

**A background paper to inform
the development of a national
professional development framework
for teachers and school leaders**

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Introduction

The purpose of this paper is to inform the development of a high-level framework to guide the professional learning and development of school leaders and teachers throughout Australia¹. The principles identified are based on theory and research about what it means to be professional in the changing landscape of the 21st century. Traditional notions of professionalism based on industrial models have been replaced by more flexible notions of successful teachers and leaders being adaptive experts who work in schools which have a high adaptive capacity (Bransford, Derry, Berliner & Hammerness, 2005; Staber & Sydow, 2002). Adaptive experts are flexible in their responses to new challenges. They constantly review their practice for its effectiveness in a given circumstance and seek new knowledge and skills to meet emerging challenges.

Traditionally, teaching has been considered a craft-based profession in which individual interpretation of how best to promote the engagement, learning and wellbeing of students has mainly been the responsibility of individual teachers (Timperley & Alton-Lee, 2008). Within this framework, a school leader's primary responsibility has been to create the conditions that motivated and optimised opportunities for teachers to do this well (Leithwood, Jantzi & Steinback, 1999). Professional learning and development, therefore, has been focused primarily on the beliefs, understandings, relationships and identities of teachers to practise their craft as well as they were individually able.

In recent years the combined efforts of policymakers, school leaders, teachers and researchers have led to two inter-related developments. The first is a greater focus on how various professional activities affect the life chances of students in terms of their intellectual, spiritual, physical, moral, social and cultural wellbeing. It is no longer acceptable for professionals in schools to do their individual best. Rather, it is expected that they will engage collectively with what is known to be effective in improving outcomes for all students. Expectations of governments and educators across the globe are that schools will cater for the full diversity of the student body. In Australian schools those expectations have proved challenging as student populations have become increasingly diverse, with instant access to technology and information (MCEETYA, 2008).

The second development concerns the evidence base about how to teach all students more effectively and to lead schools in which everyone has a place. This evidence has become more robust and available in forms that can support leaders and teachers in their practice and assist them to meet the change in expectations to educate all students. The National Professional Standards for Teachers and the National Professional Standard for Principals (Australian Institute for Teaching and School Leadership [AITSL] 2010; 2011) are based on the evidence of practices that matter.

Just describing effective practice, however, is not usually sufficient for leaders and teachers to know what to do. Fortunately, the theory and research about how to learn effectively as a professional have also developed rapidly in recent years. Traditional courses and conferences focused on 'showing' and 'telling' have given way to approaches that engage leaders and teachers in identifying how effective their practices are in creating learning opportunities for students, seeing the relevance of the evidence-base to inform changes to their practice, and evaluating whether these changes have the desired effect. That is, they become adaptive experts (Hatano & Oura, 2003). Leaders are focusing on creating organisations with high levels of adaptive capacity in which learning becomes core business (Staber & Sydow, 2002). This paper describes a set of principles based on this evidence.

1 I wish to acknowledge the contributions of Georgina Webb, John Boustead and Karen Stewart at AITSL in the development of this paper.

A set of high-level principles, however, cannot simply be picked up and translated into practice without consideration of the local contexts. Students are taught in a particular class located in a particular school in a given state or territory. The number of different stakeholders involved in the Australian education landscape has the potential to lead to fragmentation of both the evidence base and the knowledge and skills of those at each layer in each context unless all are involved in contributing to the knowledge base. The issues are complex and require collective effort. It is important, therefore, that school leaders and teachers do not just use the available evidence but also contribute to it to ensure the relevance and ongoing development of the principles and associated practices.

For that reason, the audience for this paper should not be confined to policymakers or to those with formal responsibility for providing professional learning and development opportunities for leaders and teachers. Such a construction would be inconsistent with the development of leaders and teachers as adaptive experts who both use and contribute to the wider knowledge base. Schools become sites of learning for both students and those who lead and teach in them, as well as for those responsible for formulating policy to guide them.

The Context

'Schools represent a major component of Australia's society and economy. In 2007-08, Australian schools were educating more than 3.4 million students in a total of 9,562 schools, employing more than 337,000 staff, or around three percent of the Australian labour force' (DEEWR, 2010, p. 11). The Melbourne Declaration on Educational Goals for Young Australians (MCEETYA, 2008) identified major changes in the world that are placing new demands on Australian education — particularly in schools.

International mobility, globalisation and technological change, together with environmental, social and economic pressures and rapid and continuing advances in information communication technologies, are placing greater demands on, and providing greater opportunities for, young people. As a result, there are correlating demands and opportunities for teachers and school leaders (MCEETYA, 2008; Dumont et al., 2010).

Together these contextual changes and volatility mean that every day all leaders and teachers, however experienced, face new challenges. Teachers need to develop a diverse range of capabilities which they can bring to bear to address the specific needs of particular individuals and groups of students to master new curriculum, new technology, new environmental, social and economic understandings and the intersections and interconnections between them. The scope of these factors indicates the desirability of a national approach to reforms and improvements in schooling in a nation with a relatively small population, such as Australia's, and with a global focus.

The knowledge and skills that underpin quality teaching are complex and sophisticated. Australia's educators are increasingly aware that — with the contextual issues outlined above and a rapidly developing knowledge base about the nature of learning, professional learning and improving student outcomes (Dumont, Istance & Benavides, 2010; Timperley, 2011) — engagement in professional learning and development is no longer optional.

In responding to this environment, Australian federal, state and territory governments have agreed to national education reforms through the National Education Agreement and associated National Partnership Agreements. Under the National Partnership Agreement on Improving Teacher Quality, improving teacher and school leader quality is considered an essential reform as part of Australia's efforts to improve student attainment and ensure it has a world-class system of education that is able to meet demands for a skilled and knowledgeable workforce (Australian Chamber of Commerce and Industry, 2011; Dinham et al., 2008). The purpose for having such a workforce is to address areas of current inequity in access, expectations, experiences and outcomes for students (MCEETYA, 2008). Within this frame of reference, professional learning is seen as an important contributor to improving teacher and school leader quality and effectiveness (Department of Education and Training (Victoria), 2005; Dinham, Ingvarson & Kleinhenz, 2008; Dumont et al., 2010; Zammit, et al., 2007).

This context sets the scene for the remainder of this paper, which begins with some definitions of key terms that often have different meanings for different people. Some important concepts that underpin the rest of the paper are then outlined, including understanding professionalism as adaptive expertise and leadership as developing organisational adaptive capacity; theories of learning that underpin how professionals learn; and the place of evaluation. The following section then provides an overview of the evidence base that informs four principles. These principles are then integrated into cycles of professional inquiry and knowledge-building. The paper concludes with the place of a paper such as this in developing a national framework.

Definitions

The definitions considered here include professional learning and professional development; leaders and leadership; how to decide what counts as effectiveness; and issues of sustainability.

Professional development/professional learning

In a review of the literature, Lloyd and Mayer (unpublished) differentiate professional development from professional learning and argue for a definition that includes both. The former usually refers to the activities that develop professional skills, knowledge and expertise, while the latter refers to the changes in the capacity for practice and / or changes in actual practice. Throughout this paper, I have referred to professional learning and development that is inclusive of both formal and informal opportunities for teachers and leaders to deepen professional knowledge and refine professional skills as described in the relevant Standards.

These opportunities:

- may challenge existing beliefs, attitudes and understandings
- are usually designed to result in changed professional practice for the benefit of students.

Leaders/leadership

In this paper, reference is made to school leaders/leadership while the Exposure Draft of the National Professional Standard for Principals (Australian Institute for Teaching and School Leadership, 2010) refers specifically to school principals. The more encompassing reference to leadership is made here because leadership in schools is usually distributed across different people who may or may not hold formal leadership positions (Gronn, 2003; Spillane, Halverston & Diamond, 2004). Leaders are those who exercise influence within and across schools.

