



On knowledge

*Towards understandings of the
place(s), space(s) and role(s)
of knowledge in and for education*



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Contributors

Graeme Aitken

Professor Graeme Aitken has a long history in education. For 14 years he taught geography, history and social studies teacher at Waitakere College, followed by 10 years as a secondary teacher educator. He was appointed inaugural Director of Secondary Teacher Education at the University of Auckland in 1996, and subsequently as Dean of the Faculty of Education and Social Work from 2008-2017. He is currently the Director of Educational Initiatives in the Office of the Vice Chancellor where he oversees the STEM Online NZ resource development. Graeme co-developed the Teaching as Inquiry model that underpins the pedagogical approach of the New Zealand Curriculum and is the co-author of the Best Evidence Synthesis for Social Sciences.

Janita Crow

Janita Crow is a Senior Lecturer in the School of Education, Auckland University of Technology. She has completed a number of collaborative Teaching and Learning Research Initiatives (TLRI) that work with different knowledges inside/outside early childhood education: *Enhancing Mathematics Teaching and Learning in Early Childhood* (2005); *Titiro Whakamuri, Hoki Whakamua: We are the future, the present and the past: Caring for self, others and the environment in early years' teaching and learning* (2010); and, *What's special about teaching and learning in the first years? Investigating the "what, hows and whys" of relational pedagogy with infants and toddlers*, (2011). Currently, Crow engages an interdisciplinary research methodology that recognises *art*, philosophically speaking, as a site of knowledge production and engagement, learning and exchange. This methodology utilizes a co-curatorial research method that results in exhibition-making inside/outside education.

Andrew Gibbons

Dr Andrew Gibbons is an early childhood teacher educator and Associate Professor at the School of Education. He has worked in journalism, in the social services in England and in early childhood education in Auckland. Andrew has a keen interest in philosophy and politics, and these orient his research of early childhood education, and education more generally, to questioning beliefs and practices. He has published widely on topics including the early childhood teaching profession, Aotearoa New Zealand early childhood education policy, approaches to early childhood curriculum, the educational implications of the work of Albert Camus, the philosophy of education, the role of technology in education, and the future of the university.

Nina Hood

Dr Nina Hood is a trained secondary school teacher, and taught at Epsom Girls Grammar and Mt Roskill Grammar in Auckland. Nina undertook an MSc (with distinction) in learning and technology, and a DPhil in Education at the University of Oxford. Since returning to New Zealand in mid 2015 Nina has been employed as a lecturer at the Faculty of Education and Social Work at the University of Auckland where she specialises in new technologies in education. She now is responsible for the strategic direction and day-to-day operations of The Education Hub.

David Kupferman

Dr David W. Kupferman is an Assistant Professor of Educational Foundations at Minnesota State University Moorhead. He is interested in employing trans-disciplinary methods that engage with socio-cultural constructions of pedagogy and why they matter. Recent writings have put forward poststructural and pop cultural critiques of educational knowledge and the ways in which contemporary educational discourse and policy legitimize or delegitimize particular schooling subjects. He has published articles in *Postmodern Culture*, *Journal for Cultural Research*, *Global Studies of Childhood*, and *Postcolonial Directions in Education*, among other journals. He is an Associate Editor of *Policy Futures in Education*, and the immediate past Chair of the Foucault and Contemporary Theory in Education Special Interest Group at the American Educational Research Association. He is the editor, with Andrew Gibbons, of *Childhood, Science Fiction, and Pedagogy: Children Ex Machina*, forthcoming from Springer. His first book, *Disassembling and Decolonizing School in the Pacific: A Genealogy from Micronesia*, is also available from Springer.

Graham McPhail

Dr Graham McPhail is Senior Lecturer in Music Education in the School of Curriculum and Pedagogy at the Faculty of Education and Social Work, the University of Auckland. He taught secondary school music for 21 years and for three years was the national moderator for NCEA music working for NZQA. His research interests include the place of knowledge in curriculum development, 21st century education, and pedagogy in one-to-one music tuition. He has published widely in journals including the *Journal of Curriculum Studies*, the *British Educational Research Journal*, *Research Studies in Music Education*, the *British Journal of Sociology of Education* and the *New Zealand Journal of Educational Studies*.

Carl Mika

Dr Carl Mika is an associate professor in Te Whiringa School of Educational Leadership and Policy in the Faculty of Education, University of Waikato, New Zealand. He is of the Tuhourangi and Ngati Whanaunga iwi. He has a background in law practice and legal theory, indigenous and Maori studies, and indigenous and Western philosophy. His current areas of research focus on indigenous and Western metaphysics, as well as philosophical research methods.

Lesley Murrhly

Dr Lesley Murrhly spent 17 years working as teacher and then principal in a small, semi-rural, low socio-economic school in highly challenging circumstances with 85% Maori students situated in the middle of the North Island; before leaving to take up a position as the foundation principal of a high decile (high socio-economic), multi-cultural school in Wellington. Lesley has also completed a doctorate in Education at the University of Waikato. In her work, Lesley aspires to combine vision and pragmatism - working best at the interface where practice and educational theory meet. Recently, Lesley has started writing critical responses to the educational happenings of today. Some of these writings can be found at **Future of Education**. Lesley and her husband, John, have eight children who have been very successful in tertiary education, but who have never actually attended school.

Introduction

Nina Hood

The Education Hub

The more that you read, the more things you will know.

The more that you learn, the more places you'll go.

Like so many of Dr. Seuss's verses, these from *I Can Read with My Eyes Shut* contain considerable wisdom. Knowing things, learning things, is critical to our futures.¹ The 'things' (i.e., knowledge) that Dr. Seuss refers to, however, currently hold a contested place in schools and education. The reasons for this contestation are manifold.

Firstly, in recent years there has been a deprioritising of knowledge (and content) in place of competencies and skills, particularly those competencies and skills that are supposedly required for future employment and success. Secondly, with the conceptualisation of teachers as 'facilitators' of learning, or 'guides on the side', there has been a (perhaps unwitting) deprofessionalisation of teachers and an implicit rejection of the deep pedagogical content knowledge of teachers and the expertise that teachers require to effectively support the learning and growth of their students. And thirdly, knowledge has become more pluralistic. This pluralism, which at times manifests itself quite literally with the rise of the term 'knowledges' in education discourse, refers to the rise of multiple or diverse knowledge(s) that must be incorporated into our education systems.

In this time of multiple governmental reviews of education, and the opportunity these present for debating the purpose of education, it seems timely to produce a report on the place(s), space(s) and role(s) of knowledge in and for education. To approach this thorny question of knowledge, we have invited a series of guest writers to each contribute a chapter, in which they explore a particular aspect of knowledge in education. The result is a report in many parts. Each chapter has its own distinct style, paradigmatic approach, and corresponding ontological and epistemological positions. As such, this report does not arrive at a clear conclusion, or even set of conclusions. Rather, it is hoped that the contributions here will provoke thought, discussion, and most importantly a recognition that knowledge, in its diverse forms, must be at the centre of our thinking on education, and at the heart of our education system.

Towards a conceptualisation of knowledge?

Any study or report on knowledge in education requires a working definition or at the very least a working understanding of what knowledge is and how it is generated. It also is necessary to have some understanding of how this knowledge is interpreted and utilised both by students and by teachers – of the processes that constitute the key elements of learning. However, developing a theoretical foundation for the interpretation of knowledge for this study is not an uncomplicated or uncontroversial undertaking. Knowledge is a multifaceted concept, which has been subject to various theorisations over time. It is conceptualised in different ways by different disciplines, and often within the same discipline, a phenomenon evident in the scholarship on teaching, teachers, and education.

Aristotle's three-part taxonomy of knowledge, which distinguishes between *epistêmé* (universal, theoretical knowledge), *techné* ('know-how') and *phronesis* ('practical wisdom'), remains a useful starting point for thinking about knowledge. The distinction Aristotle draws between technical, scientific and philosophical knowledge on the one hand (know what and know why), and practical, tacit and situated knowledge (what one could call craft knowledge) on the other hand, which is built through action and experience in a specific context, remains highly relevant to education discussions today. As will be explored, these different types of knowledge run through discussions of teachers and teaching as well as the knowledge-versus-skills debate and the purpose of our education system.

Knowledge is variously interpreted as being individually held or socially constructed and distributed, or in some situations a combination of the two. In the social constructivism tradition, knowledge does not reside in individual cognition but rather in the social connections and social contexts that are developed between groups of people.² Knowledge is socially embedded in organisations, structures and institutions. In contrast, in the psychological perspective of knowledge, it resides in the individual and is inseparable from the person that develops, transmits or leverages it.³ Knowledge is personal, value-laden and intimately connected to the perspectives and personal histories of the 'knower'. This means that while two people may receive the same piece of information and collectively discuss and enhance it, the ways that they interpret, utilise and act upon this information will be different.

Knowledge is not dormant or static but rather is created and transformed through action, and consequently is inseparable from human activity and the uses to which it is put. It is created and gains meaning in a specific context, encompassing the spatial and temporal location of its creator. Davenport and Prusak describe this intertwining of place, time and the individual when knowledge is created as follows:

Knowledge is a fluid mix of framed experience, values, contextual information and expert insight and provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers.⁴

The centrality of action and context to knowledge construction suggests that knowledge must be in a constant state of flux. As a knower engages with new stimuli and resources and moves through new temporal and spatial locations, their knowledge will develop. This means, that if we were to encounter the same piece of information at two different times, our understanding of it – that is, the knowledge we build – will differ because we are in a different time and place. The knowledge we build in each encounter will depend both on our own state of mind as well as the context we find ourselves in – the manner the information was delivered and the people with whom we are interacting.

The term 'knowledge' is liberally and frequently uncritically used – in education and elsewhere – and often is conflated with other terms, most notably 'information'. However, it is important to differentiate between the two terms. Davenport and Prusak define information as a message that is designed to change the way the receiver perceives or understands something.⁵ For example, a book, strictly speaking, provides its readers with information, not knowledge. This information may be transformed into knowledge through its active employment in a specific context of action. Knowledge, therefore, is constructed through use. It is personalised information that exists in the minds and acts of an individual and is mediated by and developed through their actions, interpretations, values and beliefs, as well as their temporal-spatial context.⁶

Contributions

If the above provides an initial discussion of the nature of knowledge (or at least one conceptualisation of it), what does this mean in the context of education? The contributions to this report provide a series of answers to this question. Each explores a different facet of knowledge in education – philosophies of knowledge, knowledge and learning, knowledge and the curriculum, knowledge and the teaching profession, knowledge in early childhood education, knowledge in open education. Each contribution offers a distinct voice and argument, and is defined by different paradigmatic beliefs. Despite their at times stark differences, they are united by a common belief: that knowledge really does matter in, for and to education.

David W. Kupferman, in the first of two contributions that focus on philosophical understandings of knowledge, explores how different approaches to the philosophy of knowledge influence our thinking about how students and teachers interact in educational settings as well as our pedagogical decisions. Kupferman traces the evolution of philosophies of knowledge in education, from Socrates' academy in ancient Athens through the Enlightenment philosophies of Locke and Rousseau, the German school of Kant and Nietzsche, and the progressive philosophy of Dewey before examining the poststructural turn of the 1960s in the work of the French philosophers Foucault and Lyotard.

Carl Mika revisits the terms 'knowledge' and 'education' from the perspective of a Māori philosopher. In doing so, he rejects the sociological approach to knowledge as well as the a priori assumptions of what Māori knowledge is that frequent government policy documents. Mika advocates a need for accepting uncertainty in discussions of and on knowledge, and the corresponding limits on knowing for education as a discipline.

Andrew Gibbons and Janita Crow introduce the reader to multiple approaches to conceptualising knowledge in early childhood education (ECE). In doing so they raise important ideas about the multifarious nature of knowledge and show how knowledge informing both scholarship and practice is not static but rather shifts over time in response to different contexts and inputs. Gibbons and Crow's contribution works to blend theoretical understandings drawn from the often competing fields of philosophy and sociology with the lived realities of those working in ECE settings. The authors both champion and problematise the role of knowledge in and for ECE, presenting readers with multiple notions and encouraging them to draw informed conclusions about them.

Graham McPhail argues for the centrality of a sound theory of knowledge in curriculum. He suggests that our current education system has focused too heavily on pedagogy – how we teach – at the expense of curriculum – what we teach. The result is a series of 'knowledge blind-spots', which minimise (and in certain cases disregard) the importance of knowledge in and for education. McPhail suggests that we must develop a theory of knowledge to inform the content of the curriculum. However, exactly what canon of knowledge this theory will contain requires careful consideration.

Nina Hood focuses on the relationship between knowledge and learning to build on a number of the ideas raised by McPhail. Hood draws on research in the field of learning science to detail the central importance of knowledge for learning. A person's knowledge base determines what and how easily they are able to learn, as well as their ability to engage in particular skills and higher-order learning.

