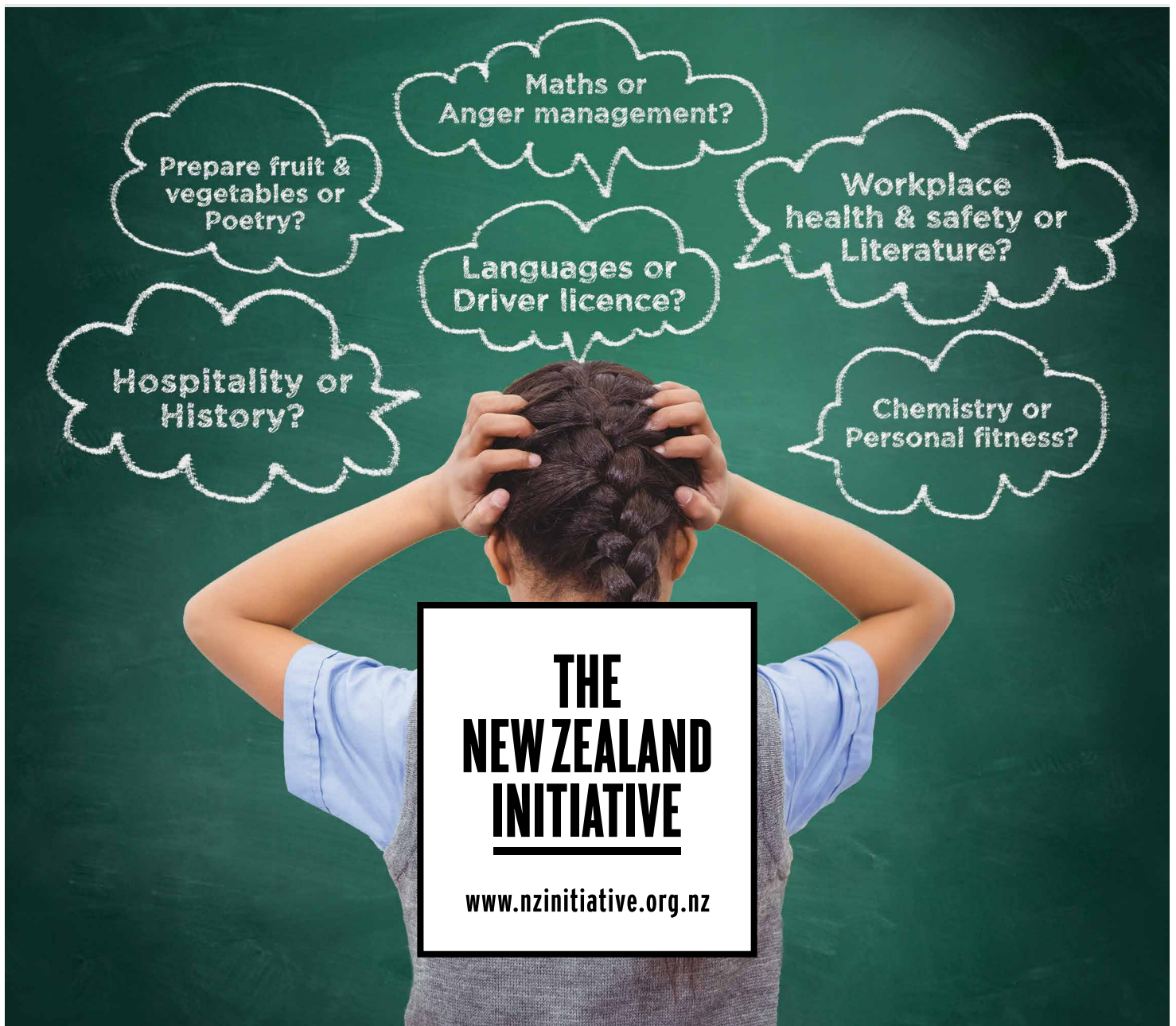


SPOILED BY CHOICE

How NCEA hampers education,
and what it needs to succeed

Briar Lipson

Foreword by Judie Alison



Prepare fruit &
vegetables or
Poetry?

Maths or
Anger management?

Workplace
health & safety or
Literature?

Languages or
Driver licence?

Hospitality or
History?

Chemistry or
Personal fitness?

**THE
NEW ZEALAND
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About the New Zealand Initiative

The New Zealand Initiative is an independent public policy think tank supported by chief executives of major New Zealand businesses. We believe in evidence-based policy and are committed to developing policies that work for all New Zealanders.

