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Reclaiming and reframing
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Waikato Journal Of Education

Te Hautaka Mātauranga o Waikato

What should initial teacher education programmes for 2022 look like and why?

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Abstract

Over the last fifteen years or so we have seen a paradigm shift in international thinking about education. Driven by an awareness of the massive social, economic, and technological changes taking place in the world outside education, the response has been to question the role and purpose of traditional forms of schooling. Today's learners need knowledge and skills that our schools were not set up to provide. However, and more importantly, to thrive in today's world, they need an orientation to knowledge, thinking and learning that differs from what was valued in 20th century schools.

While there is now a large research and policy literature looking at how we might go about building this new orientation to knowledge in students, work exploring the cognitive demands this makes on teachers is only just beginning.

If teachers are to design '21st century' learning programmes for their students, they need a 21st century orientation to knowledge. Achieving this in teachers involves more than simply adding new knowledge and skills to their existing repertoires: it requires them to change how they think, know, and learn. This has obvious implications for the design of teacher professional learning programmes, including—and especially—initial teacher education.

This paper explores what initial teacher education should look like in 2022—if we want to continue to have a public education system, and if we want our education system to lead, rather than follow, New Zealand's future development.

Introduction

This paper's starting point is the literature on future-oriented—or '21st century'—schooling. In this literature it is argued that our current schooling system is not capable of meeting our future needs. Major change is needed, at all levels of the system. The teachers of the future will need different knowledge and skills from those needed in today's system. This has obvious implications for initial—and in-service—teacher education programmes.

The literature on future-oriented schooling is large and heterogeneous.[i] I don't have space in this paper to rehearse the many arguments it makes. My focus here is on just one aspect of this work: the implications for education of various recent changes in *knowledge*. The paper looks at some of these implications—for education in general, and for teacher education—and suggests that more needs to be done if we are to adequately prepare teachers to work in a 'future-oriented' system. The paper's purpose is to raise questions and provoke debate. It is, of course, just one point of view, a 'think piece' that is not—and could not be—based on empirical research. The ideas it outlines represent one possible view of the future; there are, of course, others.

The term '21st century learners' features regularly in current educational discussion, and 'future-focus' is a key 'principle' of our current national curriculum document. However, discussions of what '21st century' or 'future-focused' *teacher*s might look like are much less common, and recent research shows that the 'future-focus' principle is not widely understood by our current teachers (e.g., Education Review Office, 2012; Hipkins, 2012). It seems to me that this 'principle' is in danger of following many of the 20th century education's 'key ideas' in becoming little more than the formal display of a value we claim to be committed to, but in fact do not actually *want* to achieve (Labaree, 2010). Seriously exploring what might be required of '21st century' or 'future-focused' teachers raises some hard questions, questions that, in my experience, people are reluctant to engage with.

In this paper I explore the following questions:

- What is *different* about the 21st century—i.e., what has changed in the world outside education, and why should this affect education?
- What knowledge, skills, and dispositions do *21st century* teachers need?
- How—if at all—are these *different* from those needed by 20th century teachers?
- Can we expect *all* teachers to have *all* of these qualities?
- Will we continue to see teaching as a unified profession?

Recent developments outside education, collectively known as the Knowledge Society, require a response from educationists. We could resist these developments, or we could react to their surface features (which in my experience is mostly what we have seen). Alternatively, we could embrace them, repackaging them in considered ways that serve genuinely *educative* purposes. This latter view is the starting point for this paper. The paper's focus is knowledge, and its main argument is that, because knowledge, in the Knowledge Society, has a new meaning, we need to rethink knowledge's purpose in the school curriculum. Following from this, we need to rethink some of our ideas about the kinds of knowledge teachers need. The paper argues that 21st century teachers need *some* of the same knowledge 20th century teachers needed, and some of this knowledge is now *even more* important; however, today's teachers need *more* and *deeper* knowledge in a wider range of areas, and—importantly—they need a new *orientation* to knowledge.