What counts as effectiveness?

Increasingly, effectiveness of professional learning and development is defined in terms of how well it results in enhancing the intellectual, spiritual, physical, moral, social and cultural wellbeing of students because it is the interests of students that schools are designed to serve. However, professional learning situations that leaders and teachers find de-motivating or alienating are unlikely to serve the long term interests of students if the recruitment of teachers and their motivation and retention is undermined. For the purposes of this paper, therefore, effectiveness includes both the engagement of leaders and teachers, together with changes in practice and improved outcomes for students.

Issues of sustainability

Sustainability in education means very different things to different people. The two dimensions addressed in this definition are what should be sustained and whether the term refers to maintenance or improvement. To be consistent with the definition of effectiveness, sustainability must include both professional practices designed to improve student outcomes and the outcomes themselves. Professional practice cannot be judged as effective independently of how it promotes the ongoing learning and wellbeing of students.

Notions that sustainability refers to the maintenance of either practices or student outcomes have arisen from a static conceptualisation of professional development. In a maintenance paradigm, the sequence is typically one of professionals learning about new leadership or teaching practices, followed by evaluating if those practices have been implemented. The sustainability question asks if those involved continued to implement new practice with integrity over time. With ongoing professional learning becoming a professional obligation for all leaders and teachers, a more fluid concept of sustainability underpinned by notions of ongoing improvement is needed. Thus, for the purposes of this paper, sustainability refers to the ongoing improvement of leadership and teaching practices, with effectiveness defined in terms of evidence of better outcomes for students.

Professional learning and the professional Standards

One of the contributions made by AITSL to developing a national vision, coherence and consistency of practice is the identification and promotion of effective contemporary practice for teachers and principals as represented in the National Professional Standards (AITSL, 2010; 2011). Professional learning and development policies and approaches should focus on what can be done to assist those involved to build their capabilities in relation to the relevant standards in ways that lead to better outcomes for students.

A potential problem with using standards as the basis of professional learning, however, is that they may come to be seen as a series of boxes to be ticked. If the Standards are to become the basis for promoting high quality professional learning, they need be regarded as a series of signposts to guide an integrated professional learning agenda, rather than a series of discrete accomplishments.

Concepts underpinning the principles

Three sets of ideas underpin the principles for professional learning. The first is about understanding professionalism in terms of developing adaptive expertise. Given that this paper is about professional learning and development, the second set of ideas concerns how professionals learn and what they need to learn so that they are supported to develop the professional capabilities required to meet the challenges of change and the deeper concepts underpinning the Standards. The final set of ideas draws out some implications for evaluation. Adaptive experts are constantly evaluating the effectiveness of their activities, so it is appropriate that wider issues about evaluation and developing adaptive capacity throughout the system are described here.

Adaptive expertise and organisational adaptive capacity

Traditional concepts of professionalism have at their core the premise that professional practice is based on a body of systematically developed scientific knowledge, and that this knowledge is applied in the interests and service of their clients (Dall'alba & Sandberg, 2006). While these premises still hold, a more dynamic definition of professionalism of teachers as adaptive experts has gained considerable currency (Bransford et al., 2005; Hatano & Oura, 2003) and is presented here because ongoing professional learning is at the centre.

Adaptive experts are deeply knowledgeable about both the content of what is taught and how to teach it. They are aware of their assumptions underpinning their practice and know when they are helpful and when to question them and, if necessary, to let them go. They become expert in retrieving, organising and applying professional knowledge in light of the challenges and needs presented by the students they are teaching. Routines are fundamental to any professional activity and adaptive experts are constantly vigilant about the impact of teaching and learning routines on students' engagement, learning and wellbeing. To exercise this vigilance, they also know how to assess students on relevant attributes over both short- and long-term time frames. What may appear to be working in the immediate situation may not be effective over time. Adaptive experts have the capability to work out when known routines do not work for students and sufficient knowledge to work out innovative approaches when needed. Part of being an adaptive expert is to know when and from where to seek help. Engaging in ongoing inquiry and knowledge-building cycles is at the core of their professionalism (Timperley, 2011). Developing adaptive expertise both requires and provides a strong sense of professional agency (Staber & Sydow, 2002).

To understand how schools as organisations both influence the development of adaptive expertise, and are shaped by high levels of such expertise within their membership, it is necessary to go beyond the educational literature to the organisational literature. Such organisations are usually referred to as having adaptive capacity (Staber & Sydow, 2002). In essence, this involves developing an organisational community that learns. The description for individual professionals above can also be used as the basis for leadership of such schools. In schools with high adaptive capacity, leaders and teachers are deeply knowledgeable about both the content of what is taught and how to teach it, and they create the organisational structures, situations and routines to develop it further. All work to become aware of the assumptions underpinning their collective practice so they know when they are helpful and when to question them and, if necessary, when to let them go. They are expert in retrieving, organising and applying professional knowledge in light of the challenges presented by the students and teachers for whom they have responsibility.

All organisations require routines to function well. In organisations with high adaptive capacity, the routines involve being constantly vigilant about the impact of leadership and teaching on students' engagement, learning and wellbeing. To exercise this vigilance, they also know how to assess students, and the effectiveness of all professional activities. They construct situations that help them to work out when known routines do not work and to have sufficient knowledge to work collectively to develop

innovative approaches when needed. Part of having adaptive capacity is to know when and from where to seek help. Engaging in inquiry and learning at all levels of the organisation is seen as core to their professionalism (Timperley, 2011).

Adaptive capacity means more than simply being adaptive (Staber & Sydow, 2002). This latter concept usually refers to adjusting organisational strategies and structures to fit contextual conditions. It is essentially reactive. Adaptive capacity, on the other hand, is a dynamic process of continuous learning and adjustment that allows for ambiguity and complexity. It is particularly relevant in loosely coupled organisations that have complex interconnections both internally and with the external environment in times of change (Staber & Sydow, 2002). These organisational conditions apply to schools at any time, and more particularly to schools of the 21st century.

Organisations with limited adaptive capacity tend to search for problems in terms of existing competencies and may not realise the need to develop new knowledge in an evolving and uncertain environment (Staber & Sydow, 2002). For example, it might be assumed that teaching methods that have worked in the past where only some were expected to succeed should be equally effective with the increasingly diverse population now in Australian schools, where expectations are that all will succeed. In contrast, schools with high adaptive capacity recognise the changing world in which they operate, recognise the need to learn, and act accordingly.

Teachers cannot develop adaptive expertise and leaders develop organisational adaptive capacity if they are not supported by the policy environment and wider education system. Fullan (2005) refers to the need to connect the dots between system layers because the impact of these environments is not always positive (see, for example, Coburn, Touré & Yamashita, 2009). An important question for all those with responsibility for regional, state and national operations and policy is to ask whether their approaches to promoting professional learning are consistent with a defensible theory of professionalism. Is the rhetoric about developing motivated professionals with a strong sense of professional agency, who can make informed decisions about their practice based on deep knowledge, then contradicted by approaches to professional learning? Such contradictory approaches might involve workshops telling teachers how to teach something without engaging them in an evaluation of what is currently working well and what is not. Successful professional learning requires the whole system to be involved in interdependent partnerships. Systems with high adaptive capacity engage in a process of learning both up and down the system layers.