Our mission is to help build a better, stronger New Zealand. We are taking the initiative to promote a prosperous, free and fair society with a competitive, open and dynamic economy. We develop and contribute bold ideas that will have a profound, positive, long-term impact.

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About the author



Briar Lipson is a Research Fellow specialising in education. Before joining the Initiative she was a Maths teacher and Assistant Principal in London, where she also co-founded the Floreat family of primary schools. Briar has worked for International Education Trust CfBT, and the Westminster think tank Policy Exchange. She holds a Masters Degree in Economics from the University of Edinburgh.

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Finally, I would like to thank all the many people who have reached out to welcome me and share their experiences of New Zealand schooling, since I arrived. Of course, responsibility for all views expressed and any errors and omissions lies with me.

Foreword

It is a pleasure to have been asked to provide a foreword for this NZ Initiative publication on the NCEA.

Briar Lipson's analysis demonstrates the benefits of a fresh and highly intelligent look at our national school qualification system. In my discussions with Briar about successive iterations of the report, I have been most impressed by the incisiveness and breadth of the questions she has asked, and her willingness to take into account a wide range of evidence. Her understanding of the qualification and its complexities is impressive, despite her being a relative newcomer to our system.

This report makes a courageous challenge to the NCEA which needs to be considered seriously. It argues that there are critical flaws in the design of the qualification that are having negative impacts on equity of outcomes for our young people, and that these must be addressed through the 2018 review of NCEA.

These flaws stem primarily from decisions made in the early years of developing the qualification. These decisions prioritised flexibility and inclusivity over comparison of candidates, and ruled out value judgements about different kinds of learning. She argues that the notion of "parity of esteem" that underpins the whole Qualifications Framework is flawed and has had negative consequences for those students who are already disadvantaged in our education system.

As someone who might be included among Briar's definition of "NCEA's originators" (p.30), having been continuously involved in PPTA's work with the Ministry and NZQA from 1997 until today, I might be expected to want to



defend the qualification. However, my knowledge of the realities of how the qualification is being implemented makes me very aware that the compromises made in developing the qualification have resulted over the years in a range of unintended consequences.

An exacerbating factor has been government interference in the qualification that has incentivised the wrong kinds of behaviours in schools. The worst example of this was the setting in 2012 of the Better Public Services target of 85% of 18 year olds achieving Level 2 NCEA by 2017. In a standards-based system with significant internal assessment available, such a numerical target inevitably drove schools to prioritise credits over learning. Briar points to the impacts of this policy in terms of the inequitable curriculum offered to some students.

This is an important report. While I don't agree with all of its conclusions and recommendations, I absolutely support the need for us all to be open in 2018 to a thorough rethink of our national qualification, and this report will make a major contribution to that.

Judie Alison
Advisory Officer (Professional Issues),
Post Primary Teachers' Association (PPTA)

Executive summary

Education is about learning. However, as assessment expert Alison Wolf explains:

... formal education is also, and intrinsically, about selection and certification... Your skills are crucial in determining your promotion and success in life – but it is the credential that gets you on the shortlist and through the door.

Wolf, A. (2008)

This is why national assessments exist. In New Zealand it is called NCEA – the National Certificate of Educational Achievement.

History and evolution

NCEA was born out of discontent with the former university-dominated system. Introduced between 2002 and 2004, it marked not just a change but an assessment revolution.

NCEA changed the way grades were determined, from comparing students against one another (norm-referencing), to comparing them against established standards.

It all but abandoned the idea of a core curriculum, as well as the reality that subjects are valued differently. Instead, NCEA was built to allow vast flexibility in course choices and on the principle of equal esteem.

To achieve flexibility, NCEA divided all subjects into multiple, smaller ‘standards’ – a process known as ‘chunking’. Many standards could be internally assessed, thereby eliminating the traditional ‘terminal’ exam. The logic was to empower schools and teachers to develop cross-curricular courses, so students could demonstrate specific skills or knowledge, even without mastering a whole subject. This way schooling would become more child-centred, practical, relevant and engaging to the full spectrum of students.

Such was NCEA’s promise: but its flexibility has been bought at unquantified cost.

Costs to students

Ministry data shows that between 2001 and 2016 the difference between the percentage of Māori and All students achieving Level 3 (or its equivalent qualification) has narrowed.