This has obvious implications for teacher education. Two examples: preparing to become a teacher will require people to make a significant cognitive shift, and it is likely that we will need to consider offering different levels and/or specialty areas of teacher education (as opposed to the current focus on preparing generalist, do-everything teachers). Space precludes a long discussion of these issues here: this paper's purpose is to set out *why* a 'step change' is needed if we want a viable 21st

century public education system, capable of preparing young New Zealanders for a future in a country that is something more than a service-oriented tourist destination, exporting most of its talent.

Twentieth century teachers—what did they need?

Very briefly, to function well in a 20th century education system, teachers need to *know* certain things. They need certain 'conceptual' knowledge: knowledge of the *content* or subject areas they will be teaching; they need knowledge of how best to *teach* that content to children, adolescents or adults; and they need knowledge of both the *system* they will be working in (its official documents, processes and institutions) and the *society* it is designed to serve. They also need 'people' knowledge. They need to know how people *learn*, how to provide the best possible *conditions* for learning for all of their students, and how to *assess* whether or not learning has taken place. Teachers also need to know how to work with and manage children, young people and/or adults, as individuals and in groups. Knowledge of one or more 'extra-curricular' activities that can provide additional contexts for working with young people (sport, drama or music, for example) is also helpful. In addition to this knowledge, certain 'dispositions' are also needed. A successful 20th century teacher is expected to identify with the teaching profession as a whole, and to understand, uphold, and contribute to the ongoing development of its values, and the collective good.

However, this assemblage of knowledge and dispositions is not enough. Learning to be a successful teacher, for most people, involves building on, selecting from, and/or re-packaging this basic knowledge to develop an idiosyncratic way of 'doing' teaching that works for them. Putting all this knowledge together, both over time, and in the moment, to meet the needs of specific individual students at specific points in time, is *the* key skill of teaching. Managing this process is extremely challenging for most people (some commentators have compared its cognitive complexity with air traffic control work). Once teachers have developed this hard-won, personalised body of—largely tacit—knowledge of 'what works', unsurprisingly they are not especially receptive to reformers' suggestions that they might like to change their approach.

So why should they? What's wrong with the 20th century approach? Why does initial teacher education need to be reconfigured in ways that allow it to foster a different orientation to—and purpose for—this basic knowledge in the next generation of teachers? The next section of this paper looks briefly at some of the key issues.

The twenty-first century context: what has changed?

In the later years of the 20th century, the term '21st century learning' began to be used as a kind of shorthand for a whole raft of 'new' approaches that, it was argued, would help schools change to better meet the needs of 21st century students and society. Now, more than a decade into the 21st century, the literature in this area is vast. However, the plethora of different goals, paradigms, disciplinary influences, political orientations, and contexts in which terms like '21st century' and/or 'future-oriented' learning are used makes them little more than slogans, meaning everything and nothing, with the result that they are no longer particularly helpful. So the first thing I want to do here is set out what *I* mean by this term, and how I plan to use it as a 'gloss' for what I think are the big issues facing today's schools.

I'll start by saying what I think are *not* the big issues. For many people, 'the future' means new technologies. 'Twenty-first century' schools use ICT and new media to make learning attractive and relevant for today's 'digital natives' (Prensky, 2001). However, as research study after research study shows, while ICT use *can* trigger beneficial and meaningful education change, this only happens where there is a parallel shift in the users' (teachers, students, school leaders) orientation to knowledge and learning (Dumont, Istance, & Benavides, 2010; Sahin & Ham, 2009). This different orientation to knowledge and learning is, I think, *the* key feature of what is needed in the schools of the future, and it is what I mean when I use the term '21st century education'.

So, why do I think schools need a new orientation to knowledge and learning? Why does it matter to this country, and what does all this mean for initial teacher education? I want to start this section by raising a couple of questions, and making some very brief comments about some high-level trends in international education.