Graeme Aitken argues that it is knowledge (and ethics) that are central to teaching deserving the status of a true profession. Teaching requires specialist knowledge that is distinct from common everyday knowledge. While the nature of the knowledge base for teaching has remained the subject of debate among scholars for decades, Aitken offers what he considers to be the four key components of knowledge for teaching and teachers: knowledge of pedagogy; knowledge of content; knowledge of students; and knowledge of self.

Lesley Murrehy, the only contributor to this report who still works as an educator in a school, begins her contribution with a personal account of her engagement with a student and his family. This narrative enables Murrehy to develop her notion of the spiritual dimension of teaching. The spiritual dimension and the teacherly gestures that are its physical enactment speak of the ethic of care required in teaching and the knowledge of students that is central to it. It is this ethic of care that enables the generation of new possibilities and new knowledge in young people.

In the final chapter, Nina Hood explores the opportunities that open knowledge and open educational initiatives, in particular OER, open online courses and learning, and citizen science could bring to school-level education in New Zealand. At its best, open knowledge has the potential to address a number of the systemic challenges facing the schooling system. Despite this potential, in their current conception, open education initiatives are yet to achieve their aims of opening both access and participation.

1. Dr. Seuss. (1978). *I can read with my eyes shut*. New York, NY: Random House.
2. See, for example, Cobb, P., and Bower, J. (1999). Cognitive and situated learning perspectives in theory and practice. *Educational Research*, 28(2), 4–15; Pea, R. (1997). Practices of distributed intelligence and designs for education. In G. Salomon (Ed.), *Distributed cognitions: Psychological and educational considerations* (pp. 47–87). Cambridge, UK: Cambridge University Press; Putnam, R., and Borko, H. (1997). Teacher learning: Implications of new views of cognition. In B. Biddle, T. Good, and I. Goodson (Eds.), *The international handbook of teachers and teaching* (pp. 1223–1296). Dordrecht, The Netherlands: Kluwer.
3. See, for example, Alavi, M., and Leidner, D. (2001). Review: Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS Quarterly*, 25(1), 107–136; Kolb, D. (1984). *Experiential learning*. Englewood Cliffs, NJ: Prentice Hall; Nonaka, I. (1994). Dynamic theory of organisational knowledge creation. *Organizational Science*, 5(1), 14–38.
4. Davenport, T., and Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. Cambridge, MA: Harvard Business School Press, p. 5.
5. Davenport and Prusak, *Working knowledge*, p. 5.
6. Alavi, M. & Leidner, D. (2001). Review: Knowledge Management and Knowledge Management Systems: Conceptual foundations and research issues. *MIS Quarterly*, 25(1), 107–136.

Philosophies of knowledge in education

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Education is a curious discipline. It does not belong with the hard sciences, but neither is it entirely received by the social sciences. As such, it often stands alone, attempting to justify its place as a science while also maintaining a firm grounding in everyday practices. Education as a field is not content-driven, in the way that the natural or physical sciences are, although the current push for data-driven policies might suggest otherwise. Nor is education considered a social science in the way that sociology, political science, or anthropology are, although most, if not all, innovations in the ways that educational philosophers and thinkers understand and apply knowledge in education come from those and other like disciplines. Instead, education is largely concerned with *process*, and the various ways that philosophical notions of knowledge, epistemology (how we know what we know) and pedagogy (how we teach and learn) both inform those processes and are in turn shaped by them.

The earliest approaches to knowledge in the Western tradition stem at least from Plato and his writings on the teachings of Socrates (5th century BC). Indeed, the Socratic method may be the most enduring pedagogical technique still widely employed in educational settings today. Simply put, it is a method in which a teacher (in the original iteration, Socrates) poses questions to a student, and directs a student to effectively discover knowledge through her/his formulation of responses to the questions. In this way, knowledge from a philosophical standpoint is something that is uncovered and discovered through dialogue between a student and a teacher, and it is this relationship that forms the basis of what the West has come to call education.

Indigenous forms of knowledge-making and transmission have also been employed for at least as long as the Socratic method, and have recently come to the fore in decolonising contexts as viable pedagogical tools for contemporary students and teachers. While it is not possible to generalise every indigenous epistemology, it can be said that, in a context such as Oceania, much of the philosophical underpinnings of knowledge within societies was stratified (often along gender and hierarchical lines) and specialised (navigators, healers, spiritual leaders, etc.), both so that a community could survive in often trying environmental and ecological conditions, and so that the transmission of particular forms of knowledge would be ensured through the generations. In the present age, while the idea that knowledge is the exclusive purview of a particular family or other social unit is no longer viable or necessary, the resurgence in indigenous ways of knowing has proven vital to legitimising and normalising the way non-Western societies and groups make meaning and understand reality, and has begun to inform more conventional Western epistemology in turn.

Another enduring and essential impact of philosophies of knowledge in education has been the role of the state in educating its citizens, as well as defining the relationship between citizen and state. There are references to this arrangement in Thomas Hobbes (1588-1679), who saw children as inherently sinful and therefore in need of management and control by the state, and in John Locke (1632-1704), who asserted that children were blank slates (*tabula rasa*) who required direction from civil society in terms of what and how to think. Perhaps the most influential, and complete, treatise on this notion of the child and the state came from Jean-Jacques Rousseau (1712-1778) in his novel *Emile*,

in which he struggled with the inherent conflict between the naïve and natural beauty of 'unspoiled' childhood and the demands of the state, which was corrupt, for informed and education citizenry. Rousseau argues for a deliberate intervention into the nature of childhood that keeps the corrupting influence of the collectivity of the state at a minimum, and offers what can arguably be considered the first philosophical theory of child development in terms of how knowledge is taught and learned. It is also important to keep in mind, however, the explicitly gendered rendering of knowledge presented here by Rousseau, and that *Emile* is about and for the education of boys. His unfinished sequel, *Sophie*, about Emile's betrothed, came under fire from feminist thinkers shortly thereafter, including Mary Wollstonecraft, who criticised it for its portrayal of women and girls as intellectually dependent upon men. Yet, *Emile* served as the basis for France's first national system of education, and its tenets regarding the purposes and transmission of knowledge in terms of citizen and state are still deliberated.

Of lesser impact at the time of their publication, although of much greater interest today, are the theories of knowledge in education by influential Western philosophers such as Immanuel Kant (1724-1804), Friedrich Nietzsche (1844-1900) and Alfred North Whitehead (1861-1947). Kant's *On Education*, published the year before his death, is notable for his argument that knowledge in education needs to address the idea that developmentally children are not simply uneducated adults, but that they have their own forms of epistemology and learning. While teaching at the University of Basel, Nietzsche delivered a series of five lectures that have recently been collected and published in English with the title *Anti-Education*. In these lectures, Nietzsche returns to the perennial debate over the aims of education and the role of knowledge in the educative process, drawing his attention to the role of state institutions of higher education and their focus on learning for purposes of economic growth. This state approach to linking higher education with economic viability, it may come as no surprise, comes under direct fire from Nietzsche, who saw the role of higher education as serving a greater purpose than simply to get a better job or a raise.

Indeed, the question of how knowledge should be used in education is one that continues to confront us today, and thrives in political debates regarding the function of educational knowledge as the preferred path, for example, to getting a better job. Whitehead, a British mathematician writing a few short decades after Nietzsche, gave a series of lectures ostensibly on the teaching of math, but his real target was education and pedagogy in general. In these lectures, published as *Aims of Education*, Whitehead spoke to the need to teach knowledge based on student interest, as well as the ways in which knowledge in education is 'living' rather than fixed and immutable. While he predated the poststructural shift to come later in the 20th century, Whitehead's lectures have more recently garnered interest because of his radical conception of how philosophical notions of knowledge are in fact produced, and contrast with Platonic ideas of 'discovering' knowledge.

A contemporary of Whitehead's, John Dewey (1859-1952), remains the most influential, if not the most important, educational theorist in the United States, and his understanding of how knowledge operates in educational settings continues to serve as the basis upon which much of contemporary Western educational philosophy is considered today. Dewey was associated with a number of intellectual and political movements, notably progressivism and pragmatism, and his works on the role and function of the teacher, the student, the school and society comprise some of the most comprehensive renderings of modern-day notions of philosophical knowledge in the field of education. Dewey's focus on the need for democratic societies to educate their children in deliberate ways, the ways students construct knowledge for the aim of intellectual and social growth, and the

idea that such growth is its own end endure, even as some of his developmental theories are attracting closer critical scrutiny.

To be sure, the most significant development in terms of theories of knowledge in the social sciences came in the aftermath of the May 1968 student protests in Paris, and the intellectual space that was created by such philosophers as Michel Foucault (1926-1984), Jacques Derrida (1930-2004) and Jean-François Lyotard (1924-1998). These scholars ushered in a radical new way of conceptualising not just how we think and how we learn, but how we make sense of reality. Emerging theoretical fields made great use of this new space, and in the 1970s and 1980s disciplines such as anthropology and political theory saw the establishment and development of postcolonial studies, cultural studies, feminist theory, queer theory and more recently afro-futurism and new materialism, to name a few.

Because of its unique position as a discipline, however, the field of education came more slowly to the post-1968 philosophical turn. It was not until the 1980s and early 1990s that poststructural thinking made its way into educational philosophy over the past thirty years, notably with the work of Michael Peters, James Marshall and Stephen Ball. Since that time, there has been a flourishing of new approaches to philosophical knowledge in education – one striking example is the work of Bernadette Baker and the ways that she asks us to question our historical assumptions around philosophies of knowledge and learning – focused largely around issues of power and the production of knowledge itself. These intellectual positions have not only married themselves to indigenous epistemologies, but have sparked a critical questioning of conventional educational philosophies of knowledge, such as the role of Dewey in the postmodern age, as well as what reconsiderations of such thinkers as Nietzsche and Whitehead can now offer. It is exciting to imagine how educational approaches to the philosophy of knowledge will continue to evolve and shift our thinking about how students and teachers interact in educational settings. And while we can be sure that our understanding of knowledge itself remains unsettled, we would do well to appreciate the role of philosophies of knowledge in education in explaining what it is we are doing pedagogically, and why we are doing it.

Māori knowledge in education: Revisiting terms and their concepts

Carl Mika

Te Whiringa School of Educational Leadership and Policy, Faculty of Education, University of Waikato

There have been notable attempts to broaden Māori knowledge so that it fits with a Māori worldview. However, most discussions about Māori knowledge in government policy already assume what that knowledge is and instead suggest how it can be properly accessed in education. Māori knowledge is, for the most part, assumed to be dealt with in its essence, and it simply needs to be divvied up equitably or given prominence in schools and universities. As such, it is understood as socially determined. The same may be said for the term 'education', which has been given a Māori gloss of 'ako' but nevertheless shares close quarters with many of the assumptions that 'education', in its dominant Western sense, suggests. Consequently, 'knowledge' is still overwhelmingly a transmissible item, and 'education' is ultimately about the transmission of, or saturation with, knowledge for the edification of a learner.¹

Māori philosophy understands the relationship of the human self to the world quite differently because it has the capacity to transcend the Western drive to make everything sensorial. In other words, where in Western thought both 'knowledge' and 'education' must have a perceived effect in order to be those things, Māori philosophy allows for events to take place that are not necessarily sensible to anyone.² In this thinking, things have their own form of self-arrangement that also interconnects with every other thing in the world, including the self. This vast reach, which includes voidness, darkness and other unseen realms, cannot necessarily be experienced by the human self (although sometimes it may be). The Māori existence of things in the world is underscored by the co-constitution of all those things. Consequently, the terms 'knowledge' and 'education', and those terms' states of being, should reflect that complexity and infinitude.

According to Te Ahukaramū Charles Royal, there are two ways to look at knowledge: either sociologically or philosophically.³ One necessary role of a Māori philosopher, therefore, is to revisit terms such as 'knowledge' and 'education' that have been overly based on the social. This decision may be driven by a scepticism of a sociological approach. That is, why have we decided not to think about those terms' ontologies, their first principles, their relationship to our first understandings about language and so on? Or it could more positively evolve because those terms ask for a philosophical reinterpretation in their own right. In both instances, the Māori decision is perhaps provoked by that same phenomenon I outlined above – the indeterminate pervasion of the self by the world. Already, then, both 'knowledge' and 'education' have reached their limits, because they assume the human self is central to their process. It would seem that the Māori philosopher is never free from that incursion from the world, and must account for it even while their revisit takes place.