Adaptive expertise can be best understood by contrasting it with routine expertise (Hatano & Oroua, 2003). Both kinds assume people learn throughout their lifetimes. Routine experts and organisations with routine expertise learn how to apply a core set of skills and routines with greater fluency and efficiency. Notions of routine expertise are based on assumptions that novice teachers and leaders become expert through supported practice (Dall'Alba & Sandberg, 2006). Skill development takes place in a stepwise, cumulative manner. Becoming a skilled professional, therefore, involves progressively developing a set of knowledge and skills relevant to that profession (e.g. Dreyfus & Dreyfus, 1986). Most descriptions follow a general pattern of an initial phase of survival and rule-following, one or more intermediate stages showing greater flexibility, experimentation and consolidation, and a final phase of mastery and fluency. By this final stage, the novice's rule-following has been transformed into skilful know-how in which problems are identified intuitively and holistically with appropriate strategies enacted to solve them. The emphasis is on procedural efficiency (Hatano & Oroua, 2003).

If experienced leaders and teachers come from a routine expert perspective, they may be surprised, or at worst feel insulted, by requirements to engage in ongoing professional learning and development. In their minds, their very experience means they are already expert. If experienced leaders and teachers come from an adaptive expertise perspective, on the other hand, they expect to have to continually expand the breadth and depth of their expertise because they assume that in some situations their skills are inadequate. They have the capability to identify when known routines are not working as well as they might and to seek new information about different approaches when needed.

Theories of learning

Adaptive expertise has professional learning at its core. A national framework for promoting this learning, therefore, needs to be underpinned by robust theories of how people learn or it runs the risk of failing to meet important conditions. Nowhere has this issue been more apparent than in traditional approaches to professional development typically comprising one-off opportunities involving seminars or workshops. These events can serve to keep leaders and teachers up-to-date and to be aware of changes in the wider educational landscape. Indeed, knowing this is a professional responsibility. There is little evidence, however, that these kinds of events result in the changes to thinking or practice needed to address the challenges outlined in the introductory sections of this paper.

There is a growing consensus that the processes of adult learning are similar to those of students (Donovan, Bransford & Pellegrino, 1999). Adults, of course, come with a greater wealth of experience, more sophisticated ideas, and are not usually a captured audience in the same way as their younger counterparts. The underlying learning principles, however, are the same. For this reason I have drawn on theories grounded in research focused on both the young and the more mature but have highlighted the implications for education professionals. These theories include the work of two committees within the National Research Council in the United States on how people learn (Bransford, Brown & Cocking, 2000); the core principles for designing learning environments identified by the Centre for Educational Research and Innovation at the OECD (Dumont et al., 2010); and work on the situated nature of learning (Putman & Borko, 2000)

Bransford et al. (2000) articulated three findings about how people learn. The first is the importance of engaging prior understandings sometimes referred to as mental models. If these understandings are bypassed, participating leaders and teachers may fail to grasp new concepts and information that are presented. They often believe that existing practice based on current mental models is similar to new ideas when, in reality, it is fundamentally different. Hammerness et al. (2005) refer to the problem as one of 'over-assimilation'. Firestone, Shorr, & Monfils (2004), for example, followed teachers into classrooms after they had participated in professional development in mathematics. The focus of the professional development sessions was to understand mathematics as a problem-solving process rather than the memorisation of facts and processes. The teachers were encouraged to seat the students in groups so they could discuss approaches and strategies. When the classrooms were observed, the students were indeed sitting in groups, but the mathematical content and the process of teaching it was the same as it had been previously.

The second finding of the National Research Council concerned the development of a deep foundation of factual knowledge, understood in terms of a conceptual framework, and organised in ways that facilitate retrieval and application. Such knowledge and related skills are fundamental to becoming an adaptive expert. The implications for professional learning are that leaders and teachers need both opportunities to develop this knowledge outside of the immediate demands of their practice situations, and opportunities to understand what it means in those situations. Professional learning is not a process of learning new things and then learning how to implement them. Identifying how things work in practice deepens learning.

The National Research Council's third finding concerned the importance of developing metacognition and self-regulated learning because in this way the participating professionals take control of their own learning and develop a strong sense of agency. Individual and collective motivation to engage is enhanced. Such processes are fundamental to the development of adaptive expertise, with professional learning becoming driven from a desire to learn and improve outcomes for students rather than passively listening to someone else's desire to tell them what to do. The idea that professionals should 'sit, receive, then implement' comes from a routine expert view of professionalism – 'If only the teachers would do it right'. The frustration comes when teachers almost inevitably do not 'do it right' because either they do not understand it in sufficient depth, or their commitment to being responsive to the students they teach means they adapt what is proposed (Kennedy, 2004).

The principles identified by Dumont et al. (2010) support the three findings above from a different perspective because their focus is on designing learning environments. One such principle is that

learning environments require the active engagement of learners because knowledge is constructed by them, rather than by those who teach it. This design principle incorporates the first and third findings above: the importance of engaging existing mental models and developing meta-cognitive skills to monitor, evaluate and optimise their acquisition and use. Dumont et al. also refer to the importance of attending to the motivations and emotions of learners because learning involves a dynamic interplay of these attributes with cognition. Motivation and emotions are attended to through a combination of engaging prior conceptions, recognising the learner as the core participant, and being sensitive to individual differences, together with developing self-regulatory skills so learners are able to take control of their own learning. They are able to answer three questions: 'Where am I going?' 'How am I doing?' and 'Where to next?' (Hattie & Timperley, 2007).

More explicit in Dumont et al's (2010) principles for designing learning environments than in the National Research Council's three principles is the social nature of learning. Human brains are primed for social interaction and individual knowledge construction occurs through negotiation and co-operation. Much has been written in the professional development literature on the central role of professional learning communities as a mediating variable in the effectiveness of programs (e.g. Ingvarson, Meiers & Beavis, 2005). Such communities can provide leaders and teachers with opportunities to construct personal knowledge through interaction with others. In the 21st century these communities are increasingly digital.

The importance of the immediate social context in which professionals work takes learning beyond formal opportunities and includes the day-to-day interactions that take place through ongoing professional activities. In a leading article on professional learning, Putman and Borko (2000) identify how these interactions form an integral part of what is learned. In reality, the social situations of classrooms and schools are likely to have more influence on professional learning and practice than formal learning opportunities. Organisations with high adaptive capacity promote the kinds of interactions that position professional learning, improvement and change as part of their organisational routines.

At the same time, professional communities should not be restricted to the immediate social context of a given school. Dumont et al. (2010) remind us that effective learning environments are increasingly connected across communities and the wider world. New ideas and the expertise of those with specialist knowledge are essential to challenging in situ learning.

The place of evaluation

I have referred to evaluation throughout this paper because it is fundamental to developing adaptive expertise and organisational adaptive capacity. It is not possible to work out what is working well and not so well without adopting a deeply evaluative stance towards all professional activities. Striving for better outcomes for students requires evidence of progress towards identified goals. Identifying and gathering both formal and informal evidence about what is contributing to that progress is central to evaluation activities that promote professional learning.

Evaluation is often thought of as something that comes after an initiative or event to see if it has achieved its desired purposes. From an adaptive expertise and capacity perspective, evaluation information feeds learning and so must be integrated throughout. For this reason, this section is placed at the heart of this paper, not at the end.

The success of national initiatives, such as the development of professional standards and a framework for professional learning, depends to a large extent on an integrated evaluation strategy. Such a strategy should be designed to unpack the processes of learning and implementation and the impact on professional practice and students outcomes. Policy initiatives are always filled with uncertainty and no amount of preparation can anticipate the unexpected. In the same way that schools need high levels of adaptive capacity to understand how well they are serving their students, different levels of the system need similar capacity to understand if system initiatives are creating the kinds of conditions that promote adaptive capacity in other system layers. Without an accompanying evaluation strategy such initiatives potentially run the danger of being perceived as unrealistic, or of simply being misinterpreted. The research literature has many examples (see for example, Coburn, 2001; Datnow, 2005). Earlier

in this paper, the potential of the Professional Standards to be perceived as a series of discrete accomplishments to be ticked off, rather than regarded as important signposts of progress providing a holistic direction for professional learning, is a possible case in point.

