

Ignorance Is Not Bliss: Why knowledge matters (and why we may not have enough of it)

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It is not the natural state of humans to live in relatively free, democratic societies that tolerate difference. Because of this, we need education to protect and preserve these societies; to transmit important cultural knowledge from one generation to the next, and value our civilisation.

— Greg Ashman

Abstract

For most of history, only the wealthiest in society had the time and resources to pursue disciplinary knowledge. For everyone else, knowledge beyond daily experience was an unaffordable luxury. Nowadays, through the spread of literacy, everyone can explore knowledge of the world beyond their confines.

However, New Zealand may be taking knowledge for granted. For example, the New Zealand curriculum and national qualification (NCEA) both emphasise skills (or competencies) over disciplinary knowledge.

To try to get a handle on the state of knowledge in New Zealand, the Initiative commissioned a telephone survey. Its findings, reported in this research note, suggest a knowledge problem.

The government's recent announcement that New Zealand history will become compulsory in the school curriculum reveals that it agrees. But why stop at New Zealand history? What about teaching all children world history, music and chemistry?

For the sake of educational equity, it is time we had a national conversation about knowledge, and what all Kiwi children should learn.

Introduction

It takes 365 days for the earth to circle the sun. The Native Land Court was established to make it easier for Pakeha to purchase Māori-owned land. A car travelling at 40 km/h will cover 30 km in 45 minutes.

If you already knew these facts, you are unusual, both by historical and New Zealand standards.

For most of history, only the wealthiest had the time and resources to pursue disciplinary knowledge. For the rest of society, knowledge beyond daily experience was an unaffordable luxury. Accordingly, the ability to read and write was limited to the elite: noblemen (yes, only men) and clergymen (again, men). If you toiled for a living, your horizons were narrow.

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In 1820, only 12% of the world's population could read; today only 17% cannot.¹ This rise in literacy was a product of the Enlightenment, whose motto according to German philosopher Immanuel Kant was *Sapere Aude* (Dare to know).

The Enlightenment democratised education and knowledge. No longer was it the preserve of a privileged class (or, indeed, gender). Through the spread of literacy, knowledge was available to all.

We must never take this development for granted because it meant the public – men and women from different socioeconomic backgrounds – could explore the world beyond their confines. They could now master their destinies. They could participate more fully in social and political life.

Without the democratisation of knowledge, we would return to a time when an educated elite might rule over the masses. We would face declining democratic participation. And we would risk cementing social inequalities brought about by heritage, gender and wealth.

Given the progress humanity has made through the spread of education, it is astonishing how little disciplinary knowledge is valued today. Especially in New Zealand.

With the introduction of the National Certificate of Educational Achievement (NCEA) in 2002, and the New Zealand Curriculum (NZC) in 2007, New Zealand has all but abandoned the idea of a core knowledge-based curriculum. Instead, NCEA affords vast flexibility in course choice and assumes all learning attracts equal esteem.² NZC leaves all content decisions to teachers. Together, the NCEA and our curriculum have made schooling more flexible and “student-centred”, but at a cost.

International data from PISA (Programme for International Student Achievement) shows that since testing began in 2002, New Zealand's educational equity has worsened, and our 15-year-olds' reading and maths scores have been in constant decline. PIRLS (the Progress in International Reading Literacy Study) compares the reading ability of Year 5 students. In its most recent survey (2016), New Zealand ranked 33rd among the 50 participating countries.³ By comparison, England ranked 8th. More worryingly, Kiwi children's scores were significantly worse than the last time the test was administered, in 2011.

Declining performance in international assessments suggest something is wrong with education in New Zealand. Do we have a growing knowledge deficit? Have we sacrificed knowledge in education at the altar of flexibility?

In one field at least, the government has answered this last question with a resounding “yes”. In September, Prime Minister Jacinda Ardern announced that teaching New Zealand history would be compulsory for all secondary school students from 2022. This curriculum reset will establish the “key aspects of New Zealand history and how they have influenced and shaped the nation”.⁴

But what of other areas of disciplinary knowledge? Of world history, science and culture? Are New Zealanders not also concerned about the risk of gaps in their knowledge of the way the world works – both the physical and social? They should be. Even in the 21st century, knowledge is a pre-requisite for skills like critical thinking, social participation and developing one's identity.

In this research note, we provide a glimpse of where knowledge stands in 21st century New Zealand. We also want to trigger public debate about the role of knowledge in education.

To do this, we asked a representative sample of 1,000 voting adult New Zealanders some basic knowledge questions.⁵ The results reinforce the hypothesis that we have a knowledge problem. Future reports will investigate both its causes and its cure.