In my own work, there is a mixture of those two reasons for reassessing these terms, depending on which ones we are talking about. My scepticism steps in when I think of the word 'knowledge' and its gloss 'mātauranga'.⁴ 'Mātauranga' gained popularity as a translation for 'knowledge' during the rise of the knowledge economy, when it was seen as an equivalent that would give Māori the ability to participate in this 'new era'. 'Mātauranga' seems to be etymologically unremarkable, but 'knowledge' is hugely significant for the assumptions it makes about a Māori world and also for its origins.⁵ It would seem that its Old English root, 'cnawan' – roughly 'to perceive, identify' – always indicates a 'dawning' or a cognitive state.⁶ For that reason, for those of us who prefer to deal in the transphenomenal philosophy of murkiness that we see underpinning such terms as 'whakapapa' and 'whakaaro', 'knowledge' may be an inappropriate term. I am not asserting here that Māori have not always had the thing that 'knowledge' implies – just that it is reductionist for the overall Māori philosophical event (for which 'knowledge' should not be seen as the final step or the preferred outcome). In other words, there are bigger things at play with the Māori existential reality than just 'knowledge'.

Those Māori philosophers who do prefer a philosophy of obscurity will instead try to position the human as an entity that ultimately feels uncertain about a thing or idea. 'Knowledge' does not convey that mystery particularly well. A highly abstract concept – 'being' – could be a useful substitute but only if it does not diminish the world's co-constitution of the human self. By 'co-constitution' I mean the presentation of the world within one thing, evident in 'whakapapa', for instance.⁷ One's 'being' is therefore not one's being at all but instead the self is commissioned in conjunction with the rest of the world.⁸

In the discipline of education, the fact that the Māori self is always commissioned within/as part of the world (along with other things) has several consequences. The self is no greater than any other thing, and those things which can't be accounted for through experience must be given equal space to those that can. This deference to the unseen itself has one massive consequence: that education is far less about transmitting a cognitive state (of 'knowledge') and much more about speculating on how the world *imperceptibly* interplays with all its elements. Even more materially, education represents one way in Māori of talking about the *fact* – not just the *concept* – of one's worlded co-constitution. Both teacher and learner are hence thrown into a world that cannot be understood, can only be vaguely represented, but may be unwittingly *presented* as a mysterious phenomenon through the fact of its relationship with the self.

This proposition of mine relates back to my second stated reason for revisiting terms: some terms do beckon through their possibilities for further thinking. 'Ako', which is taken to mean 'teach/learn', is similar to 'whakapapa' and other abstract Māori terms because it can indicate uncertainty, if we decide to think about it from that angle. If approached as a sign for the mystery of the world, ako dethrones the self, reinvokes the infinitude of the world and all its participants, and throws the self (not just a teacher or learner, either, but all things) into full citizenship with all other things. Alongside 'to teach/learn', 'ako' means 'to move or stir' and 'to split'.¹ With that in mind, in the same way that we can understand 'land' and 'placenta' as inhabiting the phenomenon 'whenua', we can approach this state of thrownness as a mode of transformation with/from the world.² In other words, we are fragmented ('split') through our interconnection with the world, and our inability to fully account for that process through the discourse of knowledge is what moves or stirs us onwards. The self is at the mercy of his/her relations, through being part of them. Ako highlights that all things have their limits in relation to the whole.

What could all this mean for education as a concrete discipline? Currently, dominant education is not particularly aware of the Uncertainty Studies that the term 'ako', together with a moderated version of 'knowledge', advocates. Admittedly, I'm not the right person to ask for a final determination on anything Māori – apart from proclaiming confidently that we humans don't know as much as we think we do. I recently attended a philosophy conference where, after presenting on self-uncertainty as a philosophy, I was asked by a participant whether I was just 'beating myself up', to use their words. I have thought about this question frequently; it was a good one, and fed directly into self-uncertainty itself. I responded that to constantly undermine one's understanding of the world was in fact liberating *for one's relations*, that is, for the world. It keeps things intact by refusing to place the self in a position of 'eternal knower'. But alongside that, education as a discipline may need to take note of its own limits on knowing as a discipline and then reflect its uncertainty in what it encourages. What should be 'led out' – if we are to continue with education as a formal discipline – is the fact of one's deep participation with the world, beyond the perceptible and beyond the human, yet including both those. The return to a perception and the profound incursion of the world on it, and hence our lack of understanding of that thing, should ultimately be our inquiry within ako. This decision to revisit ako as both thing and way of approaching things is also vulnerable to its own inquiry: ako is therefore (appropriately) ongoing.

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The importance of knowledge in early childhood education

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The Labour-led government is currently very wisely reconsidering its role in the early childhood education (ECE) sector in Aotearoa New Zealand. The government, recognising the complexity of the sector, is also very wisely looking strategically at the ways in which it can and should notice, recognise, and respond to the knowledge that our many communities and organisations regard as important in the lives of children, whānau, the nation and the international contexts that we inhabit.

A new strategic plan for the sector offers an opportunity to continue the work begun many years ago, and that took political and societal shape in such documents as *Education to Be More, Before Five*, *Te Whāriki*, *Kei Tua o te Pae*, and *Nga Huarahi Arataki*. These government publications have assisted care and education providers in developing knowledge of its many roles in society, including a knowledge of:

1. The meaning of ECE
2. Who has responsibility for ECE
3. What learning and developmental experiences are to be valued
4. What teachers, leaders and whānau should know and do

The status of knowledge is then critically embedded in this complex set of interrelated expectations. In addition, the status of knowledge is highly problematic in these relationships because there is very little agreement – there are no easy solutions and at times the answers will be highly contradictory or oppositional. Take for instance knowledge of:

- a) The significance of play in learning (how children know, what children know, and how children come to know more)
- b) The significance of teacher qualifications (what knowledge of teaching and what knowledge for teaching is essential)
- c) The determinants that indicate a child should be considered ‘old enough’ to attend an ECE centre (knowledge of child development and of the impact of participation in ECE on a child)
- d) The design of the centre indoors and outdoors (knowledge of the impact of the environment on learning)

In this chapter we explore different approaches to thinking about knowledge in ECE, starting with a challenge to the idea that there is any one privileged knowledge that can and should guide education for children, families and teachers in ECE centre communities.

ECE knowledge and the postmodern condition

While there might be talk at times of consensus in each of the areas of knowledge listed above, such talk is dangerous. It presumes not only that everyone is accounted for in terms of their views on what knowledge counts, or even what knowledge is, but also that everyone has a shared understanding of what it is that is being talked about. Take for instance the relationship between care and education. These are often considered as one and the same in ECE. People ‘in the know’ talk about ‘educare’ rather than education and regard the quality of caring relationships as the platform for a child’s learning about the world. While these points seem like part of a quite simple and obvious knowledge about education, common-sense knowledge we could even call them, there’s a proliferation of research knowledge that provides evidence that such common knowledge does not translate into common practice in contemporary postmodern societies.

The term ‘postmodern’ is very relevant to a discussion of knowledge in ECE. There is no single knowledge that can be regarded as providing the truths for education and care in the view of postmodern thinkers. According to philosopher Jean-François Lyotard, there is a crisis in the legitimation of knowledge in postmodernity – and in ECE this might be seen in the problem of deciding what counts as a good-quality curriculum.¹ As already noted, there is a lot to consider when engaging with knowledge of ECE, from the seemingly simple or straightforward to the incredibly complex. Do we have a rolling morning tea? Do we have a set and structured morning tea? Do we organise a group time with teacher-led performances and storybooks? How and why do we promote children’s engagement with the printed word? What should we be communicating with home and how should we involve the values and practices of home life in centre life? In what ways does our curriculum represent different gender identities and family structures? How do we recognise young children as social actors, with agency, and involve them in the assessment of their own learning?

Now, the idea of a crisis in legitimation is not seen as a problem if we accept diverse ways of thinking about education and care. From this position we accept that there will be many complex answers to the questions above. However, the idea of a postmodern position is seen as a problem for those who take a singular position on what counts as the ‘right’ knowledge of childhood, and the ‘right’ knowledge for children.

In Aotearoa New Zealand this problem has been somewhat addressed through the construction of a so-called bicultural curriculum. The curriculum is made up of two different curricula. That these are not interchangeable translations differentiated only by the use of English and te reo Māori is an excellent indicator of the postmodern condition – there’s more than one knowledge here and they are not interchangeable. That there is more than one knowledge in the ECE curriculum is also evident in the way that its strands and principles highlight the importance of cultural knowledge. More than this, the curriculum essentially warns the ECE sector not to look for any state-prescribed knowledge but rather to recognise the knowledge that is important within the local context. That’s fairly radical when it comes to deciding on who has a say about what children should know. Well, it’s radical when compared to other curriculum approaches in which governments clearly specify what has to be learned by the child, and also how and where they will learn.

Phoebe Pachter, *Untitled (knots, tassels, silk woven placemat)*, 2017

(photograph: Janita Crow)

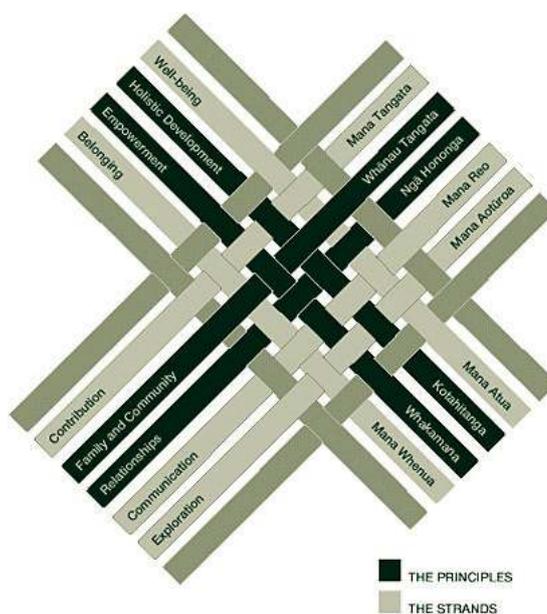


Drilling down into the strands and principles, the curriculum also guides us that whatever knowledge is, it cannot be understood as disconnected from the child's wholeness of experiences, embodiments, emotions, relationships and spirit. These wisdoms are particularly resonant in the work of Rangimarie Rose Pere, whose *Te Wheke* has significantly influenced ECE in Aotearoa New Zealand.² If the early educational 'thinkers' coming from colonial Britain had had a stronger knowledge of and commitment to different cultural knowledge regarding education and care, they may well have recognised and valued the knowledge evident in Māori educational practices. *Te Whāriki* is a curriculum with the dedicated aspiration to resolve this colonial failure, drawing upon, and fuelled by, a host of educational movements, ideologies and their attending theories of knowledge.

Pedagogical leadership and funds of knowledge

These attending, and often competing, theories of knowledge highlight another critical debate when exploring knowledge in ECE – that surrounding what (or who) is at the centre of the learning experience. *Te Whāriki* pushes thinking beyond child-centred knowledge – a social, cultural and historical approach to thinking knowledge in ECE. Work by Kate Ord et al. pushes this knowledge further through exploration of collective knowledge – a transformative mediating tool for pedagogical leadership that works with and alongside Māori leadership, and with and alongside the concept of whanaungatanga (relationship though shared experiences).³ In addition, the concept of funds of knowledge, which comes from educational researchers in Arizona, emphasises the importance in the ECE curriculum of knowing and valuing the knowledge that children experience within their many home, family and community environments. The challenge for a teacher is then not just to know each child, but to know the funds with which the child arrives at the centre. This is a significant challenge if we are at the same time to allow that a child's knowledge of the world may at times be at odds with the knowledge valued by their family.

The 1996 image of Te Whāriki



One way to think about this significant challenge is to consider the idea of what we will call, following Ord et al., 'I/we pedagogy'.⁴ This pedagogy addresses an important realisation that all knowledge is (a fund of) knowledge that both creates our uniqueness and joins us together. From this perspective, in ECE knowledge cannot ever be owned or exploited as our own and only for us. This approach is a shift away from knowledge privileges (e.g., where some children receive more knowledge benefits; or where ECE centres regard knowledge as a way of profiting from children's learning and so actively prevent knowledge being shared with other competing ECE centres). The i/we pedagogy recognises that knowledge is always co-constructed and made possible in knowledge-building communities. It becomes important then, to continuously and critically consider the processes of knowledge inclusion and exclusion, those that determine the interplay of different knowledge, and why some knowledge becomes and maintains a dominant position and other knowledge becomes and remains subordinated – power and knowledge go together.⁵

Cultural historical activity theory and transdisciplinary tools

These ideas regarding knowledge in ECE are being taken further through cultural historical activity theory (CHAT). Advocates for developing this deep and broad approach to knowledge, such as Marilyn Fleer and Joce Nuttall, are concerned with how culture and/or knowledge is transmitted and passed or handed on, in particular from generation to generation.⁶ This work builds on the socio-constructivist notion of cultural tools. From this perspective, the different knowledge/s (an intentional shift from just the singular to the singular and plural) of curriculum, pedagogy, sociology, philosophy, aesthetics and child development, often perceived as different academic knowledges, can be thought of as transdisciplinary knowledges that produce and provide tools for thinking, working and playing with and in the world.