Spillane (2004) suggests that the reason many of these kinds of issues arise as a result of what happens in the interpretive space between policy intent and leaders' and teachers' existing knowledge and understandings as they attempt to make sense of the policy messages. From a professional learning perspective, this interpretive space must be constructed to promote learning through the system layers. The learning paths need to be reciprocal and involve both practitioners' understanding of the policy and the understanding of those responsible for the policy. When evaluating a policy, those involved need to learn about the efficacy of the policies themselves and why they are being implemented in particular ways (Timperley, 2009).

This means that the evaluation frameworks and activities should not be driven from a perspective of compliance — 'are the intended recipients of the policy doing it right?' — or potential blame — 'if only they had done it right it would have been effective'. Rather, evaluation activities need to be grounded in a learning framework. In a literacy professional development project in New Zealand that greatly improved students' literacy achievement, particularly for those starting in the lowest 20 per cent (Timperley, Parr & Meissel, 2010), a policy official explained what she wanted from the research and evaluation probes. She wanted to know if everyone at different layers in the system were clear about their own learning needs, received quality information about them and were making appropriate decisions about how they could support student learners (Timperley & Parr, 2009). When it became apparent that in some cases this was not happening, evaluation probes became focused on identifying possible reasons, with the policy itself coming under as much scrutiny as the activities of those responsible for its implementation. In this way policy and implementation evolved together in mutually understood and beneficial ways.

Evaluation probes, constructed with those responsible for implementation throughout the system layers, can form a powerful way to connect the dots referred to earlier in this paper with reference to Fullan (2005). If this paper is to form the dual function of outlining the evidence of quality professional learning and providing the platform for producing new evidence to contribute to the existing knowledge base, then these kinds of evaluative activities become central to effectiveness. It identifies what is and what is not working, what needs to change on the ground, and how the ideas were framed in the first place.

The evidence base

The literature on professional learning and development is extensive. For example, a recent search of an education database using only the terms 'professional development' and 'in-service teacher education' identified more than 34,000 references. A more focused search of research articles, books, websites and theses in 2007 that provided information about both professional development opportunities for teachers and personal, social and / or academic outcomes for students identified only 97 studies (Timperley, Wilson, Barrar & Fung, 2008). Relatively few studies have tracked the impact of professional development to outcomes for students in robust ways.

There is little evidence that focusing on teacher or leader beliefs, attitudes, dispositions, styles, knowledge, skills or practices independently of changes for students has much impact on student outcomes. A recent analysis comparing transformational with instructional or pedagogical leadership is a case in point (Robinson, Lloyd & Rowe, 2008). The central question of early work in transformational leadership in non-educational organisations was why some leaders were able to engage with employees in ways that led them to demonstrate higher levels of motivation and morality (Burns, 1978). Subsequently, this work was adopted by the educational community and much of the leadership professional development through the 1980s and 1990s emphasised the ability to inspire and motivate others and develop group commitment towards common visions (Leithwood, Jantzi & Steinbach, 1999). The persistent problem, however, has been the difficulty in linking these leadership constructs associated with transformational leadership to better outcomes for students (Leithwood & Jantzi, 2005).

Similarly, in the synthesis of empirical studies on teacher professional learning and development (Timperley, et al., 2008), several studies failed to link changes in teaching practices to improved outcomes for students. For these reasons this paper has not undertaken an analysis of the wider literature on professional learning and development focused on leaders and teachers independently of outcomes for students.

In a recent meta-analysis, Robinson, Lloyd and Rowe (2008) identified that instructional leadership focused on teaching and learning (variously known as 'pedagogical leadership' or 'leadership of learning') had nearly four times the effect on academic outcomes for students as did transformational leadership. Of particular relevance to this policy paper was these authors' identification of five dimensions of leadership activities with the highest effect sizes for students' academic outcomes. The four with medium effects (effect sizes noted in brackets) included establishing goals and expectations (ES=0.42); resourcing strategically (ES=0.31); planning, coordinating and evaluating teaching and the curriculum (ES=0.42); and ensuring an orderly and supportive environment (ES=0.27). The dimension with at least twice the effect of others involved leaders promoting and participating in teacher learning and development (ES=0.84). A subsequent study by Timperley (2011) in five schools, where student literacy achievement accelerated approximately three times the expected rate over two years of whole school professional development, identified that leaders in these schools did more than participate and promote teacher learning and development. They led it.

The synthesis of the 97 studies of professional learning and development linked to student outcomes referred to above (Timperley et al., 2008) showed that professional development had a moderate effect overall. The average effect size over 227 effects of 0.6 compares favourably but not particularly strongly with an effect size of 0.4 identified by Hattie (2009) as representing 'business as usual'. What was more important than the overall effect was the wide variability in outcomes. Some studies in all three areas of academic, personal and social outcomes for students showed that teachers' participation in professional development had strong positive effects. Unfortunately, other studies in each of these three areas revealed negative effects for these outcomes. Sometimes school leaders and teachers are encouraged to learn and enact strategies that do not work for their students.

Many of those approaches to professional learning and development that did have an effect on student outcomes had the characteristics listed below, although it needs to be noted that none were sufficient on their own.

Context

- Improving outcomes for students was the reason to engage in professional learning and development, and the basis for judging its success
- Expertise outside of the participant group was available
- Consistency with wider trends in policy and research was evident

The content of knowledge and skills of focus

- How current understandings fitted with new understandings were negotiated,
- Unhelpful discourses about students, curriculum content and how to teach it were challenged
- Pedagogical content knowledge, assessment information and how students learn were integrated into holistic practices
- Teaching practice was informed by theory and theory informed by practice
- Links between teaching and learning and / or student-teacher relationships were established
- Assessment information was used to focus teaching and to judge its effectiveness

Conditions under which teachers learned

- Extended and frequent opportunities to learn and practice were provided
- Professional instruction was sequenced
- Understandings were discussed and negotiated within a professional community

The question that might be asked is whether these characteristics hold across all situations. While they will play out differently in different contexts, some areas where differences might be expected but where these expectations were not supported by the evidence included:

- The content or approach for primary and secondary schools, although the more complex structure of secondary schools needed to be taken into account
- Situations where teachers volunteered or were required to participate.

Identifying characteristics and approaches from the evidence (backward mapping) does not necessarily mean that applying them will result in improved outcomes in professional learning and development situations (forward mapping). The key findings have, however, been tested in practice in a New Zealand literacy project involving over 300 primary schools. An important point of departure in this project from most of the research evidence included in the synthesis, however, was the greater emphasis on leaders and teachers developing self-regulated learning capabilities so they could take control of their own learning over time. The development of adaptive expertise and capacity, together with professional agency, was central. The students in the participating schools made, on average, 2.5 to 3.2 times the expected rate of progress in writing and 1.5 and 1.9 times the expected rate of progress in reading over the two years of their schools' involvement. Even more important, the gains were greatest for the students in the lowest 20 per cent of the achievement band at the beginning of the project. For these students, gains in writing were five to six times the expected rate of progress and gains in reading more than three times the expected rate (Timperley et al., 2010). In a randomly selected sample of schools, most sustained the rate of gain for new student cohorts for at least the three years of the follow-up monitoring period (O'Connell, 2009).

Given the variability in outcomes of professional learning and development in many studies, and a more informed evidence base about approaches that result in improved outcomes for students, it is appropriate to develop a national framework to guide the work of states, districts and schools. If financial resources, together with the precious resource of professional time, are to be marshalled for the benefit of students, then some approaches are more likely to have traction than others. A caveat must be that none can be guaranteed because of the variable influence of different contexts. The remainder of this paper outlines some key principles and describes how they can be integrated to form the basis of a

framework. They are drawn from:

- a synthesis of the evidence outlined above of what works and what does not;
- the underlying concepts of adaptive expertise and organisational adaptive capacity that develops a professional sense of agency in the interests of improving outcomes for students;
- theories of learning that respect professionals as diverse learners who need relevant support to learn and change; and
- ways to integrate ongoing evaluation into all professional activities.