However, in the more meaningful benchmark of *University Entrance*, the gap has grown even wider.

International PISA data shows that since testing began in 2002, New Zealand’s educational equity has worsened and our 15-year-olds’ reading, maths and science scores have almost constantly declined. This stands in stark contrast to the same period’s NCEA data, which shows ever improving performance and rising equity.

If NCEA data can paint a picture of constant improvement, while almost all other measures expose decline, there is reason to believe we have a problem.

Added to this, 2014 research by the Tertiary Education Commission found that within a sample of 800 Year 12 students with NCEA Level 2, 40% failed to meet an international benchmark for functional reading and 42% failed it for numeracy. If NCEA, even at Level 2, does not signal even the most basic functional skills, then what is the point of having it?

In most developed countries, students are assessed on a core curriculum (a safety net) of academic subjects at age 15 or 16.

By comparison, NCEA’s only core requirement is for some loosely defined Level 1 credits in literacy and numeracy. Beyond this all subjects – from meat processing to mathematics – are valued equally.

This means well-advised or motivated students can still achieve a broad and valuable education. However, for less motivated students, or those whose parents and teachers do not provide sensible counsel, NCEA also offers a plethora of ‘safer’ alternatives. These will maximise

NCEA success by avoiding academically challenging content.

With pressure on teachers and schools to drive up NCEA pass rates, some students may even be *encouraged* to make these ‘safer’ choices.

This way, NCEA’s flexibility ensures almost all students achieve a qualification, and creates glowing headline figures for government and schools. However, the downside is that NCEA also masks huge variation in students’ achievements; widening disadvantage by hiding it behind an alluring facade.

Cost to teachers and teaching

NCEA affects the most important interaction in schooling: that between teacher and student.

The chunking of subjects into smaller units enables course flexibility, but it also increases assessment volume. Because most NCEA assessment now happens in class (internally) teachers’ workloads are increased. This has negative knock-on effects for teaching and learning.

NCEA also encourages ‘teaching to the test’. This is the practice of coaching students in the detail of exam questions and selected content, to boost their short-term performance in assessments rather than their long-term learning. Some teaching to the test is inevitable with high stakes assessments. However, at least three features of NCEA’s flexible design exacerbate the practice.

Cost to end-users

Many employers are vexed by NCEA’s complexity, and disappointed by school leavers’ skills.

University Entrance does restrict NCEA’s flexibility. However, too many students miss out because they fail to realise the implications of their choices before it is too late. Universities also reverse-engineer NCEA data to create crude, yet life-defining rankings.

Recommendations

The recommendations in this report will raise expectations and equity by creating a safety-net of core subjects all students must master. They will reduce teachers’ workloads and the volume of assessment, reduce the opportunities and incentives to teach to the test, and improve teaching and learning.

Recommendation 1: Raise English (and Te Reo) and maths requirements: The government should amend NCEA so that achievement at Level 1 or higher requires a minimum number of Level 1 credits in the core subjects of English (or Te Reo) and maths. This new list of eligible standards should replace the current literacy and numeracy requirements. It should also demand levels of mastery that ensure all students with NCEA also meet international benchmarks for functional literacy and numeracy.

Recommendation 2: Expect a broader core of subjects: The government should signal higher expectations of the breadth of core subjects all students must master in school (two suggestions as to how this might be achieved are given in the concluding chapter).

Recommendation 3: Reduce the number of standards: The government should reduce the number of standards so that within a particular subject there is minimal to no choice and each standard covers a bigger and broader set of skills and knowledge (there is far less ‘chunking down’). The optimal size and number of standards may vary for different subjects, to be determined by subject and assessment experts. However, broadly the ambition might be set to reduce the number of standards in a subject at each level from 6–8 to 1–3.

Recommendation 4: Make it harder to teach to the test: The New Zealand Qualifications Authority (NZQA) should rely more heavily on the reassurance provided by elements of norm-referencing (e.g. PEPs and the cut score procedure during grade score marking) to move away from such close matching of external assessment to past assessments and specifications. Instead, they should inject elements of ‘surprise’ that encourage

teachers to teach the breadth of their subject's curriculum, rather than to its assessments. Reference tests could also be deployed to help examiners identify national level changes in students' performance over time.

Recommendation 5: Reduce reliance on internal assessment: The government should reduce NCEA's reliance on internal assessment, so it is used only where external assessments cannot capture performance in essential areas.