Readers will be familiar with the international assessment of our schooling system as being high quality, but low equity; that is, on international tests of educational achievement, New Zealand school students perform reasonably well in relation to the countries we traditionally compare ourselves with, but we have a 'long tail of under-achievement'. The 'high-quality, low-equity' phrase is widely used, usually to support the assertion that our system is basically quite good, except for the 'long tail', which we really must do something about. But *is* this good enough for the 21st century? Do international tests like PISA measure what we need in the 21st century? Will the 'long tail' be 'fixed' if we work harder to do more of what we have always done? In the rest of this paper I'm going to outline why my answer to these questions would be no. I'm going to begin this by looking briefly at what is happening in some countries that are not the ones we usually compare ourselves with.

For much of the 20th century New Zealand provided educational 'aid' to many of the countries of South and East Asia (via the Colombo Plan and other such schemes). Now, however, New Zealand is on the verge of being overtaken by educational developments in these countries (at least on current measures). In China, for example, the first decade of the 21st century saw extremely rapid growth in educational participation at all levels of the system. Several of the Chinese universities are now 'world-class' (above ours) on the international rankings (whatever one might think about these). Education is highly valued, and the fast-growing middle-class has a strong commitment to supporting the education of their offspring. In addition there is a robust state 'settlement' on the country's high-level educational objectives; that is, there is a consistent, long-term set of policy objectives that are not subject to constant change (Marginson, 2012; Marginison, Kaur, & Sawir, 2011).

What does this mean for New Zealand, and for our education system? Should we redouble our efforts to work harder and harder to keep up with China? Should we reorganise ourselves to turn out proportionately similar numbers of engineers, IT specialists, medical professionals and so on? Should we assume that we are all now competitors in the same global knowledge marketplace? Or should we work to create a niche for ourselves, a niche that builds on what is good about our schools, repackaged for new times. As is probably clear, I favour the second option, but this would require us to rethink a lot of what we do now. It would also require a focus on 'inputs' to the system not 'outputs', which is totally out of kilter with the New Public Management-

influenced approaches of successive recent governments. I'll return later to what I think this niche could be, but first I need to explain what I mean by saying that 21st century teachers need to think differently about knowledge and learning, and why I think it needs this. So, how is knowledge different in the 'networked', 'knowledge age'?

'Networked' knowledge and 'knowledge societies'

In the last couple of decades knowledge has changed its meaning. A large research literature documents this, mainly outside education. This 'new' meaning is very different from past understandings of knowledge, both in the everyday sense and in the theoretical/philosophical sense. This change is highly significant for education. To very briefly summarise the literature, this change has occurred as part of some very significant worldwide economic changes, it has been accelerated by various technological developments, and it will have far-reaching social and educational consequences. Some commentators view these changes negatively, but in my view there are many positives—*if* we can think this through properly. There is no doubt, however, that these changes, whatever we might think about them, have important consequences for how we think about what it means to be an educated person in the 21st century (Gilbert, 2005).

The traditional view of knowledge is as a body of truths that express the truths of the world. Knowledge systems are built up by experts, who, by working and thinking with the tools of their discipline, make sense of a particular aspect of the world. This usually involves reducing and filtering the world in some way, simply to make it manageable. However, the advent of the knowledge age has changed this. In economic terms, in the 'weightless economies' and 'fast capitalism' of the late 20th century, knowledge is the main driver of new economic growth (Drucker, 1993; Gee, Hull, & Lankshear, 1996; Leadbeater, 2000a, 2000b; Neef, 1998; Stehr, 1994; Thurow, 1996). Alongside this, the development of the internet has meant that knowledge is now generated in huge volumes, at ever-increasing speeds, and is constantly being updated, by multiple contributors. It is now unmanageable, unthinkable even, in terms of the above model (Weinberger, 2011). This has changed what knowledge *is*, and how it is *used*. Knowledge is seen not as 'stuff' but as something that *does* stuff. It's like a form of energy (Castells, 2000), or, as one commentator put it nearly 20 years ago, knowledge is a verb now, not a noun (Barlow, 1994). Rather than being something we *have*, knowledge is something we *do*. Knowledge is no longer something that lives in the brains of experts, or in objects that contain it, like books or libraries. These are now way too small. It lives—and is created and replaced—in the spaces *between* experts, books, databases and so on. It is no longer a 'thing in itself': it exists in, and is a property of, networks. Knowledge, in the knowledge age, isn't a stable body of facts or truths, it isn't masterable, and it doesn't necessarily reflect the world: rather, it is *networked expertise*. This doesn't mean that the network *is* knowledge, that the network creates meaning or that it is some kind of conscious super-brain. It's not. Rather, the network *enables* connected groups to take ideas further and faster than any individual ever could. The knowledge they create is *in* the collaborative space, not in individual heads (Weinberger, 2011).