The poll

It is not a straightforward process to gain a handle on, let alone judge, the state of knowledge in any country. Elsewhere, longitudinal studies by organisations such as the Australian Academy of Science and the Pew Research Center in America have provided insights into changes in knowledge over time.

No equivalents exist in New Zealand, so the Initiative created a snapshot. Where possible, our survey was based on questions used elsewhere in the world to provide comparator data. Where equivalents did not exist, we devised questions of our own.

During May and June 2019, Curia Market Research conducted telephone surveys of a representative sample of 1,000 New Zealand residents aged 18 and over who were contactable on a landline or mobile phone.⁶ The full results of the survey, with breakdowns by gender, age, area type and deprivation decile, are available [online here](#).⁷ Table 1 summarises the results.

Table 1: Knowledge polling results

	Question	Correct answer	% of respondents who answered		
			Correctly	Incorrectly	Unsure
1	How long does it take for the Earth to go around the sun?	365 days, 364.25 days, a year or a sidereal year	53%	29%	18%
2	Do antibiotics kill viruses as well as bacteria?	No	67%	21%	12%
3	Did the earliest humans live at the same time as dinosaurs?	No	70%	15%	15%
4	In what year was the Treaty of Waitangi first signed?	1840	32%	37%	31%
5	Which country was the first to give all women the right to vote?	New Zealand	85%	3%	12%
6	Was Winston Churchill a real or fictional character?	Real	90%	2%	8%
7	Was the Native Land Court established in New Zealand to return land to Maori or to make it easier for Pakeha to purchase land?	to make it easier for Pakeha to purchase land	34%	35%	31%
8	In the sentence "Their house is large", how would you spell their?	their	80%	11%	9%
9	If a car travels at a constant speed of 40 kilometres per hours, how far would it travel in 45 minutes?	30 kilometers	48%	23%	30%
10	Imagine you put \$100 in a savings account that paid 2% interest. Assuming there were no fees or tax, how much money would be in the account after one year?	\$102	57%	18%	25%
11	If you left that \$100 in the same account for five years, how much money would be in the account after five years out of a) less than \$110, b) \$110 and c) more than \$110?	c) more than \$110	39%	25%	36%
12	What is the capital of Australia?	Canberra	81%	10%	9%
13	Can you name the seven continents?	Africa, Antarctica, Australia, Asia, North America, South America, Europe	44%	33%	23%

The final picture is mixed.

- 90% of New Zealanders (or 87% of Kiwis aged 18–30) knew that Winston Churchill was real (compared to only 80% of British teenagers)⁸
- 85% of New Zealanders knew New Zealand was the first country to give all women the right to vote
- 81% of New Zealanders knew the capital of Australia is Canberra, and
- 70% of New Zealanders knew the earliest humans did not live at the same time as dinosaurs (compared to 63% of Australian and 59% of American respondents).⁹

However, far fewer accurately answered some other questions:

- 53% of New Zealanders knew how long it takes for the earth to go around the sun (compared to 59% of Australian respondents)¹⁰
- 44% could name the seven continents
- 32% could name the year in which the Treaty of Waitangi was signed
- Fewer than half of adult New Zealanders could correctly calculate how far a car moving at 40 km/h would travel in 45 minutes, and
- Only 57% could work out that \$100 invested at 2% would leave the investor with \$102 at the end of the year (compared with 65% of adults across all OECD countries and 80% in Finland and Norway).¹¹

We know there may be disagreement about the relevance of some of the survey questions. Is it really necessary to know the year the Treaty of Waitangi was signed? Why should we learn to name the seven continents, or how to calculate distance from time and speed?

We also know that education is about concepts and processes like problem-solving as well as facts. A 13/13 score would not indicate someone has had a great education.

Even though we might debate the nature of these questions, we hope there is a consensus that to participate meaningfully in society, some basic knowledge of the world is required.

A society cannot shape its future if it does not understand its past. That is why we need knowledge of history and literature. We cannot understand our place in the world without geography and art. We cannot grapple with the opportunities and risks of technology without knowledge of science.

To converse meaningfully with each other, and evaluate the performance of our political leaders, we need to have knowledge that takes us beyond our daily lives.

To grow into active, engaged citizens who can think critically about the wider world, children need to know about language, science, maths and culture (including but not only their own). However, only 44% of New Zealand adults can name the seven continents, let alone locate Afghanistan or South Korea on a map – countries where our defence force has personnel in the field. Issues like national defence, along with migration and trade, are all critical to New Zealand's role in the world. But how can we expect voting-age adults to engage with New Zealand's geopolitical challenges – and how our nation should respond to them – if they do not even know where in the world the challenges lie?