Recommendation 6: Use Comparative Judgement software: NZQA should use Comparative Judgement (CJ) software to improve the reliability and efficiency of the processes available to judge external and internal assessments. CJ would also better capture genuine quality in essay-type assessments, and equip assessors to ask more open-ended and creative questions.

Recommendation 7: Commission independent analysis: The Ministry of Education should openly evaluate NCEA's effects by commissioning and publishing independent analysis (various suggestions are given in the final chapter).

Recommendations 1–5 trade some of NCEA's flexibility for higher equity and standards. In the short term they may generate a *drop* in NCEA achievement. Because of this adopting them will require political courage and public support.

However, in the medium and long-term these recommendations will finally establish NCEA as a credible qualification, and raise expectations and outcomes across the board.

This report is published to coincide with the launch of the Ministry of Education's statutory review of NCEA. It will be followed in due course by a sequel on the New Zealand Curriculum.



Introduction

Your true value depends entirely on what you are compared with.

– Bob Wells

It is a complex endeavour to define a vision for education. That’s why national assessments matter: because they interpret and explicate a country’s vision. They cut through the abstract thinking to clarify what is valued.

New Zealand’s national qualification is the National Certificate of Educational Achievement (NCEA). It was introduced between 2002 and 2004, and certain features of its design mean it is an outlier internationally.

According to headline NCEA data, the performance of New Zealand upper secondary students has improved dramatically since 2004.

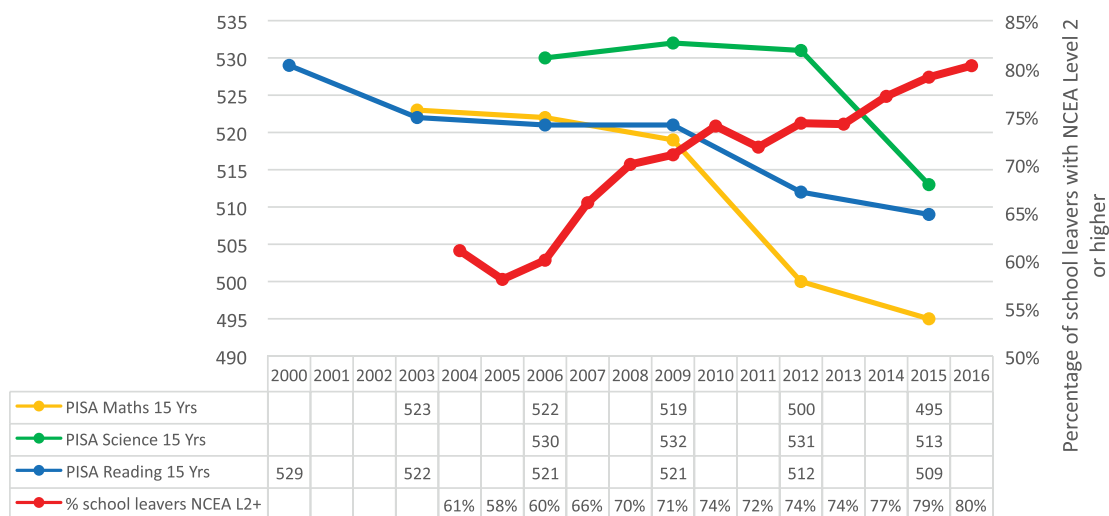
In contrast, the OECD’s Programme for International Student Assessment (PISA) data tells a markedly different story. Since the OECD began testing 15-year-olds in reading, maths and science in 2002, New Zealand’s ranking and absolute scores have been in almost continual decline (see Figure 1).

This disparity is generally said to exist because PISA measures different features from NCEA. This is partly true: PISA tests proficiency in maths, reading and science, while NCEA’s reach is far broader. However, literacy and numeracy are compulsory requirements for NCEA. English, maths and science are also compulsory parts of the curriculum up to Year 10 (when children are aged 14 or 15). If our national assessment system cannot help us infer even the most basic trends in the reading, maths and science performance of our upper secondary students, then what is the point of having it?

Around the world (and previously in New Zealand), national end-of-school assessment frameworks exist to create shared-meaning; they equip employers, universities and other end-users to compare school leavers. They also communicate to teachers and students what types of learning are valued.