Principles for quality effective professional learning

Four broad principles are identified. The first is the principle of making professional learning core school business. The second is the importance of focusing on outcomes for students. Improving student outcomes becomes the reason to engage in professional learning and the basis for deciding effectiveness. The third involves the development of deep pedagogical content and assessment knowledge when the outcomes focus on academic areas. The final principle is the need to construct professional learning environments in ways that are consistent with how people learn. Each principle will be described in terms of how it connects to the underlying concepts and evidence-base outlined in earlier sections of this paper.

Principle one: Professional learning is core school business

The above description of professionalism as one of developing adaptive expertise and the role of leaders in creating organisations with high adaptive capacity means that professional learning must be core business within and across schools. The professional practices identified in the National Professional Standard for Principals (AITSL, 2011) strongly support the importance of leaders in this role. High-quality learning, teaching and schooling require professionals who engage systematically in developing their knowledge and skills as part of their everyday responsibilities. This claim is strongly supported by the meta-analysis undertaken by Robinson et al. (2008) in which they found that the leadership activity with the greatest influence on student outcomes was leaders' promotion of, and participation in, teachers' professional learning and development. Kaser and Halbert (2009) describe how these opportunities cannot be episodic events but refer to this principle as developing a learning-oriented design in schools that reflects the complexity required to create appropriate conditions, structures and rhythms for professional learning.

This principle is consistent with important learning principles. When learning becomes core business, it creates the conditions that allow for the social nature of learning (Dumont et al., 2010), as those involved have opportunities to process and challenge each other's ideas on an ongoing basis. Not only is learning social but it is also situated in the physical and social context in which teaching takes place (Putman & Borko, 2000). This means that these situations are likely to have a far greater effect on what leaders and teachers learn than out-of-school learning opportunities.

This principle does not preclude leaders and teachers seeking learning opportunities beyond a particular school. These opportunities can be an important source of new ideas and new ways of framing old problems and practices, and of promoting career development. Indeed, Dumont et al. (2010) identified the importance of designing learning environments that connect to the community and the wider world. These external opportunities, however, cannot be a substitute for learning as core school business but rather complement this core business. The Best Evidence Synthesis on Professional Learning and Development (Timperley et al., 2008) found that in some circumstances out-of-school courses did improve outcomes for students, but only when they were supported in the school context.

One of the difficulties involved in relying on out-of-school rather than in-school learning opportunities is that they can result in patches of brilliance in some classrooms and mediocrity, at best, in others. This can mean that many students miss out. It is typically the enthusiastic who volunteer for such courses and sending the unenthusiastic to external courses does not work. The analysis of the evidence in the Best Evidence Synthesis on Professional Learning and Development (Timperley et al., 2008) identified that volunteering was not the critical element in effectiveness, rather it was teachers' engagement in the learning at some point and the ongoing support they received to work through iterative cycles of learning something and trying it out in practice. When professional learning is core business, these opportunities are provided and there are high expectations for everyone to engage.

O'Connell (2010) identified that schools with sustained improvement in teaching practice and student outcomes following whole school professional development were those that developed an evidence-informed inquiry focus for leaders and teachers that was congruent with school goals. Individual teacher

goals, consistent with the school goals, were based on the diverse needs of teachers with specific reference to the students they taught. Goals are central to developing self-regulated learning capacity and a sense of professional agency because such learners are able to answer the question ‘Where am I going?’ so they know how they are doing and what they need to learn next.

Principle two: Improving outcomes for students forms the reason to engage in professional learning opportunities and the basis for evaluating its effectiveness

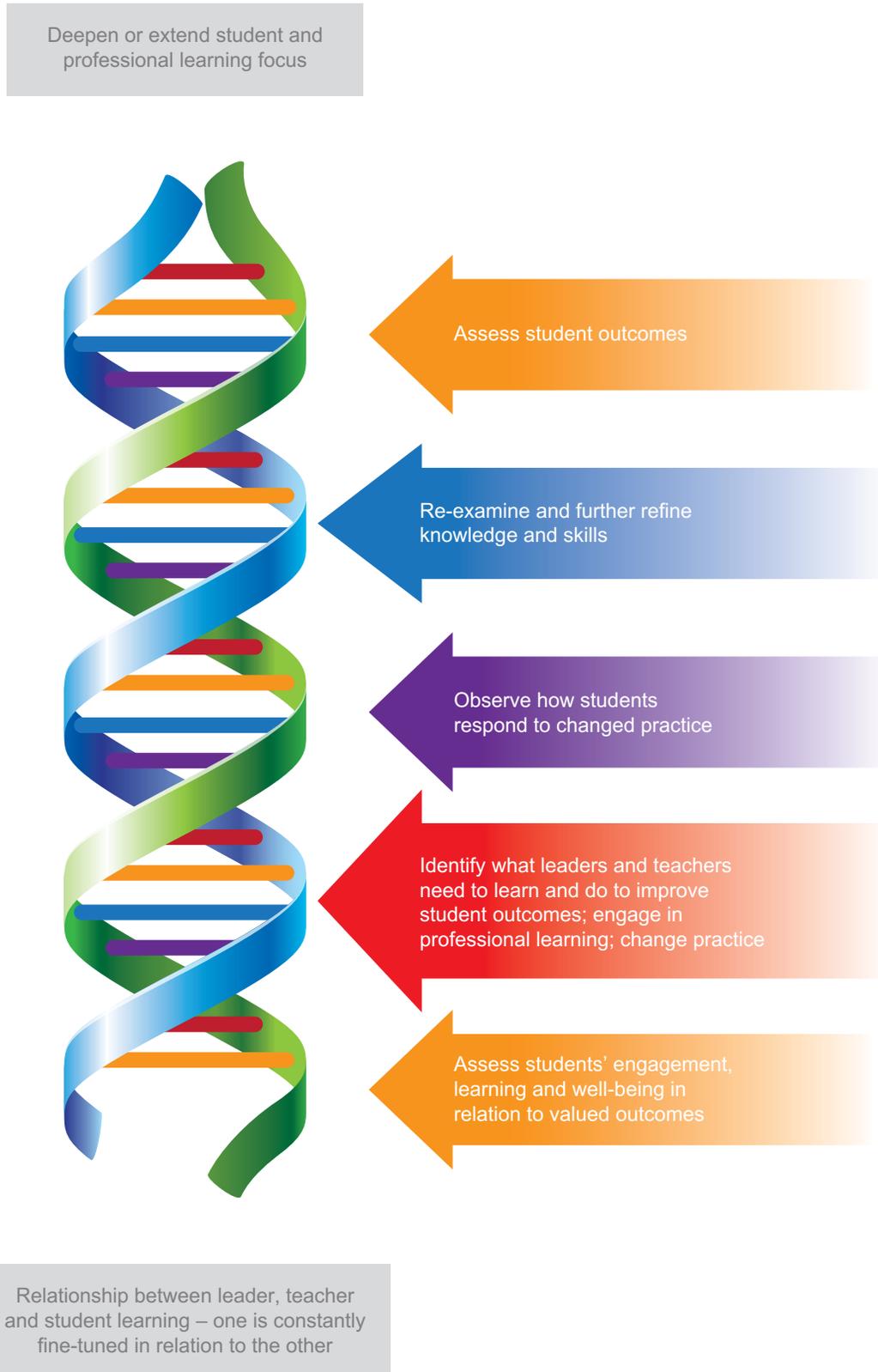
This principle relates to the need for professional learning opportunities to be framed around improving academic, social or personal outcomes for students. Improving these outcomes becomes the reason to engage in professional learning, the reason to deepen knowledge and refine skills, and the basis for deciding if it is effective. Adaptive experts are constantly focused on the impact of their practice on students, and when their routines of practice are not working for students, they seek new knowledge and skills. Similarly, those leading organisations with high adaptive capacity seek these opportunities at the level of the whole school as an organisation.