All this, if we accept it, is highly disruptive to most people's ideas about what schools are for. For example, it no longer seems appropriate to see curriculum development as the relatively straightforward task of deciding what knowledge students

should learn, organising this material into logical step-by-step sequences, and assessing whether or not students have learned it. Second, if knowledge is 'in' the network, and new knowledge is created in the spaces between the network's constantly shifting nodes, then people need strategies to deal with, and assess the quality of, what they find there. This can't be done via the 'old' approach, the universal principles that, we were taught, would always work. As one commentator argues, instead of lamenting and/or trying to stop the 'dumbing down' of ('old') knowledge, our primary goal should be to build (and be able to recognise) 'good' networks that make us smarter, not 'bad' networks that make us dumber (Weinberger, 2011). We need well-developed skills for dealing with conflict and disagreement (that don't involve appealing to 'authorities'), and we need skills for working productively in the spaces between experts, and between ideas, that make up the network. This ability to function in 'third spaces', to be able to connect, translate, or work *across* the space between different expertises (or different cultures) is, according to some commentators, *the* key knowledge age skill (Bauman, 1992, 2000).

At this point it is probably important to make two things clear. Firstly, working in third spaces is *not* the same thing as 'communication', 'dialogue', or 'knowledge transfer' *across* the space: it involves creating something completely new *in* the space. Secondly, this new meaning of knowledge does *not* mean that 'old' knowledge doesn't matter any more. Nor does it mean that all knowledge is equally good, that 'anything goes'. To work in third spaces, in the network, people have to *know* something; they have to bring something to contribute to the space. To think in third spaces, people have to have something to think *with*: i.e. they have to have some knowledge—in the 'old' sense. But this knowledge, on its own, is not enough. People need to be able to *connect* with the different knowledge/expertise of others. They need to be able to articulate *their* contribution, and to listen to, seek clarification from, and negotiate with the others in the space. Doing this successfully requires *having* knowledge to contribute; it requires well-developed *thinking* skills, and it requires well-developed interpersonal skills.

Some readers might be wondering at this point what all this has to do with teacher education? These are of course all things that could be developed, from quite an early age, in a knowledge age education system. *The New Zealand Curriculum* (Ministry of Education, 2007) and the key competencies could, in theory, provide a framework for doing this. However, the research evidence so far is that teachers are 'reading' the curriculum document through the 'old' lens, seeing, for example, the key competencies as 'things to be taught' (Cowie, Hipkins, Keown, & Boyd, 2011; Hipkins, 2012). If this research has accurately captured what is happening, knowledge age schools are a long way off. In the meantime, what we effectively have is the worst of both worlds: we have jettisoned the good aspects of an education system based on 'old' knowledge, but we haven't replaced them with the good aspects of the 'new' knowledge. To me, this is a significant problem. So, what—if anything—can initial teacher education programmes do about this?

Teacher education for the future?

Susan Robertson, in her analysis of the evolution of teachers' work since the mid-19th century, describes the late-20th century appearance of a set of new teacher 'identities' that, as she puts it, "fracture the cohesiveness of teachers as a class" (Robertson, 2000, p. 208). The traditional salaried 'service teacher' with standardised credentials and an

orientation to 'doing good' is no longer the only way to 'do' teaching. Other identities, characterised by Robertson as the 'bricoleur'—the problem-solver with multiple competencies who fills new niches as they emerge; the 'teacher entrepreneur'—the innovator and/or community-networker; the 'teacher manager'; and the 'temporary teacher' who 'fills in' on an as-and-when-needed basis, have emerged from the economic changes outlined above, and are pushing the boundaries of what it means to be a teacher.