Yet within and across each different disciplinary knowledge/s, knowledge/s of different cultural practices emerge as a result – whether these be the way gardening happens or something akin to how bread is understood and/or made. Hence, the different disciplinary knowledge/s articulated in *The New Zealand Curriculum* can be thought of as funds of knowledge/s that are integral to *Te Whāriki*. Together, these curricula can be understood as something that provides a frame of shared and increasingly complex ways of thinking. Exploring known worlds, together with opening up opportunities for exploring not-yet-known/possible worlds with young children, opens up opportunities for thinking knowledge/s differently in ECE.

The CHAT approach values young children's engagement in the activities (and the people, places and things used to enact these activities) that emerge as a result of children's active engagement in the everyday social, cultural life/lives they live. CHAT challenges the reduction of children's learning to play. The purpose here is to incorporate new ways of thinking about the relationship between play, work and playfulness. Research by Avis Ridgway, Gloria Quiñones and Liang Li offers a provocation regarding the relationship between play and knowledge for children's education.⁷ They see 'pedagogical play' as having two characteristics:

1. *conceptual reciprocity*, whereby the pedagogical approach acknowledges and supports children's academic learning through joint play – or collective inquiry; and
2. *agentic imagination*, whereby the child's (or children's) imagination/motives in play experiences is/are recognised for the critical role they play

In Aotearoa New Zealand, thinking about this kind of knowledge of children's learning is also developed in the work by Margaret Carr and Wendy Lee, who apply what they call split-screen analysis to assessment.⁸ This approach activates teacher interest in analysing narratives of children's learning because it highlights the interrelationship between dispositional knowledge and content knowledge.

Yet both of these approaches to knowledge have a tendency to be reduced to matters concerning the mind – as something one has, owns, attains and contains through one's exploration of the world. Early childhood teachers are taught this through the work of Jean Piaget, whose take on cognitive psychology has significantly shaped a knowledge of the child as a knowledge adaptation machine. While clearly Piaget afforded the body a status in the process of learning, that status was subordinate to the mind. This knowledge has been challenged through attention to the embodiment of knowledge. For instance, Gilles Deleuze develops an equally valuable three-pronged intersecting epistemological frame for thinking the world: 1) science is understood as offering ways of knowing the world with patterns; 2) philosophy with concepts (language); and 3) art with affect.⁹

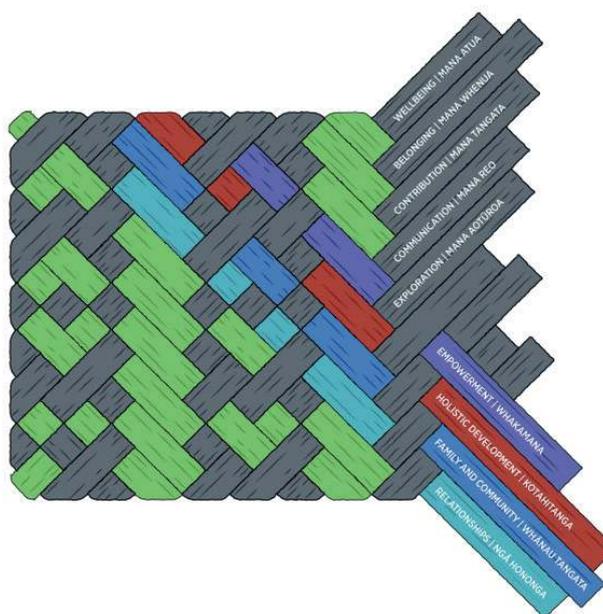
Knowledge as thought is materialised in the brain (i.e., in the body) as sensation, as dynamic movement. This interest in (bodily) thought as movement helps us to understand how we make sense of the world, and how we come up with a language for our experiences. This approach to making sense of knowledge/s is emphasised in a growing interest in *gesture*. For instance, in early childhood, exploring and understanding gesture in infancy as an energising act that is central to initiating and sustaining (playful) communication with others is offering a new knowledgeable way of thinking the very young child as an active (proactive) and reciprocal communicator in the world. This growing interest is not unlike the way that a revived and excitable interest in gesture in the art world is offering artists new ways of forming, messy or otherwise, gestural images and image-making techniques. Yet many people struggle to understand the need for this kind of knowledge in ECE.

The third spaces and knowledge trajectories

A recent interest in the ‘middle’ (or the ‘third’) space, the space that exists in between that of the mind of the child as learner and the environment, has prompted researchers (e.g., Carr, Smith, Duncan, Jones, Lee and Marshall) to consider what happens when an understanding of learning (knowledge, skills or otherwise) incorporates a shift in focus – a shift that takes the focus away from knowledge as content to one that includes the verb, the processes of coming to know(ledge) (i.e., knowing).¹⁰ From this perspective, knowing why, when, where and how to engage in the application of knowledge/s are equally valued. What becomes important then in ECE, for teachers, children, and whānau, is having the inclination, the imagination, the social and cultural capital, the opportunities to engage in connecting knowing (making connections, with people/s, places and things) and in connecting the knowing (across time, space) with the different worlds that surround us.

These ideas of connecting knowing and connecting the knowing are reiterated in the ‘knowledge-building communities’ (or in this instance, knowledge/s) approach. Sue McDowall describes an approach that works with knowledge/s as ‘things’ that are actively and collaboratively built in communities (stored in communities, digitally or otherwise – knowing how to navigate these storage ‘houses’ then becomes important).¹¹ Here knowledge/s are valued as things that are held in a collective rather than, or as well as, in the embodied minds of individuals. Learning how to build knowledge communities, McDowall argues, involves ‘opportunities to think about, talk about, and work with knowledge in ways that are similar to those of knowledge workers’, such as those who put knowledge to work play with the possibilities it offers ‘out there’ in the world/s beyond that of the early childhood (or school) setting.

The 2017 image of *Te Whāriki*



These trajectories of knowledge/s in ECE highlight that the child’s knowledge/s are both a central and open driver of the curriculum. *Te Whāriki* used the terms ‘competent’ and ‘confident’ in 1996 to describe what the child will be, and in 2017 to describe what the child already is. The knowledge of the child is then not what should be taught to the child because they are participants in a planned curriculum, but rather it is what the child arrives with, and it is what the child chooses to learn. This approach recognises the kind of ‘intellectual equality’ that philosopher Jacques Rancière argues is the essential condition

for emancipatory education in *The Ignorant Schoolmaster*.¹² Put simply, if the child's intellectual freedom is an educational aim, then the knowledge the teacher must have is that the child is already intellectually free.

This is not to say that in all, or even many, ECE centres the interests of each child are the primary driver of the curriculum. Indeed, the very idea of an individual child's interests is open to debate for a curriculum approach that abides largely by the idea that knowledge and learning are, and should be, socially and relationally, rather than biologically and individually, mediated (an approach that works with the idea of I/we identified above). In other words, the focus in ECE (at least guided by the approach to knowledge/s evident in the national curriculum) might be better understood as a shared intellectual freedom.

And there are no doubt many teachers and parents who reject this position. For instance, they may believe that the interests of the child or children are wonderful but at the same time not what children really need to know. One can see these beliefs in practice where ECE centres plan specifically, programmatically and prescriptively for what are often called 'little scholars' activities where children prepare for primary school, or at least a certain view of what primary school is and what the primary school curriculum expects children to know. There are quite a few points to address on this matter, but we only have space here to present a few:

1. All activities and experiences are academic and scholarly, not just reading, writing, counting, etc.
2. Children learn to count in many ways, for a large(r) number of, and increasingly more complex, different purposes.
3. Some children will learn that they are not learners on account of the way they are forced to engage in these so-called academic activities.
4. With pressure on primary schools to adopt innovative learning environments (ILE) or FLE models, the prescribed literacy and numeracy activity (which not many adults remember fondly) may soon be a thing of the past for most children.

Conclusion

Knowledge in ECE is not static, it sometimes moves in response to current social and political concerns or whims. Other times it moves in response to disciplinary knowledge/s that move too – that of pedagogy, of the child/childhood, of development and/or other theories that inform the different discourses, sometimes dominant, that abound in ECE. These shifts in knowledges are responsive to the changing postmodern worlds. A growing mindfulness of other ways of knowing emerges, and with it new ecologies of knowledge/s. Teachers tied up in the everyday worlds they encounter are often challenged to make meaning, or sense of, these shifts in knowledge/s, the shifts in thinking that these new knowledge/s demand, and as a result the changes that might emerge are slow or non-existent. Such perceived resistance to changing ways of thinking and changing knowledges is complex.

The final point to make around knowledge/s and ECE is that the growth of ECE can be understood, playfully and seriously, as a *thing*. Thinking about ECE as a thing invites us to take seriously the different ways in which things appear to us. In John Carpenter's 1982 movie *The Thing* scientists in Antarctica are confronted by a shape-shifting alien that can assume the appearance of the people and animals it kills.¹³ Meanwhile, in the thinking of

German philosopher Martin Heidegger, the thing is an essence that reveals being in the world.¹⁴ The task for the study of knowledge in ECE is to explore such radical possibilities in terms of experience. For instance, clearly identifiable (although constantly shifting) professional knowledge/s about early childhood development, curriculum, pedagogy, reflective practice, politics and more have become a defining character of the sector. More than this, such knowledge/s are employed to limit who can and cannot work in the sector, create hierarchies in terms of the ways in which adults work with children, and justify the contribution of the sector to the nation (albeit with very little recognition by the nation given the globally recognised parlous state of early childhood teacher professional status and working conditions). On one level then, professional knowledge has, like a hostile alien shapeshifter, taken on the form of the knowledge of diverse communities and then consumed those communities (consider, for instance, the case of Te Kōhanga Reo National Trust and the Waitangi Tribunal's findings in *Matua Rautia: The Report on the Kōhanga Reo Claim* regarding the failure of government to recognise and value the knowledge regarding childhood, education, care and learning that guides Te Kōhanga Reo).¹⁵ Alternatively, knowledge/s as things in ECE can excite an understanding of a rich tapestry of shared lives.

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On knowledge and curriculum

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British educationalist Michael Young considers that there is a curriculum crisis within education.¹ Despite the current times being ubiquitously described as a ‘knowledge age’,² Young suggests this crisis actually concerns knowledge, in particular our lack of understanding of the affordances of different knowledge forms and the issue of student access to these different forms.

Young’s recent arguments are of particular interest because of the key role he played in the major critiques of the curriculum in the 1970s.³ Most interestingly, he now considers that the ideas developed at that time and subsequently have been unsuccessful in solving the key problem they identified – the persistent educational underachievement of certain groups in society. Nevertheless, the ideology critiques of that time revealed important truths for education, key amongst them the fact that a curriculum is socially constructed and not some form of immutable scripture. A curriculum cannot be ideologically ‘neutral’. It can be complicit in the reproduction of inequality in the way it might represent or exclude matters of class, gender, sexuality, culture and ethnicity, for example.⁴ The critiques of the 1970s and following went beyond the curriculum to question the very nature of knowledge itself. Much knowledge is now considered ‘Western’ rather than universal to all cultures – knowledge relativism. However, as Young now argues, an awareness of these issues, as significant as they are, only takes us so far towards knowing how to reshape the curriculum.

If the current curricula are revealed to be classist, sexist and Eurocentric for example, then *what* are we to teach and who decides? Since these questions are very complex to confront head-on (it can lead down the dead-end path of epistemological relativism), we have become understandably distracted by focusing almost exclusively on pedagogy – the learner and learning – omitting the other key element in the equation – *what* is being learnt. This shift in focus to the learner and learning has occurred at the expense of continuing the development of our understanding of forms of knowledge, the effects and affordances of these forms, and *what* is most important to make accessible to students. This shift has created what Karl Maton terms ‘knowledge blindness’.⁵

One example of the knowledge blind-spot is the New Zealand Curriculum. It does not specify a common core of knowledge that *all* the country’s students have a right to access. Curricular content is a decision largely devolved to the local level, which is seemingly very democratic⁶ as this encourages the curriculum to be developed around student interests and their pre-existing ‘funds of knowledge’. But, as I will argue below, *what* we learn – particularly knowledge *structured in a particular way* – has a major effect on our development as thinkers. We need a national conversation about the type of knowledge that should be taught in schools.

A second key idea, that I will not have space to pursue here but is important to mention in passing, is that it is vital for discussions to be had about what common knowledge we want our schools to include as societies become increasingly diverse. The great sociologist Emile Durkheim (1858–1917) suggests that pluralist societies need a ‘collective representation’ – a common imaginary of their shared values – to bind them together. Education is the major societal institution for creating such collective representations. Increasing localisation and the knowledge blind-spot makes this task increasingly difficult, to the growing detriment of society in general.