There is little evidence to support the idea that students benefit when teachers develop generic leadership and teaching strategies independently of a direct focus on their students. The majority of studies in the Best Evidence Synthesis on Professional Learning and Development with improved outcomes for students (Timperley et al., 2008), for example, involved a problem that needed to be solved. Knowledge was developed to solve the problem, and the impact on students was informally and formally monitored in both the short and longer term. In the literacy professional development project with such high effect sizes that were sustained after the project was finished (O’Connell, 2010; Timperley et al., 2010), this knowledge was systematically transferred to other students and curriculum areas. In all these studies, student and professional learning were interrelated. The way in which this happened is depicted in Figure 1.

A question that arises when considering this integration of professional learning with improved outcomes for students concerns the kinds of outcomes that should be considered. They are framed in this principle as those valued by the communities in which students live and are educated. In this context, the term ‘communities’ includes the nation, the state/territory and the local communities, because all these communities influence what is valued and the meaning made of it. In Canada Kaser and Halbert (2009) found that the strongest leaders had an expansive view of the kind of education they wanted for young people in their schools and all their activities were accompanied by an intensive moral purpose in achieving this. The new Australian Curriculum (ACARA, 2010) provides guidance for Australian school leaders and teachers about the kinds of outcomes valued in the Australian context. Similarly the introduction to the new National Professional Standards refers to the intellectual, spiritual, physical, moral, social and cultural wellbeing of students (AITSL, 2010; 2011). These broad ideas need to be framed within the context of local communities and particular schools.

Figure 1

Interrelationship between student outcomes and professional learning and development¹



¹ The image of the relationship between leader, teacher and student learning being in the form of a double-helix was first proposed by Kaser, L., and Halbert, J. (in press) *Powerful inquiries: Questions That Spiral to Deepen Student Learning*. FAPRESS.

Principle three: Professional learning opportunities build deep pedagogical content and assessment knowledge focused on what is needed to improve outcomes for students

This principle is particularly relevant to improving academic outcomes for students. There are several dimensions to the principle and I will discuss each separately, although all need to be integrated to be effective. The first relates to building deep pedagogical content knowledge, identified by Shulman (1987) more than 20 years ago as the core professional repertoire for teachers. An important finding in Bransford et al's (2000) synthesis of the literature on learning is that learners who can readily retrieve information have a deep understanding of factual knowledge within conceptual frameworks. Leaders and teachers must retrieve information in moment-by-moment interactions throughout their school day. Having this knowledge organised into conceptual frameworks means that it is known both in a practical sense and theoretically. If understandings are introduced in theory only, then problems arise when teachers try to put them into practice in their own teaching and learning contexts (Kennedy, 2004). On the other hand, leaders and teachers need to know why the understandings and practices promoted through professional learning opportunities are more effective than what they did before so that they can tailor new practices to meet the demands of particular situations. Knowing something theoretically also counterbalances the situated nature of learning referred to in the first principle, in that conceptual or theoretical knowledge allows for transfer to other situations with other students or in other curriculum areas. Indeed, opportunities to apply existing knowledge to new situations deepen understanding. Specific expertise is usually needed to develop this kind of knowledge, with the engagement of experts external to the group (but not necessarily to the school) an important ingredient.

More is known about areas of knowledge important for teaching (see, for example, Kennedy, 1998) than for leadership. The most widely recognised research in this latter area has been undertaken by Stein and Nelson (2003) in relation to a mathematics reform in the United States. While not specifically linked to students' mathematical achievement, these authors identified the importance of having deep content knowledge in order to undertake some important leadership activities. For example, providing teachers with feedback beyond generic teaching moves to discuss mathematical understanding required deep disciplinary and pedagogical content knowledge. For one principal, some decisions changed as his mathematical understanding deepened. When considering the criteria for textbook selection, for example, he began to consider the kinds of mathematical thinkers being promoted by particular texts rather than being distracted by their surface features.

The power of formative assessment (Willam, 2010) has brought to the fore the second dimension of this principle: that is, the importance of professionals having the knowledge and skills to assess students' learning. It is not possible to teach in ways that are responsive to students' individual needs unless teachers can identify what students know and do not know, can diagnose their difficulties and draw on the appropriate pedagogical content knowledge above to know what to teach next and how to teach it. Timperley (2011) has drawn parallels between these formative assessment processes for students and those for teachers. From this perspective, assessment information about students also tells teachers what they have taught well, what they need to re-teach, how they should adjust their teaching strategies and what they need to learn in order to do so.

This principle as a whole must promote innovation in students' learning environments and experiences because we cannot rely on what we already know. In changing contexts, such as those outlined in the introductory sections of this paper, innovation is essential to meet the challenges of changing demands. It does mean, however, that those introducing innovations are disciplined in their approach by being informed by what is known and the theoretical understandings underpinning them. It is not a case of letting a thousand flowers bloom. The effectiveness of innovations must be evaluated throughout their implementation using evidence of what is accepted as effective or challenging those assumptions explicitly.

Principle four: Professional learning environments are consistent with how people learn

The dimensions of this fourth principle include engaging teachers' existing theories of practice, providing opportunities to learn with others, allowing sufficient time with multiple opportunities to learn, and promoting self-regulated learning in ways that support the development of professional agency.

Whether learners are adults or young people, they actively interpret new information through the lens of prior understandings (Bransford et al., 2000; Dumont et al., 2010). These prior understandings are, in turn, structured and interpreted through existing mental models. For educational professionals, the relevant knowledge includes (but is not restricted to) what is important for students to learn, how they learn it, how best to teach them and how best to organise schools for it all to happen. In professional learning situations, if prior knowledge and existing mental models are not engaged, those involved may fail to grasp new concepts because they believe that existing practice is more similar to new ideas than it really is. Another reason for engaging existing mental models is that they may be counterproductive to enhancing better outcomes for students. When beliefs are held that certain groups of students cannot learn, or that important content in mathematics and science is the same as memorising facts, then understanding the differences between the old and the new are important if the new is to be adequately understood. This kind of process usually requires someone external to the group of participating teachers to recognise, engage and challenge existing mental models.

Providing opportunities to learn with others, the second dimension of this principle, draws on theories about the social nature of learning (Dumont et al., 2010). Several authors (e.g. Ingvarson et al., 2005; Lai, McNaughton, Amituanai-Toloa, Turner & Hsiao, 2009) have identified the importance of professional communities as places where leaders and teachers can process what they have learned. Principle one, making professional learning core school business, builds on this dimension of this fourth principle. Professional communities may be within schools, across schools or web-based. What is important is that their focus and processes are consistent with other principles in that they contribute to making learning core school business; they have students' engagement, learning and wellbeing as their central focus; and they build relevant knowledge and skills.

Professional communities can provide the vehicle to develop adaptive capacity (Staber & Sydow, 2002) because such capacity is dependent on collaborative effort and joint problem-solving. However, there are many examples in the research literature of professional communities that are counterproductive to this development. When social norms are not challenged they can lead to entrenchment of existing beliefs and develop processes antithetical to learning. A detailed study in the United States by Lipman (1997) followed teachers' interactions within such a professional community over a year. The teachers were given generous amounts of time to plan together to meet the needs of minority students but they failed to take advantage of the situation because they did not examine the effectiveness of their own practice. Rather they viewed all problems as resting with the students and their families. Participating in a professional learning community appears to be a necessary, but not sufficient, condition for learning.