Robertson's analysis is critical. But is there another way to look at this? I'd like to throw up for discussion the idea that there is. It seems likely that by 2022 people will be demanding more from our education system than they are now. Here, and elsewhere in the world, people want *more* education—they see it as laying the foundations for social mobility, for higher standards of living, for a well-developed civil society, and for democratic government. At the same time, discontent with how education works, and the extent to which it is 'value for money', is growing. This discontent is not always well informed, and so could be channelled in a number of different directions. I think as educationists we have a role to play in defending and shaping public education so that it can meet the demands that will be placed on it, but in ways that are *educationally* defensible.

Providing higher levels of education for all will make huge demands on the teachers of the future. They will have to do much more than provide knowledge, facilitate and assess learning, manage children and/or adolescents, and comply with system requirements, so much more that I think it is unrealistic to expect *all* teachers to be able to do *all* of what is needed. While the 'standardised', 'all things to all people' teacher was—arguably—an adequate model for the one-size-fits-all schooling system of the 20th century, it is no longer tenable.

The 21st century teacher role requires a multiplicity of competencies. Firstly, as an absolute baseline, teachers need *deep knowledge* in at least one of the 'old' disciplines. This is needed not so much so it can be imparted to students (although this is important) but because 21st century teachers need to be thinkers, and to be able to think in the third spaces described above. As outlined above, to do this, they need content knowledge. They also need to know, at a system level, how 'their' discipline works: how new knowledge is created in it, how it is justified and how it is communicated.

Secondly, they need to know quite a lot about *learning*. They need to know the theory and the practice of helping other people learn, but before this, they need to have developed a deep understanding of their *own* learning (Swann, 2012), and to be a learner themselves. They need to know about brain development, perhaps specialising in early years, age 8–14, 14–adult or adult development, and they need to know how to use this knowledge to design appropriate learning activities. They need to see learning not as 'taking on' existing knowledge but as building intellectual capacity, as expanding minds.

Thirdly, they need skills in mentoring, coaching and counselling, and facilitating the development of young people (relationship skills, psychological knowledge and/or emotional intelligence), and they need community liaison skills.

Fourthly, they need leadership skills, and programme development/management skills—to lead the teams of paraprofessionals and/or other teachers who will develop and implement the many parallel learning programmes school will offer.

The fifth essential competency is a sophisticated understanding of 'diversity'. By this, I *don't* mean having strategies for raising all learners' achievement, assessed by today's measures (although this is important). Building a 21st century education system requires us to think *outside* the one-size-fits-all, everyone must fit the system, difference=deficit model, to replace it with an organic, network-based model that can actively *encourage* (not assimilate or tolerate) multiplicity, diversity and difference, a model that can educate people *for* diversity. Teachers need strong skills in working with different people, different cultures and different *ideas*. They need the ability to think beyond existing ideas, the ability to focus on what can happen in the *connections*—or spaces—between people, things and ideas, to create new knowledge 'in the network'. The current development of an ultra-fast broadband network for schools is, I think, a helpful metaphor here. If 'bandwidth' is a system's capacity to handle multiple signals simultaneously, and we think of the 21st century education system as a 'high bandwidth' system, then we can imagine it as a system that has the capacity to not only support but actively encourage a multiplicity of 'diverse' signals simultaneously, *not* one that requires all signals to be standardised (or modulated) to fit a 'dial-up' system (20th century education).

We *could* attempt to require all teachers to be competent in *all* of these areas; however, I don't think this is realistic. Attempting to do so is likely to lower teachers' overall competence, and in addition it won't allow them space for the kind of cognitive development I'm suggesting is needed here. We *could* require all teachers to develop baseline competencies in all of the above areas (while being clear that these are only baseline) and to, at the same time, specialise in one or more of the areas—for example, learning, brain development and pedagogical design; mentoring, coaching and guidance; or developing innovative scientific thinkers. However, while this approach might be appropriate as a transition measure, in my view it is 20th century thinking. These areas are all important, critical even, but we can't continue to keep adding new requirements to the already overloaded expectations we have of teachers. And when we add to this the fact that teachers will also need to be able to move back and forth between the 'old' ways of doing things (providing basic skills and knowledge, managing behaviour and so on) and the 'new', in a context in which there will no one 'right' way to do things, the situation will become impossible. We need new ways of thinking about this. And we need transition strategies. So what should we do?