Despite increasing concern being voiced by writers worldwide and in New Zealand about the importance of knowledge (see the 'Further reading' list below) an ethical alternative for curriculum development based on a sound *theory of knowledge* has yet to eventuate. The *dominant narrative* creating the blind-spot (learners, learning, and knowledge relativism) is difficult to dislodge. As with any blind-spot, it is difficult to see!

In the remaining sections of this short chapter I provide some further examples of the knowledge blind-spot and I suggest where we might begin with a *theory of knowledge* to act as a countermeasure to the knowledge blindness. It is very important to note at this point that the knowledge-led approach being argued for here is not a return to the past with didactic accumulation of 'knowledge as facts', but rather a reassertion the significance of academic knowledge as the fulcrum for what happens at school. Knowledge at school needs to emphasise the conceptual, while being put to use in active modes of learning; the integration of *knowing that* and *knowing how*.⁷

Blind-spots

An intriguing example of the knowledge blind-spot, somewhat ironically, is to be found in John Hattie's well-known and influential book *Visible Learning*. The emphasis in this book is clearly on pedagogy, and Hattie appears either to take knowledge as a given or assume its secondary significance when he states 'it is less the content of curricula that is important than the strategies teachers use to implement the curriculum so that students progress upwards through the curricula content'.⁸ This seems quite an extraordinary statement given that progress in learning depends on increasing conceptual understanding enabled by the sequencing of specific concepts and content that students encounter through their teacher. Pedagogy becomes somewhat incidental or even 'empty' if the content of the curriculum is of little conceptual value or if its sequence is muddled or misunderstood.

A further example of the knowledge blind-spot is the language now used to talk about education. It reveals the pedagogy obsession mentioned above, and the absence of knowledge specificities, and even the absence of the teacher. Gert Biesta has analysed and written about this and has coined the term 'learnification' to describe it. He argues that the problem with this new discourse is that it distorts education's very essence: 'The point of education is never that children or students learn, but they learn *something*, that they learn this for particular purposes, and that they learn this from someone' (italics in original).⁹

Numerous other examples can be found of the knowledge blind-spot, not least the course descriptions of many teaching qualifications. The obsession with pedagogy at the expense of understanding the significance of knowledge itself can also be seen in the disestablishment of curriculum specialist advisors, both those within the Ministry of Education and those available to teachers. Generic pedagogical and culturally informed professional development is now considered sufficient to assist teachers at work.

In a more recent off-shoot of the learnification discourse called '21st Century Learning', the knowledge blind-spot is also visible. Knowledge is displaced by the new centrality of 'generic competencies' and the idea that it is more important to learn *how to learn* than to learn anything in particular (Biesta's learnification mentioned above). Knowledge (often confused with information) is seen as constantly changing so of little significance for the curriculum.¹⁰ In Cynthia Scott's reviews of the 21st century education literature, the terms 'skills', 'information' and 'competencies' feature far more frequently than 'knowledge'.¹¹ In another UNESCO publication titled *Curriculum in the Twenty-First Century: Challenges*,

Tensions and Open Questions, there is little mention of what knowledge a curriculum might contain beyond generic competencies.¹² In most of this literature we are left wondering through what knowledge content these new skills and competencies will be developed.

Towards a theory of knowledge for curriculum development

Young has argued that before we can theorise a curriculum, we need a theory of knowledge. In this final section I introduce two ideas that can assist us with beginning to realise that aim.

I have already alluded to the first idea above – *the differentiation between curriculum and pedagogy*. By thinking of these two aspects of schooling as having a different purpose we can begin to see more clearly the importance of each and how they should interact. The curriculum should indicate the disciplinary concepts, progression of concepts, and content that all children should have the right to encounter. Pedagogy, on the other hand, is about motivating and engaging students by how the knowledge is presented, including opportunities for students to ‘make knowledge their own’ through use and application. Teachers are not always subject specialists to a sufficient degree for deep curricular development and so may need to engage with specialist research. However, teachers are pedagogic experts with the key task of reshaping academic knowledge for engaging use in the classroom.

The second idea is called *knowledge differentiation*, and this concept can help us move beyond the idea that what is selected for curriculum inclusion will always need to be somebody’s subjective or political decision. This argument suggests there are actually intrinsic dimensions in knowledge (structural dimensions) that give some knowledge more ‘power’ to explain the world than other sorts of knowledge. This can help us make the decision about what to teach in a reasonably objective way. Knowledge differentiation refers to the difference between two sorts of knowledge that exist in the world and that go under a variety of names such as ‘formal’ and ‘informal’; ‘academic’ and ‘everyday’.

While the dominant learnification discourse alluded to above has gradually weakened the boundaries and distinctions between these two types of knowledge, Young’s argument now is that this is a mistake. The knowledge only schools can provide access to is knowledge that is *structured differently* from everyday knowledge, and that has *a different purpose* from general informally acquired sociocultural knowledge. We need to differentiate these knowledge types because it is this different structure of academic knowledge that provides unique cognitive affordances that informal knowledge does not. It is the ‘epistemic structure’ of academic knowledge, its structured coherence, that is pivotal for cognitive development.¹³ Put simply, this type of knowledge is the means for us to learn to think abstractly; the key to educational success and the possibility to think beyond the confines of our own context and experience. We need to be sure the balance between sociocultural knowledge (making a school an inclusive, diverse and welcoming place) and academic knowledge does not dislodge the key purpose of the school: initiation into the realms of abstract thinking. We need to make sure there is a balance of each type of knowledge in the curriculum and that the different affordances of each are clear. Each type must be fit for purpose.

Conclusion

In contradiction to current educational orthodoxy, Young argues that ‘curriculum theory must begin not from the learner but from the learner’s entitlement to knowledge’.¹⁴ This is a social justice concern. The curriculum needs to provide access to the historically evolved funds of knowledge that a society decides all its young people need access to. Coming to know and understand this ‘academic’ knowledge develops *the intellectual means* for the next generation to build on and modify that knowledge, and from that foundation, to create new knowledge. Populating a curriculum with everyday knowledge and experience will simply not provide that possibility. As argued above, it is the special inherent epistemic structure of academic knowledge that provides the means for students to learn how to objectify and critique their own circumstances.¹⁵ This is the beginning of education’s power for interruption and political change. Developing a theory of knowledge should enable us to think more critically about what it is we need to include in the curriculum. Questions about what to teach ‘have no “once and for all” answers; societies change, so every generation has to ask those questions again - and they are not easy’.¹⁶ But awareness of different types of knowledge, the varied affordances they offer, and of the differentiation between curriculum and pedagogy can assist us with the challenging process of deciding what knowledge we should focus on in school and how we should decide. As to the question of *who* decides, the authority comes from the knowledge itself, knowledge that is developed, recognised, tested and warranted in communities of scholarship and practice around the world. These are specialist communities and, in partnership with teachers and policy makers, they should lead the discussion about what should be taught in schools.

Further reading

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1. There are a number of definitions of 'curriculum' but for Young and for this discussion curriculum is taken to be a theoretically derived set of curricular principles elaborated through subject concepts and indicative content for teaching. Ideally a curriculum will be derived from a theory of knowledge and a theory of curriculum with indicative implications for pedagogy. In this way it is much more than a syllabus. See Young, M. (2013). Overcoming the crisis in curriculum theory: A knowledge-based approach. *Journal of Curriculum Studies*, 45(2), 101–118.
2. For example, 'knowledge-led economy', 'knowledge capitalism', 'global knowledge economy', 'knowledge society', 'catching the knowledge wave', etc.
3. The original 'movements' in educational studies in the 1970s were known as the New Sociology of Education (NSOE) in the United Kingdom and Critical Curriculum Studies (CCS) in the United States. Today we have critical studies, critical pedagogies, culturally responsive pedagogies, etc. Michael Young became influential as the editor of the NSOE-informed 1971 collection *Knowledge and control: New directions for the sociology of education*. London, UK: Collier-Macmillan. For notable examples of CCS scholarship, see Bowles, S., and Gintis, H. (1976). *Schooling in capitalist America*. New York, NY: Basic Books; Apple, M. W. (1979). *Ideology and curriculum*. Boston, MA: Routledge and Kegan Paul.
4. Of course it is accepted that education can only do so much in countering the inequalities of wider society. See, for example, Snook, I., and O'Neill, J. (2010). *Social class and educational achievement: Beyond ideology*. *New Zealand Journal of Educational Studies*, 45(2), 3–18.
5. Maton, K., and Moore, R. (Eds.) (2010). *Social realism, knowledge and the sociology of education: Coalitions of the mind*. London, UK: Continuum.
6. 'Choice' and 'relevance' are key concepts used to argue for devolution of curriculum to the local level. This is the 'free choice' ideology of neoliberalism.
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9. Biesta, G. (2009). Good education in an age of measurement: On the need to reconnect with the question of purpose in education. *Educational Assessment, Evaluation and Accountability*, 21(1), p. 36.

10. Young (2013) draws our attention to the differentiation between concepts and content within a discipline or subject. He argues that concepts are relatively stable while concrete and material realisations of those concepts may be constantly evolving. A teacher may choose varied *content* to illustrate and elaborate central concepts.
11. Scott, C. L. (2015a). *The futures of learning 1: Why must learning content and methods change in the 21st century?* [ERF Working Papers Series, No. 13]. Retrieved from <http://unesdoc.unesco.org/images/0023/002348/234807E.pdf>; Scott, C. L. (2015b). *The futures of learning 2: What kind of learning for the 21st century?* [ERF Working Papers Series, No. 14]. Retrieved from <http://unesdoc.unesco.org/images/0024/002429/242996e.pdf>; Scott, C. L. (2015c). *The futures of learning 3: What kinds of pedagogies for the 21st century?* [ERF Working Papers Series, No. 15]. Retrieved from <http://unesdoc.unesco.org/images/0024/002431/243126E.pdf>
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15. Rata, E. (2017a). Knowledge and teaching. *British Educational Research Journal*, 43(5), 1003–1017; Rata, E. (2017b). Connecting knowledge to democracy. In B. Barrett, U. Hoadley, J. Morgan (Eds.), *Knowledge, curriculum and equity: Social realist perspectives* (pp. 19–32). London, UK: Routledge.
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Knowledge and/for learning

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A personal introduction

When thinking about what teachers need to know and be able to do, there is much discussion in the New Zealand context about the importance of curriculum knowledge (what to teach) and pedagogy (how to teach), but considerably less time given to an area of research commonly called the science of learning (the neuroscience of how people learn). Indeed in my own experience (which certainly should not be taken as being representative of any wider context), it was not until I started my master's that I first really engaged with the research literature on how people learn, and it was much later still that I became interested in the connections between neuroscience and education.

These first encounters with research on learning were something of a revelation for me. I was struck by how useful this knowledge would have been when I was in the classroom, providing guidance on how to structure my teaching in ways that would most benefit my students' learning. It also was fascinating to find the scientific evidence base for some of the insights I had tacitly gleaned about my own learning over the years. It is some of this research on the science of learning that forms the basis of the argument here – that knowledge is critical to learning.

Knowledge of/for learning

While for many the statement that knowledge is intimately connected to learning and to education would seem axiomatic, it is not as straightforward or apolitical a statement as it would outwardly seem. Increasingly, gaining knowledge is seen as a secondary goal of our education system. It is the development of competencies and skills, such as critical thinking and problem solving, which is the primary goal. These generic skills and competencies undoubtedly are an important component of our education system – indeed employers consistently rank so-called soft skills such as collaboration, critical thinking and communication at the top of their list of desirable skills for employees.

While skills and competencies are undoubtedly important – for both an education and life more generally to develop – cognitive psychological research has demonstrated that general abilities and skills cannot be studied independently of content domains. For instance, while it is possible to teach general principles or approaches to problem solving, the ability to utilise these in response to a specific problem requires relevant content knowledge. The growing field of learning science research has found that knowledge is critical not only for the enactment of skills but also for enabling effective learning. That is, knowledge is not only the *product* of learning but also directly *influences* how and what we are able to learn.

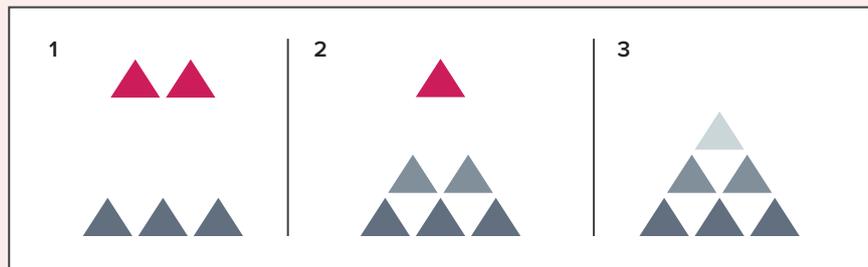
Knowledge begets knowledge

The more you know, the more you are able to know.