The third dimension of extended time with multiple opportunities for teachers and leaders to learn is also a necessary but not sufficient condition. In the synthesis of the empirical evidence on professional development undertaken by Timperley et al. (2008), professional development that had substantive positive effects on outcomes for students had repeated opportunities for leaders and teachers to learn, to apply new knowledge and skills, and to revisit important concepts. Changing practice is not a simple process of learning something and then applying it. Integral to developing an understanding of new teaching or leadership practices is trying them out in practice, analysing what happened and problem-solving the issues that arise.

The only exceptions to requiring extended time occurred when teachers learned discrete knowledge and skills that could be implemented independently of an integrated curriculum. In a secondary school study, for example, teachers were taught approaches to map-reading skills in a one-off session that resulted in improvement in students' map-reading skills. The wider knowledge and skills involved in geography, however, were not affected (Fishman, Marx, Besta & Tai, 2003).

The final dimension of this principle draws on Bransford et al's (2000) findings about how people learn and Dumont et al's (2010) design of learning environments and the development of meta-cognition and self-regulation. Professional development that focuses on check-lists and compliance has a mixed history. It can lead to initial improvements in student outcomes when teachers have limited skills and are watched closely, but these outcomes are not necessarily sustained (e.g. Stallings & Krasvage, 1986). Such an approach is also antithetical to developing adaptive expertise. More robust and sustainable approaches promote self-regulated learning professional. Just as students need to be able to answer the questions 'Where am I going?', 'How am I doing?' and 'Where to next?' if they are to take control of their own learning, so do their teachers and school leaders. This means working with the professionals involved to identify what they need to learn in order to improve outcomes for students, how to monitor if new practices are more effective than those used before, and where teachers and school leaders can seek help when needed. Through such processes teachers and school leaders take control of their own learning and develop a strong sense of professional agency.

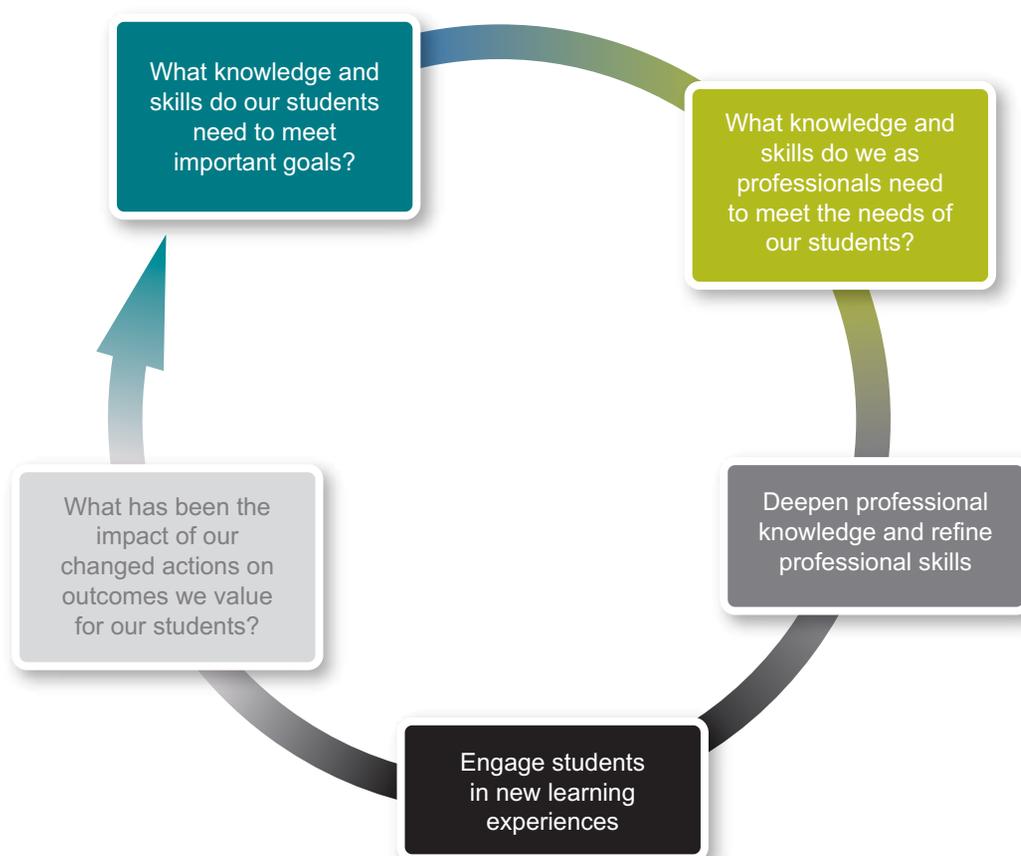
Integrating the principles

One useful way to integrate the principles so they promote adaptive expertise is for leaders and teachers to engage in cycles of inquiry that systematically build knowledge and skills (Figure 2). This approach to integration was used in the New Zealand literacy project that resulted in such high and sustained gains for students' literacy achievements, particularly those students progressing least well at the beginning of the schools' involvement (Timperley et al., 2010). Professional inquiry is not a new idea. Teachers inquire into the effectiveness of their practice every day as they observe which parts of lessons students appear to understand and what continues to cause them difficulty. Leaders support and assist teachers to inquire through structured opportunities to reflect on the effectiveness of practice. This kind of inquiry, however, usually takes place within the frameworks of existing knowledge. To develop adaptive expertise in ways that make a substantive difference to student outcomes, teachers usually need to enlist new conceptual frameworks using a range of evidence and accessing different kinds of knowledge that will challenge their thinking and practice.

This cycle starts with teachers investigating what students need to know and do to meet goals valued by the communities in which they live and are educated (principle two). Students' engagement, learning and wellbeing form the touchstone. When teachers have a deep understanding of the profiles of their students, they then move to inquire into the knowledge and skills they need if they are to be more effective in addressing the needs of individuals and groups of students in the area of focus. Part of the process involves examining existing approaches to assess what has been effective, and what has not, together with the mental models underpinning their practice (principle four). From there, teachers engage in new professional learning opportunities to deepen their knowledge and refine their professional skills (principle three) and try these out in practice (principle four). This new professional learning frames the kinds of new experiences that they can bring to their students. But that is not the end. Given that the effectiveness of all teaching practice is influenced by context and no particular practices can be guaranteed to result in particular outcomes, the final stage of the inquiry involves examining the impact of changed actions on the outcomes for the students who were the focus of the inquiry (principle two). Evidence of both intended and unintended consequences is sought. Through assessing impact, self-regulated professional learning is promoted. The purpose is to understand what has been effective and what has not (principle four).