In our poll, a third of adults did not know whether antibiotics are effective against viruses. Only 53% knew that it takes a year for the earth to circle the sun. Yet to participate in the democratic process, all New Zealanders need to know some basic science. How else can they engage meaningfully with

(for example) the “anti-vaccine” movement, or New Zealand’s response to the challenge of climate change? How should they form an opinion on banning nuclear power or genetically modified crops? To engage on these and other issues requires a basic understanding of the physical world – of how our oceans and atmosphere interact, of plants and the carbon cycle, and of the scientific knowledge that can spark curiosity.

Our poor grasp of maths is also concerning. Basic arithmetic is critical for personal financial literacy. It is difficult to understand mortgages, savings and investments without the mathematical keys. But knowledge of maths goes beyond finance to everyday life. Try renovating your house, baking a cake or calculating medicine doses without basic maths. It is true that the 20th century provided us with calculators, but if you do not understand maths you are poorly placed to check your electronic answer. Without basic maths, much of tertiary learning and more productive, higher-paid work is foreclosed to Kiwi school-leavers. Lack of basic maths looms as an ominous problem for the future of New Zealand.

If geography, science and maths are important, history and culture may be even more so. We live in an age of prosperity, unparalleled in history, but we still face social, economic and environmental challenges. Inequality, trade wars and climate change all threaten wellbeing and prosperity. So how did we get here? What can history teach us? What might just solutions entail? To engage on these questions requires knowledge of our past and an understanding of our social, economic and cultural heritage. Yet our survey showed limited knowledge of even basic facts about New Zealand history.

Knowledge and skills

Unfortunately, facts are out of fashion in New Zealand education. Instead, the emphasis is on skills – especially 21st-century skills like problem-solving, critical thinking, and creativity.

We might debate whether these skills are any more important this century than they were in the past; either way, we must agree it would be difficult to think critically about the Hong Kong riots without knowing something about Hong Kong’s history and geography. It would be equally difficult to evaluate policies on use of plastic without a basic knowledge of biochemistry and economics.

As Daisy Christodoulou explains in her book *Seven Myths About Education*, while the word skill is:

... excellent at describing a phenomenon we all recognise... it is much less good at explaining how we have acquired or can acquire that property... the phenomenon of skill... is explained by the knowledge we have in long-term memory.¹²

Whether you are building a house, playing the violin or deciding to immunise your child, knowledge is essential, because there is not a generic skill of problem-solving or critical thinking. As anyone who has lifted the bonnet of a broken-down car knows, problem-solving skills do not exist in the abstract. Teaching children skills has confused the ends and means of education.

Cognitive psychologist Daniel Willingham puts it succinctly:¹³

Data from the last thirty years lead to a conclusion that is not scientifically challengeable: thinking well requires knowing facts, and that’s true not simply because you need something to think about. The very processes that teachers care about most – critical thinking processes such as reasoning and problem solving – are intimately intertwined with factual knowledge that is stored in long-term memory (not just found in the environment).

Skills are not separate from knowledge. Instead, improving one's skill depends on accumulating more knowledge. You become more skilled at tennis by practising so many times that your brain automates the knowledge of exactly what your hand, arm and body must do to create each shot. You become more skilled at writing by accumulating knowledge of your topic (and related topics), vocabulary, grammar, metaphor and writing styles. You become more skilled at thinking by accumulating knowledge of the subject and all related subjects, of concepts in those subjects, and of how knowledge is created in them.

'Higher order' skills like evaluating and critical thinking may be more prized than 'lower order' knowledge recall, but they are inescapably interwoven. Thinking – organising information, making connections, adapting concepts and narratives – depends on knowledge.

The government's announcement in September about the compulsory teaching of New Zealand history from 2022 is an acknowledgement of the shortcomings in New Zealand's national curriculum; by emphasising skill, it has deprived too many Kiwi children of the knowledge of our shared national history needed to engage critically with contemporary New Zealand challenges.

As Leah Bell, one of the students who petitioned for New Zealand history to be made compulsory, explained following last month's announcement:¹⁴

We hope that people will take pride in learning our history and even in the dark moments of bloodshed, of assaults, of war, they will see the beautiful connections... even though we have a brutal past, understanding who we are is actually what brings us together. **It is a lack of knowledge that makes a fearful arrogance.** (Emphasis added)

Teaching New Zealand history will make future generations less ignorant of the shared history that has brought our nation together. But what of our shared history of Western and Eastern civilisations? What of our shared inheritance of liberal democracy, art and culture? Should Kiwi students also learn what has shaped the modern world? The unprecedented forces of globalisation that have brought nations and peoples together? What binds us and divides us?