Data from national assessments also equip teachers and students to compare their performance with others nationally; researchers to compare the relative performance of different pedagogical and curricular approaches; and

Figure 1: PISA and NCEA Level 2+ performance in New Zealand (2000-16)



Source: Education Counts, Annual Reports 2004–15, Website; Education Counts, “PISA 2015 – New Zealand Summary Report,” Website.

parents, boards of trustees, and governments to hold schools to account.

Elsewhere in the world, these purposes are widely accepted and valued, but in New Zealand things are different. NCEA is not primarily designed to enable end-users to distinguish between candidates or to communicate the relative value of different learning.

Instead, it is designed to provide sufficient flexibility for all students to leave school with recognition of proficiency in at least some areas of learning. In all but the most extreme cases, NCEA achieves this aim, but as a result it is constrained in achieving other objectives expected of a national assessment.

The demands placed on assessment systems are acute and diverse. There is no one perfect system. Often the conflicts are intractable. For these reasons, the principal purpose should be made clear.

According to the New Zealand Council for Educational Research (NZCER), which has been evaluating NCEA since its inception:

NCEA confounds the long-established tradition that high-stakes assessments will sort students according to ability levels, and that only some can succeed. NCEA has a more inclusive orientation, having been designed to allow meaningful learning gains of all students to be credentialed.¹

New Zealand's economic, educational and social history provides context for why NCEA prioritises flexibility and inclusivity.

NCEA was born out of discontent with the old trio of School Certificate, Sixth Form Certificate, and University Entrance (UE)/Bursary. As more and more students chose to stay in school beyond age 15, the focus on academic subjects, and the arbitrary cap placed on success, became increasingly

problematic. By the time NCEA was introduced in 2002, there was broad support for change.

But NCEA was not just a change, it was a revolution.

- NCEA ruled out any form of norm-referenced assessment in favour of standards-based assessment. Standards-based assessments determine grades against established criteria. Norm-referenced assessments determine grades compared to peer performance.
- NCEA divided all subjects into several smaller standards. The idea was that students could show specific skills or knowledge without mastering a whole subject; schools and teachers could develop innovative courses that cut across traditional subjects; and schooling could become more child-centred, practical, relevant and engaging for all students. It was also hoped that greater transparency about student learning would benefit end-users (employers and universities).
- NCEA brought the certification of vocational and academic learning under one umbrella. This, in theory, granted 'parity of esteem' to courses in everything from filling food containers to applying geometric reasoning.

Each change put New Zealand into problematic and internationally uncharted territory.

And as Paul Black, an international authority on assessment, pointed out in his 2001 evaluation of the Ministry of Education's plans for NCEA:

These of proposals constitute an ambitious attempt to set up a truly unified national system. I judge that New Zealand will be one of the leading countries in the world, if not the leading country, if this approach can succeed, even although I shall argue below that it has significant deficiencies which will have to be tackled in time.²

¹ Cathy Wylie and Linda Bonne, "Secondary Schools in 2015: Findings from the NZCER National Survey," Chapter 3: "Working with NCEA" (Wellington: NZCER Press, 2016), 28–29.

² Paul Black, "Report to the Qualifications Development Group, Ministry of Education, New Zealand on the proposals for development of the National Certificate of Educational Achievement" (Wellington: Ministry of Education, 2000), 1.

But according to Judie Alison, when NCEA was introduced in 2002, “Few of his [Black’s] recommendations were actioned.”³

Twelve years later, in 2014, the Tertiary Education Commission (TEC) examined the literacy and numeracy skills of New Zealand students and found:⁴

- only NCEA at Level 3 was predictive of operating at international benchmarks for functional literacy and numeracy;
- only 49% of a sample of Year 11 students with NCEA Level 1 achieved the international reading benchmark, and 53% the numeracy benchmark; and
- among a sample of Year 12 students with NCEA Level 2, the numbers were only a little higher: 60% achieved the benchmark in reading and 58% in numeracy.

If the teaching and learning for NCEA does not ensure students are functionally literate and numerate, and worse still, sends them into the world thinking they are, then there is reason to believe we have a problem.

This year marks the first time NCEA will be formally reviewed by its owner, the Ministry of Education. It is appropriate therefore that its impact and design flaws are identified and understood – and then addressed. This report does this as follows.

Chapters 1 and 2 explore NCEA’s history and reality today. Chapter 3 evaluates the impact of NCEA on students’ outcomes and educational equity. Chapter 4 looks at how NCEA affects teachers and teaching. Chapter 5 explores how NCEA data is used by employers and universities. The final chapter sets out conclusions and recommendations.