Figure 2

Teacher inquiry and knowledge-building cycle to promote important outcomes for students²



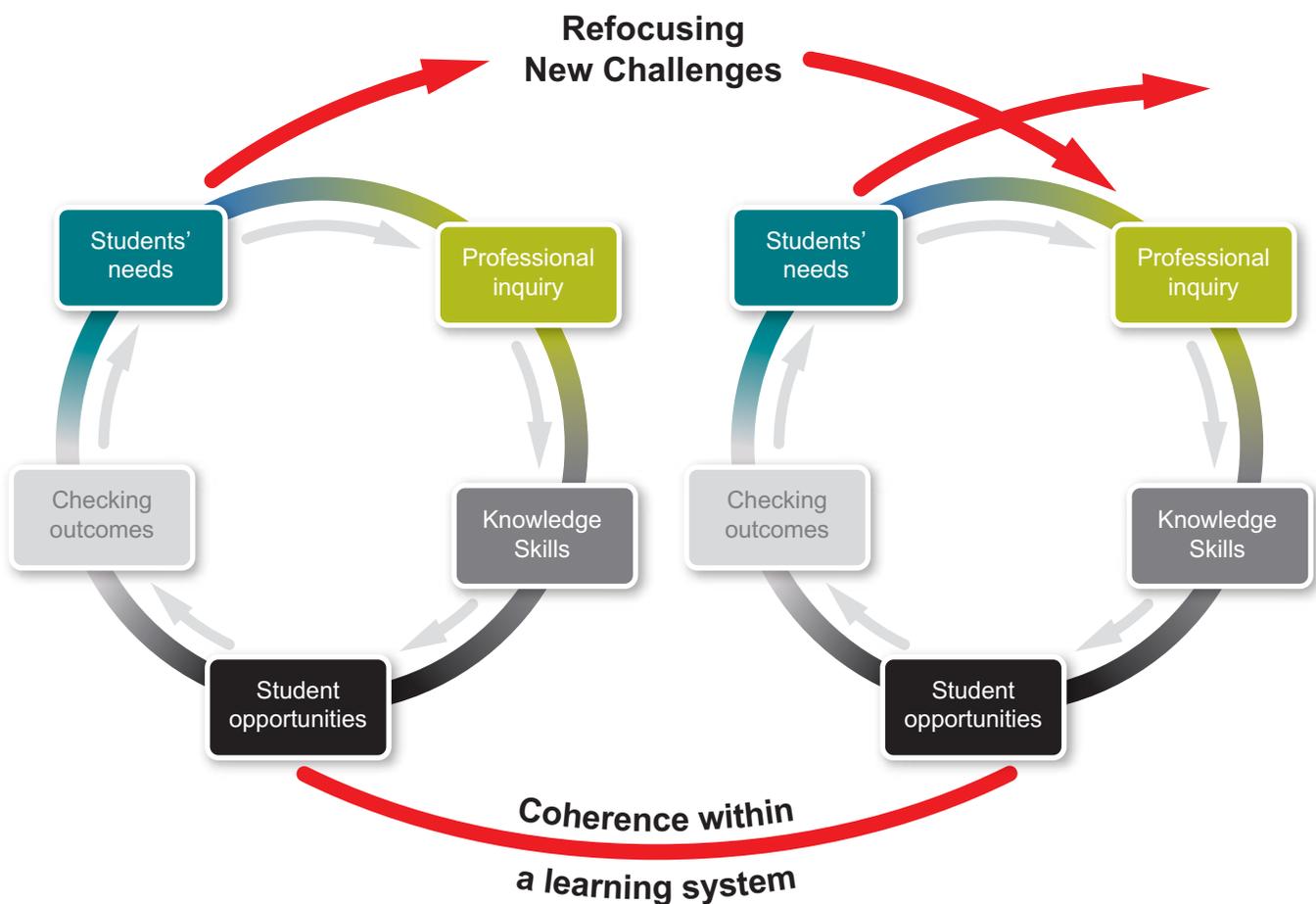
² Adapted from Timperley (2011a). *Realizing the Power of Professional Learning*.

Teachers cannot engage effectively in cycles of inquiry and learn how to improve practice without the active support of their leaders. The context in which teachers work strongly influences what and how they learn (Putman & Borko, 2000), so leaders need to create schools that foster inquiry in ways that lead to high levels of adaptive capacity (principle one). Providing support to teachers early on in the cycle means engaging with them to interpret the information on students' profiles of engagement, learning and wellbeing. Later on it means helping them to identify which teaching practices are contributing to better outcomes than others. When new areas of professional learning are identified, leaders need to engage the relevant expertise and so on throughout evolving cycles.

Leaders who support teachers in this way find that they also have new things to learn if they are to be effective in their role. They find that they also profit from systematically engaging in their own inquiry and knowledge-building cycles by identifying professional learning goals for themselves and seeking the appropriate expertise to achieve them. They learn when existing routines work, so that they can be maintained, and also identify when they, as leaders, need to expand the depth and breadth of their current expertise because established routines are not as effective as they might be.

If the leaders' and teachers' knowledge and skills are to develop beyond the specific situation and extend to other students and other curriculum, then iterative cycles are needed. Each cycle should not be seen as separate but rather that each builds on another into professional learning plans, thus creating professional development across inquiries. It is from these premises that coherence and deep knowledge are built.

Figure 3
Keeping it all going through ongoing inquiry³



³ Adapted from Timperley (2011a). *Realizing the Power of Professional Learning*.

Conclusions

Demanding standards for principals and teachers have been designed to add to the professionalism and excellence of Australian teachers and principals (AITSL, 2010; 2011). Reaching such standards will require considerable ongoing investment in professional learning and development. The international evidence with respect to effectiveness of the approaches of many such opportunities shows highly variable outcomes (Timperley, et al., 2008). The proposal to develop a national professional learning framework to support teachers' and school leaders' professional learning is an opportunity to ensure the latest knowledge and understanding about effective professional practice. To do so, learning and development must be embedded in all teachers' and leaders' consideration of, and participation in, professional learning. 'The major challenge in improving teaching lies not so much in identifying and describing quality teaching, but in developing structures and approaches that ensure widespread use of successful teaching practices: to make best practice, common practice' (Dinham et al., 2008, p. 14).

The development of adaptive expertise requires that professional learning and development opportunities are both high quality and effective for the full range of leaders and teachers in Australian schools and, most importantly, the students they teach. Improving outcomes for students becomes the reason for leaders and teachers to engage in professional learning and forms the basis for judging its effectiveness. The particular challenge for leaders is to develop schools with high adaptive capacity so that ongoing professional learning becomes a planned part of the development of every professional in every school. The four key principles identified for this to happen include:

- Professional learning becomes core school business
- Improving outcomes for students forms the reason to engage in professional learning opportunities and the basis for evaluating its effectiveness
- Professional learning opportunities build deep pedagogical content and assessment knowledge focused on what is needed to improve outcomes for students
- Professional learning environments are consistent with how people learn

Both Fullan (2005) and Levin (2007) have emphasised the importance of developing coherence across all communities working in interdependent partnership if change and improvement in teaching and learning practices are to occur in large numbers of schools. In Australia, these communities are complex in that different decisions are made at school, regional, sector, state and national levels. Each influences the others and so effective large-scale change requires all levels of the system to work with one another. A coherent strategy across the system is more likely to achieve manageable and effective change than one where different parts work separately. Such coherence is likely to be effective only if the overall strategy is based on a vision of a profession that embraces the challenges of the 21st century, the evidence of what it takes to create the change, and incorporates principled systems for action and evaluation. This paper is designed to provide the theory and evidence on which such a process of learning and development can be based.

It is acknowledged, however, that there are limitations to the evidence base informing the paper because there is still much to be explored, particularly in the Australian context. For example, there is good evidence for the impact of professional learning on student outcomes when it is highly focused on specific outcomes. There is less robust evidence for the impact of having a highly educated teaching and leadership workforce. A research agenda around this issue may well emerge from this initiative by AITSL.

A second limitation of the evidence base is that it is primarily constructed by researchers. Internationally, the roles of school leaders and teachers are increasingly being defined as not only the consumers of new knowledge but also the developers of that knowledge. A recent review by the Centre for the Use of Research and Evidence in Education (CUREE) in England (2010) showed a substantial increase in the number of teachers who engaged in research about teaching and learning in recent years. Unless

associated with a research institution and part of a wider research program, however, practitioner research is rarely systematically incorporated into a wider body of knowledge about leadership, teaching and learning. Too often the research is context-specific and idiosyncratic. Teachers with adaptive expertise working in schools with high adaptive capacity could well contribute to a wider knowledge base as they develop organisations in which all routinely engage in ongoing professional learning in ways that benefit the students participating in the Australian education system.

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