If students will benefit from a national curriculum containing specific knowledge of New Zealand history, why would they not also benefit from specific knowledge of science, culture and language?

Where to from here?

This research note gives a glimpse of how knowledge is regarded in New Zealand. It also gives a glimpse of what Kiwis know and do not know.

Of course, our poll is not scientific proof of shortcomings in our national curriculum. As we acknowledge, there may also be disagreement about the relevance of some of the questions we asked.

Nevertheless, this research note raises questions about knowledge in education, and whether some basic standards of knowledge are needed for New Zealanders to participate fully in society. These are important questions – especially for anyone interested in social justice.

The "Matthew effect" describes the devastating phenomenon at the heart of accumulating knowledge – that those who have more gain more. Named after the line in Matthew's Gospel: *To them that hath shall be given*, the Matthew Effect does much to explain why those who know less when school begins too rarely catch up. Unless teachers make a concerted effort to close the gaps in disciplinary knowledge that exist between school entrants, the gaps invariably grow.

New Zealand's education system is notorious for its inequity of outcomes, despite successive governments' well-meaning rhetoric and intentions about addressing inequity.

The Matthew Effect's simple insight has profound implications for what schools, particularly primary schools, should teach. And yet, in New Zealand, we have almost no idea what any schools, let alone primary schools, teach.

If we care about closing the gap in educational achievement, then the fact that 61% of New Zealand adults cannot answer the simplest question about compound interest should alarm us; the fact that 21% think antibiotics kill viruses as well as bacteria should be cause for concern; and the fact that 56% cannot name the seven continents should make us question our curriculum.

In a future research report, The New Zealand Initiative will explore whether New Zealand's national curriculum is fit for purpose. Is it helping close the gap in educational achievement or widening it? Do children in different parts of New Zealand, or from different socioeconomic backgrounds need to know different knowledge? Or should certain knowledge be blind to culture, ethnicity and geography?

As a bicultural nation with a colonial past whose ongoing legacy is playing out in our troubling national statistics, it will never be easy to answer these questions. But if all our children are to have an equal chance to prosper in 21st-century New Zealand, we need to have the difficult conversations to decide whether there is a safety net of disciplinary knowledge all children should receive.

If there is logic behind the Prime Minister's commitment to do this with New Zealand history, then it applies elsewhere in the curriculum too.

Such a curriculum and associated conversations will be messy, encumbered and wanting, but they will also embody what it means to be human and a citizen of New Zealand.

Endnotes

- ¹ Max Roser and Esteban Ortiz-Ospina, "Literacy," Our World in Data, Website.
- ² Briar Lipson, "Spoiled by Choice: How NCEA Hampers Education, and What it Needs to Succeed" (Wellington: The New Zealand Initiative, 2018).
- ³ Ina V.S. Mullis, Michael O. Martin, Pierre Foy and Martin Hooper, "PIRLS 2016 International Results in Reading" (Boston College, TIMSS & PIRLS International Study Center, 2017).
- ⁴ Jacinda Ardern, "NZ history to be taught in all schools," Media release (Wellington: New Zealand Government, 12 September 2019).
- ⁵ The full survey and results are available on our website.
- ⁶ Based on this sample of 1,000 respondents, the maximum sampling error (for a result of 50%) is +/- 3.1%, at the 95% confidence level.
- ⁷ Curia Market Research, "[General Knowledge Poll](#)," (Wellington: New Zealand, May 2019)
- ⁸ Aislinn Simpson, "Winston Churchill didn't really exist, say teens," *The Telegraph* (4 February 2008), citing a poll by UKTV Gold.
- ⁹ Nick Wyatt and David Stolper, "Science Literacy in Australia," (Australian Academy of Science, 2013); California Academy of Sciences, "American Adults Flunk Basic Science," *ScienceDaily* (13 March 2009).
- ¹⁰ Nick Wyatt and David Stolper, "Science Literacy in Australia," op. cit.
- ¹¹ OECD, "OECD/INFE International Survey of Adult Financial Literacy Competencies" (Paris: OECD Publishing, 2016).
- ¹² Daisy Christodoulou, *Seven Myths About Education* (London: Routledge, 2014), 79–80.
- ¹³ Daniel Willingham, *Why Don't Students Like School?* (San Francisco: Jossey-Bass, 2009), 28.
- ¹⁴ Ministry of Maori Development, "A hope for the history of Aotearoa," Website (13 September 2019).