The second and final report in this series will look at the New Zealand Curriculum (NZC) and its consequences for learning in our schools.

Students, teachers, unions, assessors, academics and policymakers continue to work tirelessly, despite a problematic design, to make NCEA work for New Zealand. We owe it to them, and to future students, to be honest about our national qualification.

³ Judie Alison, “Mind the Gap! Policy Change in Practice: School Qualifications Reform in New Zealand, 1980–2002,” Unpublished PhD thesis (Palmerston North: Massey University, 2007), 82.

⁴ Gill Thomas, Michael Johnston, and Jenny Ward, “Alignment of Literacy and Numeracy Measures Research for the Tertiary Education Commission” (Wellington: Tertiary Education Commission, 2014).



Chapter 1

History of NCEA

Before examining NCEA, we need to understand its history, Whakapapa,⁵ and the social and economic ideas that influenced its design.

As Bali Haque, former deputy chief executive of the New Zealand Qualifications Authority (NZQA), explained in 2014:

NCEA was not really ‘introduced’ at all. It evolved, rather tortuously, out of a myriad of political compromises engineered by the Ministry of Education and NZQA in an attempt to satisfy two broadly opposing views in the sector and the nation.⁶

More than 30 years previously these two opposing views had been summarised in a Post Primary Teachers’ Association (PPTA) position paper, which acknowledged that teachers were in two camps on assessment. Those who wanted radical reform viewed schools as “agents of social change” that could “encourage the development of a more cooperative and caring society.”⁷ The other camp was content with the status quo, believing that the primary purpose of schooling was to “prepare students to adjust to, rather than question the existing social order.”⁸

Teachers were divided over the fundamental purpose of their work, and the disagreement extended to assessment.

The reforming camp regarded assessment as a mechanism to achieve social change. To the others, assessment existed to equip universities and employers to compare students from Northland to Invercargill.

Haque outlined some beliefs that motivated the reformers. Summarised, they are:⁹

1. Assessment should be about what students know and can do, not how they rank;
2. Internal assessments are fairer because teachers can better ensure that assessments reflect classroom teaching. External, time-bound exams are artificial and unfairly disadvantage certain learners;
3. The distinction between academic and vocational subjects is not ‘real’ or ‘relevant’; and
4. Studying traditional academic subjects is less likely to engage students than practical opportunities to apply academic knowledge.

Hindsight, and an understanding of assessment, shows how each of these beliefs is problematic. However, at the time, the pernicious effects of the old system, combined with New Zealand’s growing pains in the 1970s, secured an appetite for reform.

⁵ Whakapapa, or genealogy, is a fundamental principle in Māori culture and its recitation a critical element in establishing identity. A person reciting their whakapapa links themselves to land and tribal groupings and their power. Wikipedia, “Whakapapa,” Website.

⁶ Bali Haque, *Changing Our Secondary Schools* (Wellington: NZCER Press, 2014), 88.

⁷ Post Primary Teachers’ Association (PPTA), “Association Assessment Policies,” HX 83/9, 4/2/83 (1983), cited in Judie Alison, “The NCEA and How We Got There: The Role of PPTA in School Qualifications Reform 1980–2002,” *New Zealand Journal of Teacher’s Work* 5:2 (2008), 119–138, 124.

⁸ Ibid.

⁹ Bali Haque, *Changing Our Secondary Schools*, op. cit. 88–91.

Growing discontent with the old assessment system

Before NCEA, Years 11, 12 and 13 (Fifth, Sixth and Seventh forms) were assessed through:

- School Certificate in Fifth Form (Year 11);
- University Entrance (UE) and Sixth Form Certificate in Sixth Form (Year 12);¹⁰ and
- University Bursary in Seventh Form (Year 13).

The entire system was based on rankings and geared to selecting students for entrance to university.

School Certificate was designed to fail around half the entrants.¹¹ This had long been accepted because only a minority of students stayed on in school beyond age 15, and even fewer went to university.

However, the 1970s and 1980s saw rapid changes in the economy. Where most New Zealanders had worked in farming, fisheries, forestry and small-scale manufacturing, new industries now required relatively few but highly skilled workers. During the 1970s, economic shocks also caused a dramatic rise in unemployment, especially among the young and unskilled.

Students responded by staying in school. This put pressure on secondary education to remove the arbitrary cap on success and recognise the achievement of a far greater range of students.¹²

Many educators also objected to the way the qualification system valued only a narrow academic curriculum, failed to reflect New Zealand's unique cultural heritage and identity, and constrained teachers' professional autonomy.