A new concept is always learned in association with already existing knowledge. When we encounter a new idea or new piece of information, we make sense of it in relation to what we already know on the topic. The amount of existing knowledge and the extent to which it is interconnected also influence the quality of learning – more interconnected knowledge leads to easier and faster learning. This suggests that both *what* we know and *how* we know influences our ability to learn.

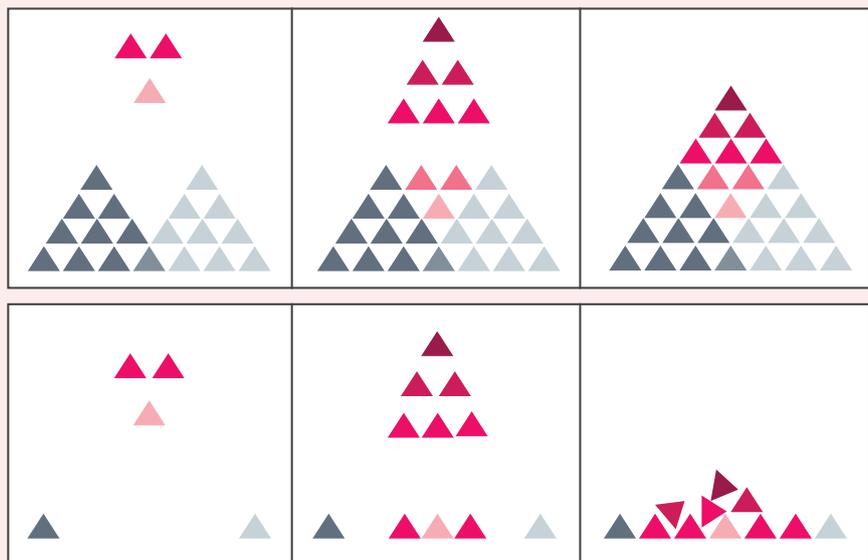
The hierarchical nature of the learning process can be described as a pyramid – where the knowledge pieces are the individual bricks and our broader understanding of a topic is the structure they form (see diagram 1). The final product is dependent on both the individual pieces of knowledge and our ability to form interconnections between them to develop understanding.

Diagram 1: The hierarchical nature of learning



As we learn more, we create more pyramids, as well as more opportunities for higher-order learning (where a whole pyramid becomes just a brick in a new one) and interdisciplinary learning (which is supported by several other pyramids). In such learning, we are able to reshape and reapply our knowledge in new situations and in relation to new contexts and problems (diagram 2).

Diagram 2: Higher order learning of learning



Higher-order learning abilities are dependent on the solid structure of well-established knowledge. For example, at the basic level of learning we attach a concrete meaning to a meaningless concept, such as a word – like the name of a person (Katie), an action (play) or an object (ball). The meaning relies on the ability to use the new concept to communicate effectively; the recurrent successful use of the word creates meaning. At higher levels of learning, concepts with concrete meaning are used as examples for more abstract or general concepts. For example, to teach the meaning of ‘equal’ it would be possible to say, ‘If Katie has one ball and Roimata has one ball, then they have an equal number of balls.’ Meaning of the new concept ‘equal’ is established on the basis of already known concepts – ‘ball’, ‘Katie’, ‘has’, ‘one’, etc. Later, we can go further up the pyramid and connect ‘equal’ with more abstract concepts such as ‘equality’ or ‘equity’.

The importance of existing knowledge for ongoing learning is clearly demonstrated in the literature on reading comprehension. The ability to read a text and make sense of it is highly correlated with background knowledge. While the ability to decode enables you to identify words in a text, it is existing knowledge that helps you to infer meaning from those words. A frequently cited study clearly demonstrates the importance of knowledge for reading.¹ The researchers gave intermediate-aged students, who were classified as either good or poor readers based on their results in standardised tests, a text about a game of baseball. The students were then asked to use a replica baseball field to describe and re-enact what they had just read. Perhaps not surprisingly, the students’ knowledge of baseball had a substantial impact on their performance. Those students with poorer reading skills but with a high knowledge of baseball displayed better understanding than those students with better reading skills but poorer knowledge of baseball.

Our existing knowledge base not only enables us to comprehend and think about information but also helps us to remember new information.² As the diagrams above indicate, it is easier to remember new material when we already have some existing knowledge of the topic because we already have an existing network, or cognitive schemata, in which to situate and orient the new information. By contrast, if we have no existing network in our memory, we have nothing to tie the new information to. The result is that students who know more will also be able to learn more and more effectively and efficiently. This has substantial implications for education. Teaching both breadth and depth of knowledge in meaningful ways must be a central goal of education. This does not negate the importance of skills; it fosters a robust knowledge base that enables the effective enactment of skills, as the following section will demonstrate.

Knowledge for thinking

One must have something to think critically about.

Knowledge not only supports our ability to gain new knowledge, it also facilitates our ability to think and to apply our knowledge in relation to particular tasks and problems. This is largely because knowledge frees up space in our ‘working memory’ for undertaking more complex tasks.

Working memory is where all our mental processing takes place, our real-time thinking. All new information is received and processed in the working memory before it is either forgotten or enters the long-term memory. Working memory also is where we combine incoming information with knowledge retrieved from our long-term memory, and use both to make a decision or perform an action. The most prominent feature of the working

memory system is its limited capacity. It is only able to handle a small number of items at any given moment. If the working memory is overloaded, it leads to information loss – either incoming information will not be processed, or an item ‘in process’ will be dropped for a new one.

The relationship between working and long-term memory has significant implications for the position of knowledge in and for learning, and in particular the importance of knowledge for undertaking complex tasks and problem solving. When undertaking particular tasks – such as writing an essay or solving a complex problem – if we do not have sufficient domain-specific knowledge, simply understanding the problem or task can take up most of our working memory, leaving limited space for devising solutions. It is for this reason that we struggle to write an essay on a topic that we do not know well enough. While we may be familiar with the key components required in essay writing – an introduction, a clear argument, the use of paragraphs, etc. – our lack of knowledge on the topic of the essay puts too much pressure on our working memory. Similarly, a meta-analysis of 40 studies on ways to improve scientific problem-solving skills demonstrated that the most successful interventions focused on strengthening students’ knowledge base, while interventions focused on problem-solving strategies had little or no impact.³

Knowledge matters

In the age of Google and near-instant access to an incalculable wealth of information, knowledge continues to matter. Knowledge, while often downplayed, is in fact crucial to the skills and competencies – critical thinking, meta-cognition, problem solving, lifelong learning – that are so desired both by our education system and among employers. A person’s knowledge base determines both what and how easily they are able to learn, as well as their ability to demonstrate particular skills and higher-order learning. Understood in this light, knowledge is directly related to discussions of equity in education. While increasing knowledge is not a silver bullet, it does represent an important component in building a more equitable education system.

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3. Taconis, R., Ferguson-Hessler, M. G. M., and Broekkamp, H. (2001). Teaching science problem solving: An overview of experimental work. *Journal of Research in Science Teaching*, 38, 442–468.

The importance of knowledge for teaching

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Imagine for a moment that someone has challenged you at the end of a lesson with the questions:

- Why did you teach that to those students? and
- Why did you teach it that way?

Seemingly simple enough questions. To the first you might respond that it is where you were up to from the previous lesson, or where the students were up to, or what came next in the curriculum. To the second you might say that it is the way you have always taught this; that it is how the students like learning; or that you heard about the approach from others. While such answers are legitimate, they are far from satisfactory or complete, especially if we want to think of teaching as a profession. And that is precisely the way we should be thinking – in the same way that we think of medicine, law, engineering and architecture as professions. But thinking of teaching as a profession means more than just making the claim for this status. It means commitment to and enactment of a set of ideas with knowledge and ethics at the heart. The Australian Council of Professions defines a profession as:

a disciplined group of individuals who adhere to ethical standards and who hold themselves out as, and are accepted by the public as possessing special knowledge and skills in a widely recognised body of learning derived from research, education and training at a high level, and who are prepared to apply this knowledge and exercise these skills in the interest of others.¹

It follows from this that teaching's claim to be a profession rests on decision-making and action that is informed by 'special knowledge . . . derived from research, education and training at a high level' and applied 'in the interests of others'.

The answers proffered to the two questions at the start of this chapter hardly amount to specialist knowledge, and it is doubtful given the diverse nature of students that the answers serve the interests of students. They are in essence practical, routine responses. Not wrong, not irrelevant and not thoughtless – but limited. Something better and more informed – more knowledgeable – needs to be offered in response to questions about what is being taught and why. Not just because we want to justify the status claim that teaching is a profession but, more importantly, because of the adherence to 'ethical standards' and advancing the 'interests of others' – our students – that directs the need for and use of specialist knowledge.

We could get away with limited responses to questions about what and how to teach if we accepted limited or no responsibility for the outcomes of those decisions. But teaching, like medicine, aims to make lives better. Just as we would not want a doctor to treat based on limited knowledge of diagnoses and possible treatments, we would not want a teacher to teach based on limited knowledge of what they are teaching, of students, of learning and of possible strategies to improve learning. This is especially the case when teachers are working with the most disadvantaged and underserved. As George Beaton explains, 'The power that . . . knowledge gives [professionals], and the trust that society reposes in their conduct [means that] professionals have the special obligation to share their knowledge and expertise appropriately – that is, ethically – with the world and to its benefit.'² So knowledge matters. Not only because its specialist nature accords status to

the profession but because it enables better decision-making which in turn brings greater advantage to those it serves.

With this in mind let us return to the questions posed at the start of this chapter and consider what more knowledgeable and complete responses might look like.

First, the question of justifying (perhaps even defending) *what* you teach. This is probably the more challenging of the questions because there are few limits on the options and, if the response is to speak to *each* student (rather than all students in general), then it needs to be nuanced according to ability and interest. Part of the justification of what to teach rests in the teacher's knowledge of the subject. This is not to suggest that the teacher needs to know everything, nor that they should position themselves as the font, and communicator, of all knowledge. Rather it is to suggest that the teacher needs to be accurate and confident in what they are teaching and to be secure enough in their knowledge to be able to respond flexibly to students. We don't always have this accuracy and security at the outset of considering what to teach. We have all experienced teaching in an area that is new to us. But our curiosity for the content needs to be such that we are eager to learn, to get ourselves more than one page ahead, and thus be a resource and inspiration for student learning.

Knowing the content only gets us so far. As Lee Shulman pointed out many years ago, 'Mere content knowledge is likely to be as useless pedagogically as content free skill.'³ It needs to be accompanied by pedagogical understanding and skill. National curriculum and assessment policies inform entitlements, aspirations and expectations for learning and provide one source for narrowing down the possibilities of what to teach. So being knowledgeable about these policies (the New Zealand Curriculum, NCEA) is a fundamental pedagogical requirement. Where this narrowing occurs, for example in senior external assessments, content selection needs to be guided by an analysis of past assessments and examiners reports so that teaching is responsive to expected outcomes. This is not 'teaching to the test'. It is being responsible about determining the direction of learning and making decisions about priorities and emphasis.

The other pedagogical element in deciding what to teach lies in knowledge of the students – their abilities and their interests. While curriculum with its typical focus on levelling and progression guides what the next steps for learning might be, it does not answer the question about the next steps for *particular* learners. That requires teachers to know about and use formal and informal diagnostic assessments. What experiences do the students bring? How can those experiences be accessed to optimise connections to, and relevance of, new learning? What are the expectations of family, whānau and community? What do students already know? How does this knowledge vary among students? The assessment and pedagogical literature offers reliable ways of answering these questions. Being knowledgeable about this literature informs the design of more focused teaching and more personalised learning.

The combined knowledge of the subject matter, of curriculum and assessment, and of students is a specialist resource that enables the teacher to defend what they are teaching at any particular time. And it is a defence that they must be able to mount because in teaching time is a scarce resource. There is only so much available in a school day, term and year. There is so much of importance that could go into that time. But the issue is not one of importance; it is one of *relative* importance – why this content with these students on this day at this time? This cannot be well answered from everyday, common knowledge. It can only be answered from a commitment to deep and specialist knowledge.

Second, the question of justifying *how* you are teaching. Our own experience as learners, and the research literature on teaching, tell us that there is no one right way to teach. But this is not to say some ways of teaching are not better than others. Knowledge of these better ways comes from the research literature and from practice. The research literature offers insights into general pedagogy (use of advance organisers, clarity of explanations and instruction, maintenance of order, use of formative assessment and feedback) that are *likely* to be effective in most instructional settings. But there is also a subject-specific pedagogical literature (pedagogical content knowledge) that suggests approaches, and sequences, that are most likely to be effective in the teaching of particular concepts and ideas. Practice – the teacher’s own past experience and colleagues – is also an instructive source for selecting approaches to teaching especially where that practice is based on an honest appraisal of impact. Just as the focus of teaching needs to take account of student abilities and interests, so does the approach to teaching. Knowing what helps learning for *particular* students alongside a well-developed understanding of the literature on motivation helps find ways of generating greater interest and engagement – not merely for its own sake, but for advancing learning. Knowing how *individual* students respond to the management of their behaviour alongside the literature on classroom management helps generate practical and respectful strategies for maintaining an orderly environment. The defence of the second questions lies very much in the combined wisdom of practice and specialist knowledge of the research and theoretical literature on general and subject-specific pedagogy.