Next steps?

In New Zealand (and elsewhere), 'teacher quality' is currently a hot topic, and our government is investing heavily in teacher professional learning programmes. In general this work is designed to *add* new knowledge or skills to teachers' existing repertoires. There is a strong emphasis on developing the knowledge and 'best practice' required to achieve current policy targets. In this paper I have argued that if we want a future-oriented education system, we need 'future practice', not 'best practice'. Developing this requires us—teachers, researchers, policymakers, anyone who cares about education—to think differently, which is of course difficult.

The question of how people can be supported to do this is being explored in a small but growing international research literature (e.g., Drago-Severson, 2007; Garvey Berger, 2010, 2012). This literature draws on work in three areas, all outside education, which are as follows:

1. *Adult learning and development*: this literature distinguishes between the learning needs of children and adolescents (on which most learning theory is based) and those of adults, especially working adults (e.g., Kegan, 1994; Kegan & Lahey, 2001; Merriam & Caffarella, 1999).

2. *Transformational learning*: this literature explores the differences between 'informational' learning—learning designed to *add* new skills or knowledge, and 'transformational' learning—learning designed to *change* thinking or behaviour (Brookfield, 1995; Drago-Severson, 2007; Mezirow, 2000). Robert Kegan (1994, 2000) argues that *all* adults need this kind of 'growth of mind' to cope with the demands of 21st century life and work.

3. *Organisational learning*: this literature argues that, because people do not make changes in a vacuum, professional development programmes must be connected into, and supported by, their organisation's wider culture, its leadership, its structures and systems, and any other programmes that are going on (Bridges, 2001; Quinn, 1996).

Jennifer Garvey Berger (2010) argues that programmes designed to support 'future practice' for teachers need to

- provide support for ongoing cognitive growth/intellectual development;
- support 'transformational' learning (see Belenky & Stanton, 2000; Drago-Severson, 2007);
- connect to the real world context of teachers' everyday work;
- be sustainable over time;
- allow for—and *use productively*—diversity in the participants (i.e., diversity of professional experience, subject matter expertise, socio-cultural background, developmental level, personality—and so on);
- be 'contagious'—have features that help it 'spread' beyond the first-hand participants; and
- be connected with the school's leadership, its culture and its systems.

I think we need to start thinking about how we could design *initial* teacher education programmes that have these features. Doing this has some significant implications—for example, we would need to

1. Make a quality first degree the basic entry-level standard;

2. Acknowledge that the days of the standardised, 'generalist' teacher are probably over; that the 'teaching' role in future-oriented schools consists of several different but overlapping professional roles, supported by a range of non-teaching paraprofessionals;

3. 'Personalise' teacher education—identify and develop individual strengths;

4. Focus on relationship skills—explicitly teaching where necessary;

5. Build programmes around a focus on 'third spaces'—the spaces between participants, between participants and teacher education professionals, and between participants and the young people they work with in schools—as places for creating new knowledge;

6. Assume that becoming a successful 21st century teacher requires significant, and ongoing cognitive shift, and the ability to 'work with' knowledge in 'third spaces'—in-depth interviews designed to assess candidates' potential for this would need to be built into the selection process; and

7. Support teacher education professionals to engage in their own forms of 'transformational' learning, to develop programmes for their own ongoing cognitive growth/intellectual development.

Will all this happen? I don't know, but for me, the arguments for change are compelling.

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[i] Some of the theorists in this area are as follows: Facer (2011), Leadbeater (2011), Robinson (2011), Peters, Marginson and Murphy (2009), Kress (2008), Wagner (2008, 2012), Egan (2008), Christensen, Johnson and Horn (2008), Peters and Besley (2006), Gilbert (2005), Hargreaves (2003), Beare (2001), Slaughter (1989).