Underlying both questions is another knowledge base that cannot be ignored: knowing yourself as a teacher. A defence of what you are teaching and how you are teaching it must be embedded in a commitment to setting expectations high and to avoiding deficit-thinking decision-making. We need to know ourselves well enough to avoid self-fulfilling negative prophecies and to be optimistic with and for each of those we teach. We need to know our blind-spots and biases – pedagogical and personal – and to seek to overcome them through persistence and tolerance. But just as importantly, we need to know ourselves well enough to preserve our own sense of sanity and health. As Beaton notes, the professions are distinguished by selfless service and altruism.⁴ Nowhere is that more the case than in teaching, but it does no one any good for this to overwhelm our own health and well-being.

In summary, knowledge matters in teaching because it is the hallmark of a profession. Because its specialist nature informs decisions that are more reliable than everyday or common knowledge. Because informed decisions lie at the heart of the social justice mission of teaching. And because knowing ourselves helps us behave in ways that both serve this mission and protect our personal well-being.

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4. Beaton (2010), p. 6.

Missing in action: The spiritual dimension

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We are currently standing where humanity has never stood before. Having attained 'evolutionary consciousness' – the consciousness that as humans we are able to choose our future – it is now for us to take responsibility for the design of our future. Bela Banathy and Patrick Jenlink suggested that 'the most salient implication – and greatest challenge our species ever faced – is that *we have to enter into the evolutionary design space and with purposeful creative surge give birth to the life of the Fourth Generation of H[omo] S[apiens]S[apiens]*'. It has become '*our task, our responsibility, our burden and privilege to choose and create our...future*'.¹

It appears that we are not particularly well prepared for this great task – consciousness often arrives before the capacity to actually do it. As a result, there is a great deal being contested in education today: traditional views of knowledge versus progressivist approaches; modern learning environments versus single-cell classrooms. Even the role of the teacher is being contested – are teachers a sage on the stage, guide on the side or, perhaps, a peer at the rear? The purpose of education is being contested. Is education to meet the needs of business, serve the economy, progress the human race, or . . . ? It is time 'to turn to one another without reserve and in truth and openness, accepting and honouring each other', and to enter into a dialogue as a means of collective communication about our future as a species and the future of education?² Banathy and Jenlink argued that in the process of designing our future we must define and take account of all the key dimensions of the human experience, including the spiritual dimension.³

It is in this spirit of openness to all ideas, including ones that are problematic for us, that I raise the spectre of views of knowledge and ways of knowing that are largely missing in action from among the ideas that are currently being so hotly contested in education. These pertain to knowledge that is less certain, less concrete and less visible than the traditional knowledge that is spelt out in curriculums and taught in institutions every day around the world. Though often overlooked, from my perspective, this knowledge is also very real, rich, powerful and undeniably essential to a successful and meaningful life. It belongs to the realm of the 'spiritual'. The main point I wish to make in this chapter is that if the dialogue about education and knowledge remains firmly temporal and does not include the possibility of a spiritual (non-temporal) dimension of the world in which what is seen as legitimate and desirable knowledge is very different in essence from, but exists in integral relationship with, knowledge in the visible, temporal realm, then we are at risk of designing a future of education that does not represent or take account of the full or whole reality of the world. Such a future will not and cannot fulfil the task of education, which according to Gert Biesta, 'consists in arousing the desire in another human being for wanting to exist in and with the world in a grown-up way, that is, as subject'.⁴

Being 'subject' is not about having a unique identity, or the unfettered freedom to do as I want. Biesta's subject references Philippe Meirieu's idea of one coming to the self-knowledge that one can live in the world without having to occupy the centre of it. It is about each individual coming to the knowledge of his or her unique contribution, where 'I encounter freedom as the very thing that only I can do . . . and no-one can do in my place.'⁵ Biesta argued that opening up the space 'where the student might appear as subject' and discover this knowledge is the work of teachers and teaching. 'When teaching has an interest in and orientation towards the subject-ness of another human being, it operates in an altogether different way.' This world is characterised by 'an orientation towards the unforeseen . . . , that is, to what is not present, to what can be the object of hope and thus requires faith, but can never be a matter of knowledge or certainty'.⁶ This is the 'spiritual' realm, where teachers do not 'input' but rather make 'teacherly gestures' that open up the possibility for our students to appear as subject. In this realm, teachers are active in the world of education, but do not occupy the centre of it. And the hoped-for outcome is what Biesta calls the 'grown-up subject-ness' of the student.

A 'spiritual' encounter

To this day I remember the encounter vividly. He said to me, 'We are [name of family]. We do to others before they do to us. We are violent and we are criminals. We end up in prison. That's who we are. We are [name of family] and there is nothing else for me.' He said this at the beginning of his year eight year – this student who presented such a hard, immutable exterior, redolent of violence. In that moment, I was incredibly grateful that I had recently spent some time at his home with his grandfather – past president of a gang, who died shortly afterwards – and his grandmother; and I had seen something else. What the student said to me was factually and visibly the truth. But it wasn't the whole truth. In that moment I was able to say, 'I have been to your house and spent time with your whānau. I have seen love and care and strong, unconditional relationships.' In fact, in that house I had seen the impact of poverty, of drug and alcohol abuse. But I had also had a 'moment' – I had experienced the warmth of human connection and seen the humanity of a man approaching the end of his life, sharing memories that still brought him joy and funny stories that still made him laugh and made me laugh. I had seen a grandmother who loved her mokopuna and loved reading; we talked about our favourite authors and discovered we had several in common. Patricia Cornwell was one such author.

Others at school had begged me not to do this home visit because it wasn't safe, and I had approached in the wintery dark with trepidation. But during that encounter in my office at school with that student, I was unbelievably grateful that I had visited and experienced that moment, which had enabled me to see beyond the obvious and the visible to their humanity and to the possibility of a future that could be different. At the end of that year, this student received our award for outstanding leadership. What a privilege it was to present it!

Grown-up subject-ness and teacherly gestures

If what I outlined above is to be the task of education, and I agree that it must be, then we really must embrace the reality of the spiritual realm. By this I mean not only in terms of students gaining consciousness and understanding of this dimension and how it pertains to their lives but also in terms of teachers recognising that there are ways for students to

develop knowledge of the world (which includes themselves and others) that are different from the mechanistic processes of learning that dominate education today. The work of teachers in arousing the desire of students to live as subject *is* 'spiritual' work, and must stand strongly and proudly alongside the scientific, evidence-based, constructivist, sense-making approaches to developing knowledge that are so pervasive today. Science is important. Teachers do need to maximise the effectiveness of their inputs to ensure students bridge the gap between what they know and what they don't know. However, if these are the only approaches to knowledge that we focus on, education will never meet the needs of every student, and teachers will burn themselves out trying. Education also needs to dwell in the land of the uncertain, of miracles.

It is here that I will return to the true story I began with and begin to weave my experiences and understandings of the spiritual dimension and spiritual ways of knowing with the story of the year eight student hereafter known as Charlie. In this section I briefly explore the 'teacherly gestures' that may have opened up a space for Charlie to see the possibility of his grown-up subject-ness.⁷ The term 'teacherly gesture' is helpful. We often speak of a gesture in relation to giving a gift. We give a gift as a gesture that can only ever partially represent the depth of our gratitude or the importance of the relationship to us. In relation to the grown-up subject-ness of our students, we carry out teacherly gestures, but we know that though we must make these gestures, they are, after all, *only* gestures, and we are not actually 'commanding' the student's grown-up subject-ness to show up, or 'commanding' that the student will recognise it when it does. We are making gestures that acknowledge the possibility. Whether it actually happens is outside of our control, outside of our *wanting* to control. However, we make the gestures *just in case*, in spite of the fact that we have no power or ability to *make* it happen. When we act using power, we are treating the student as 'object', as something to be done to, and we shut down the possibility of the student's subject-ness showing up. Hence, teacherly gestures are acts of faith and hope – done with no assumptions or expectation that they will produce particular outcomes. They are nevertheless done, and always done with hope that they will lead to the self-showing of the student's grown-up subject-ness.

What were my teacherly gestures in Charlie's story? In the first instance, I invested myself into the relationship with this very difficult student beyond what would normally be expected. I also offered unconditional positive regard in spite of the possibility that my investment might not result in any dividends.⁸ My several visits with his whānau are examples of this. Noddings suggested that moral individuals nurture an ethic of care which communicates to people that they are important, worthwhile and esteemed individuals.⁹ The care is unconditional because it is given regardless of how the recipient responds or has behaved or is likely to behave in the future. Sitting down to talk with this student with openness and curiosity (and without judgement) in this particular circumstance (and many other times), in spite of actions he had taken, was a teacherly gesture of my unconditional care and regard for him.

Secondly, in spite of (often) being treated as object by this student, I had to get in touch with and bring to the surface my own grown-up subject-ness. My gesture in refusing to be objectified and belittled by his behaviour, by his pain and hurt, enabled me to act in the situation out of my own grown-up subject-ness; to forgive him, and in doing so to open up a space where his own grown-up subject-ness became a possibility. When I am not subject, I cannot open up a space for others to be subject. Thus, the nurturing of my own grown-up subject-ness and the refusal to be object is a teacherly gesture that I must continually make.

The third teacherly gesture was in not allowing the student's view of himself and his family, and of his past, present and future, to stand unchallenged in spite of the visible truth of it. Biesta argued that 'when we approach a child or student as subject *precisely* when this flies in the face of all available evidence . . . it is precisely this gesture – a teacherly gesture – that opens up a possibility for the child or student to appear as subject'.¹⁰ Refusing to accept the inevitability of Charlie's future in spite of all available evidence to the contrary, and approaching him as subject – as one who is free to encounter the very thing that only he can do and nobody else can do in his place – was a teacherly gesture that opened up the possibility of his encounter with his grown-up subject-ness and of a future that could be different.

A fourth, but inextricably related gesture, I call 'speaking prophetically'. As well as refusing to accept his view of the future, in the conversation with Charlie I was able to describe to him, and for him, a future that could be different. I wasn't speaking to his rational mind, because his rational mind had already rejected the possibility of a future that was different – rationally he knew what his future would be ('We are [name of family]. We are criminals . . .'). My teacherly gesture was to speak, from the place of my grown-up subject-ness, to the possibility of his grown-up subject-ness, of a future that could be different, and, as I did so, there was a sense of calling that possible future into being. In the space that had developed between us, Charlie began to receive knowledge-as-revelation of his grown-up subject-ness, of the possibility that he could become a good man and a good leader of people. As a result, increasingly over that year, he began to act differently – as though his future could be different. Biesta commented that what is important here is not whether a future as subject is *likely* to be true, but rather what might happen if we assume it *is* true and *act* on the assumption that it is true, because only when we do, do we open up that future as a possible future and 'only then may we find out whether it is true'.¹¹

Conclusion

Education must embrace all the realities of our world, all knowledge, all ways of knowing, no matter how uncertain and uncomfortable it makes us. I agree with Parker Palmer that if we want to grow as teachers and fulfil our educational task, we must do something alien to our education culture: 'We must talk to each other about our inner lives – risky stuff in a profession that fears the personal and seeks safety in the technical, the distant, the abstract'; and, equally, we must also create opportunities for our students to explore their inner lives.¹² We must embrace the spiritual dimension of the world as an integral, essential aspect of what it means to be a teacher and a student. If we don't, we will, in spite of all our efforts, fall short of the educational task of arousing, through our teacherly gestures and the development of the (uncertain) knowledge that gestures make possible, the desire in our students for wanting to exist in and with the world in a grown-up way, as subject, as one who is free to do what nobody else can do in one's place, and as one who is able to live in the world without needing to occupy the centre of it.

Epilogue

Just the other day, at an unexpected time and in an unexpected place (Burger King at Turangi, where I'd stopped on a drive from Wellington to Auckland), I encountered a man who spoke of effective and life-changing work he and others are doing with young people in the town where I had once lived. Charlie's family, who, in their own words, are criminals and destined for prison, who do to others before others do to them, are beginning to encounter new ways of being and the possibility of a different future is emerging in reality. Another, who is not trained, has taken on the role of teacher and is carrying out teacherly gestures to create spaces for these young people to encounter the call to their grown-up subject-ness through their Māoritanga and metaphors of birds, and they are responding to that call. The miracle is still in play.

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5. Ibid.
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7. Biesta (2017).
8. Hines, D. R. (1992). Presence: Discovering the artistry in relating. *Journal of Holistic Nursing*, 10(4), 294–305; Gibbs, C. (2006). *To be a teacher: Journeys towards authenticity*. Auckland, New Zealand: Pearson Education.
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Towards open knowledge: Opportunities and challenges for education

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It was with the advent of the public internet in the 1990s and the access it provided to a previously unimaginable wealth of information that the current open movement was conceived. Open knowledge, which lies at the heart of the open movement, refers to knowledge (here interpreted broadly to include data, content and information) that is free to use, reuse, remix, and redistribute without restrictions. As such, it represents an alternative to the intellectual property approach to the production and distribution of information, and a movement away from the individual ownership of information towards a more collective or distributed model.

The possibilities enabled by open knowledge, and in particular the ability to reuse and reconceptualise information without concern for copyright laws, have been embraced by research and development efforts, especially in the areas of science and technology. Open source models and associated applications – including open publishing, open access, open archiving, open repositories, and open data banks – coupled with Web 2.0 technologies, have seen linear models of knowledge production give way to more diffuse, open-ended, decentralised knowledge processes. This has enabled the emergence of distributed knowledge and learning systems that support cross-border international collaborations. Increasingly, the products and new knowledge developed through open source models rival the quality of those produced by proprietary efforts.

Since the early 2000s, the combination of new technologies and the new ways of licensing content and information associated with open knowledge have spurred new educational initiatives and approaches, often termed ‘open education’.¹ One of the earliest educational endeavours to utilise open knowledge was MIT OpenCourseWare, launched in 2001 as an initiative to put all of the educational materials from MIT’s undergraduate and postgraduate courses online, allowing anyone to access and use the materials free of charge. Other open education initiatives include open educational resources (OER), which are digitised materials that are ‘freely and openly available for educators, students and self-learners to use and reuse for teaching, learning and research’.² And more recently, MOOCs (massive open online courses) allow anyone with a digital device and internet connection to access learning opportunities, many of which are offered by elite universities.

Proponents of open knowledge in education believe it has the ability to democratise education by enabling anyone to access high-quality educational materials, regardless of location, background, prior qualifications or financial considerations. As such, open education initiatives could provide new ways of addressing significant challenges facing education, counteracting geographical barriers, facilitating collaboration with and between ‘experts’, enabling ‘universal’ access, and overcoming economic impediments. To date, open educational models primarily have been the domain of higher and further education. In school-level education, especially in New Zealand, open education and open knowledge is yet to make much of a mark. However, with the challenges currently facing the New Zealand school system, it is worth exploring the possibilities and potential offered by open knowledge and open education.

Financial constraints, an escalating teacher shortage, reports of increasing teacher workloads, a low-equity schooling provision with substantial inequities in opportunities and outcomes, as well as new demands such as a growing focus on globalisation and the (apparent) need for new skills, knowledge and expertise, represent major challenges for the New Zealand school system. While there is no such thing as a silver bullet in education, it is worth considering how open knowledge and open education might be positioned to address some of these challenges. The remainder of this chapter provides an initial exploration into the opportunities that open educational initiatives, in particular OER, open online courses and learning, and citizen science could bring to school-level education in New Zealand, as well as the potential pitfalls and limitations of these models.

Challenging the ‘egg-crate’ model of teaching and learning in schools

Knowledge sharing among teachers has long been constrained by the ‘egg-crate’ model of schools, where teachers work primarily in isolated classrooms with limited opportunities to discuss their practice or to collaborate on teaching strategies. According to Ann Lieberman and Lynne Miller, the isolation of teachers and teaching in individual classrooms has led to the development of ‘remote, oblique and defensively protective’ relationships between teachers, where privacy rules interactions and knowledge is not freely or openly available or shared.³ Furthermore, the ‘localness’ or context-rich nature of teaching and teacher knowledge, where what works in one classroom or school does not always neatly transfer to another classroom or school, also complicates knowledge sharing.

Open knowledge and more particularly OER have the potential to challenge the isolationist and individual approach to knowledge production and knowledge use in schools and to foster a more collaborative and collective approach to teaching and learning. The Cape Town Open Education Declaration (2008), a founding document of the OER movement, suggests that open education has the potential to ‘empower educators to benefit from the best ideas of their colleagues’ and to adopt ‘new approaches to assessment, accreditation and collaborative learning’.⁴ The emergence of technology and licensing that allows a resource to be reused, remixed and redistributed results in what Anderson has termed the ‘Long Tail’ phenomenon; the unlimited availability of resources and individual choice in how they will be utilised.⁵ OER provide access to a huge array of ready-made, teacher-created materials, whilst also maintaining the autonomy of individual teachers to (legally) repurpose and adapt the materials to suit their own contexts and needs.⁶

OER and the open educational practices they encourage provide a valuable means for connecting teachers and facilitating the sharing of their knowledge and ideas. They also have the potential to reposition teachers and the knowledge they create for, in and through their teaching practice, offering them the opportunity to collectively add to the professional project of teaching. The collaboration and collective knowledge OER can engender and the focus on collective rather than individual resources and knowledge for teaching challenges the interschool competition established in New Zealand since the advent of Tomorrow’s Schools. They instead suggest that resources and teacher knowledge should serve all students, teachers and schools by being openly available to all, and potentially could facilitate a shift in mindset away from seeing a teacher’s responsibility as just to the students in their classes and towards a responsibility for supporting all students in New Zealand.

While OER have the potential to facilitate distributed learning and knowledge production and to lighten the load for teachers by providing ready access to content and materials, their implementation also faces significant challenges. There are implicit tensions in OER for and by teachers. As Michael McShane explains:

[There] is a central tension that plagues the open-resources movement: teachers want free, high-quality resources, but the people who create them want to be paid for doing so. Creating high-quality educational content is not like editing a Wikipedia page. Yes, it requires expertise, but it also requires creativity and pedagogical smarts. Content must be sequenced and aligned with the learning goals articulated in state standards. It must be supported by activities, handouts, quizzes, PowerPoint slides, and so on. As any teacher will tell you, content development takes time.⁷

McShane identifies not only the time and considerable knowledge and expertise that goes into making high-quality teaching and learning resources (and the tension of creating and sharing resources effectively for free) but also that a single resource in and of itself is only of so much use to a teacher. The power of any teaching and learning resource is all the other factors that support its implementation – its alignment to particular learning needs and learning contexts, its relationship to what is taught immediately before and immediately afterwards, and its alignment to a teacher’s individual pedagogical style and approach.

The use of OER is further challenged by the huge number of resources available (by some estimates there are more than one billion pieces of educational content available in the open resources infrastructure⁸) and the resulting issues around ensuring the quality of OER, and the effective indexing of resources. This issue of how to vet and validate the knowledge teachers produce is not restricted to OER. As Harvard Graduate School of Education’s Catherine Snow explains:

Teacher practices get developed but there is no mechanism to distinguish and vet them. There is no way to elevate and replicate. Even if there is some evidence that something works, the chaos and lack of respect for teacher professionalism almost inevitably undercut this knowledge.⁹

Opening access, removing barriers

New technological infrastructure and digital technologies and the open education initiatives they support are, at least in theory, removing barriers to accessing learning opportunities. As Neil Selwyn observes: ‘The ever-expanding connectivity of digital technology is recasting social arrangements and relations in a more open, democratic, and ultimately empowering manner.’¹⁰ Indeed, it is now possible for anyone with a digital device and an internet connection to access a wealth of learning and educational materials that were previously inaccessible. Geographical, temporal and economic barriers that previously restricted access to educational opportunities have been diminished. Furthermore, open online learning is not only providing wide-scale access, but also enabling new approaches to learning and the repositioning – if not in practice then at least in theory – of learners, educators and institutions.

Learners increasingly have the flexibility to determine when, where and in what ways they engage, giving them greater control over their learning. This enables learning to transcend the boundaries of the school building and the school day. Take, for example, the ‘flipped classroom’ approach where students engage with content (typically access online) at home before using this content in a more hands-on, active and collaborative way during school lessons. Open knowledge and education also offers the potential for the greater personalisation of learning opportunities, enabling students to work at their own pace and potentially in non-linear ways.

While offering numerous opportunities, open online education also faces substantial challenges. Successful and effective large-scale online education is expensive and notoriously challenging to produce and deliver.¹¹ To cover these costs providers increasingly are turning to ‘freemium’ models, offering a reduced service free of charge but charging for the full product or experience. And even where access is truly open, the outcomes of a particular learning experience will differ considerably depending on the student and his or her ability to learn. The same factors that limit students’ ability to engage in offline learning also impact their ability to learn in online environments, leading to what Selwyn describes as ‘inequalities of participation’.¹²

Tressie Cottom argues that online systems get designed and configured to ‘the norm’ of a self-motivated, highly able individual who is ‘disembodied from place, culture, history, markets and inequality regimes’.¹³ That is, those who are most able to benefit from open knowledge and open education are people who have the social and educational capital to engage with the learning opportunities presented. So while open learning does break down multiple barriers to engagement and access, it does not, in and of itself, address barriers to participation in and with knowledge and learning that continue to plague our school system.

Citizen science: Promoting real-world participation

The merging of boundaries between schools and the real world has become an increasingly popular refrain in education. *The New Zealand Curriculum Update 26* states:

Twenty-first century learners need access to a wider range of resources and expertise than in the past. Educational professionals will need to collaborate with other people and groups who can provide access to specific kinds of expertise, knowledge, or learning opportunities. The community or wider public will also need to be on board with new thinking about education in order to support schools to become more future oriented.¹⁴

Expanding the boundaries of schools and engaging more closely with external experts and contexts provides students with access to new knowledge and forms of learning. Citizen science, an open knowledge initiative, provides an avenue for enabling students and teachers to engage with experts and opportunities outside of their immediate school context.

Citizen science refers to research collaborations between scientists and non-scientist volunteers, involving the collection and analysis of data and providing open access to these data. This has the potential to enhance the science education infrastructure in schools by promoting closer links with universities and research institutions, and

broadening the scope of the science curriculum. Citizen science provides school students with the opportunity to connect with experts from across New Zealand and the world, and to contribute in a meaningful way to advancing science. While the benefits of citizen science are undeniable, Michael Peters offers a reminder of the duties that come from involvement in open science initiatives:

An emerging challenge of citizen science is its deployment in education at all levels to promote participatory scientific practices integrating school, STEM education and environmental science and green studies at university to promote DIY science for local communities that encourages committed and objective, disinterested research based on rigorous and systematic data collection on the one hand, and, on the other, environmental responsibility for an action agenda—an indissoluble link carrying an ethical and political obligation to act on results.¹⁵

Connecting science education with real-world problems brings immense educational opportunities – as well as real-world ethical obligations.

Towards openness and participation

Open knowledge and associated open education initiatives offer considerable possibilities for school-level education in New Zealand. They provide the opportunity to participate in real-world learning and experiences, to collaborate with experts and colleagues from around the world, and to access to a wealth of resources and materials. There is much to applaud in the open movement and its democratising agenda, and the New Zealand school system and those involved in it would do well to consider how to make better use of the knowledge and opportunities it presents. In doing so, however, it is important not get swept away in the often uncritically enthusiastic rhetoric. While open education does provide (largely) free access to opportunities to learners, it is important to recognise that the financial costs of providing these opportunities and knowledge are still borne by someone or some institution.¹⁶ Similarly, while anyone is able to access open educational opportunities and to engage with and contribute to open knowledge, in reality it is those who already have the necessary knowledge, skills and expertise who are able to make best use of these. For open knowledge and open education to achieve their aims of opening both access and participation, it is necessary to overcome many of the barriers that continue to dog more traditional educational systems.

1. The origins of open education may be traced back to early distance learning enterprises that originated in the 18th century as correspondence courses using the postal system, and later utilised radio and television broadcasts, and more recently online learning. The first recorded instance of distance learning comes from Boston in 1728, when Caleb Phillips advertised private correspondence courses in the *Boston Gazette*. Correspondence education expanded extensively throughout the 19th century, and in 1969 the UK Open University became the first institution to deliver only distance learning, a model that soon spread to other countries, including Canada and Germany. The Open University also pioneered admission without qualifications and the concept of degrees awarded through modular source work.
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4. Cape Town Open Education Declaration: Unlocking the promise of open educational resources. (2008). Retrieved from <http://www.capetowndeclaration.org/read-the-declaration>
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6. It should be noted that the sharing of materials between teachers is not a new practice and that the majority of these materials are not OER. Further, teachers typically utilise materials made by others without referencing the original source.
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15. Peters, M. (2012). Citizen science and ecological democracy in the global science regime: The need for openness and participation. Unpublished paper, p. 3.
16. In the case of MOOCs, for example, it is primarily elite institutions and multinational corporations that dominate the market, leading some to claim they are attempting to colonise (or at least capture) the education market.



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