As far back as 1974, the report of an Education Development Conference blamed New Zealand's qualification system for the widespread failure of students and restricting the curriculum. It pointed to the emotional effects of 'failure' on pupils and said most teachers would welcome change.¹³

The report also recommended School Certificate gradually become internally assessed.

The relative merits of internal and external assessments will be covered in detail in the second report of this series. However, some common justifications for preferring internal assessments include:

- External assessments usually involve competitive, time-bound exams sat in exam halls. This environment is unnatural and unfair, particularly for already disadvantaged students.¹⁴
- Internal assessments give teachers more flexibility and professionalism in their classroom practice by equipping them to accredit a wider range of skills than is possible in a traditional exam.
- Teachers should be trusted to make important judgments about students.
- Internal assessment promotes more student-centred teaching and learning, which many regard as an inherent good.

By the mid-1980s, the Department of Education's Committee of Inquiry into Curriculum, Assessment and Qualifications was unanimously supporting the introduction of an entirely internally assessed system in Forms 5 and 7 based on 'standards' rather than 'norm-referencing'.

¹⁰ Sixth Form Certificate was introduced in 1974 to eventually replace UE and provide a more comprehensive range of subjects.

¹¹ Bali Haque, *Changing Our Secondary Schools*, op. cit. 88.

¹² Mark Sheehan, et al. *NCEA in Context*, op. cit. 16.

¹³ Educational Development Conference, Working Party on Improving Learning and Teaching, "Maori education: A report prepared for the Working Party on Improving Learning and Teaching of the Educational Development Conference / [by a study group]" (Wellington: 1974), cited in Judie Alison, "Mind the Gap!" op. cit. 126.

¹⁴ In portfolio subjects like art, externally set and marked assessments may be completed outside of time-limited, exam-hall conditions.

Box 1: NCEA's predecessors: School Certificate, Sixth Form Certificate, and Bursary

School Certificate: Fifth Form (Year 11)

The School Certificate exam was introduced in 1945 for the end of Fifth Form. Designed as an entrance qualification for public service or the business sector, it was also a requirement for those wanting to attempt UE. Students needed a total score of 200 from four subjects, with a minimum of 30 in English.

Students who failed could repeat Fifth Form.

From 1968, single-subject passes were enough to remain in school, though the emphasis on four or more subjects, including English, remained. Some students still left school when they turned 15 and never sat School Certificate.

School Certificate was predominantly externally assessed. It was norm-referenced, which meant the same proportions of the grades A–E were awarded each year in each subject. A grades required marks of 80–100%, B grades 65–79%, and C grades 50–64%.

Because it was (and still is) impossible to keep exam difficulty the same from year to year, School Certificate marks were scaled up or down to ensure the agreed proportions of students achieved each of the letter grades.

To ensure students were not discouraged from taking subjects perceived as harder, like Latin, French and physical science, scaling was carefully calculated *across* different subjects.

Although justifiable, this cross-subject scaling accentuated the hierarchy of subjects that already existed due to the streaming of students. For example, in 1980 the pass rates for Latin and French were 87% and 78%, respectively, but only 40% and 39% for home economics and Māori, respectively.¹⁵

The effect was to exclude some students from any chance of success. Even if they opted for easier subjects like woodwork and typewriting, the proportion of students allowed to pass was so low they were unlikely to succeed.

University Entrance (UE) and Sixth Form Certificate: Sixth Form (Year 12)

Historically, students' predominant purpose in Sixth Form had been to gain UE – a largely academic qualification administered by the University Entrance Board (UEB) – and which could be achieved through in-school 'accreditation' or an external exam. The UEB's method of moderating outcomes was to mandate that at least 5% of each school's cohort sat the external exam.

In 1969, in an effort to displace university dominance of Sixth Form curriculum, Sixth Form Certificate was introduced to be completed alongside UE. The certificate was internally assessed and enabled teachers to assess a more comprehensive range of subjects. However, it was viewed as inferior to UE, until it became the stand-alone Sixth Form qualification in 1986, and determination of UE moved to Seventh Form.

Under Sixth Form Certificate (from 1974), students were awarded a grade from 1–9 (highest to lowest). The quantity of grades (1–9) available for allocation was calculated from that cohort's School Certificate results in the previous year. This meant in some schools there might not be any grade 1s, for example (or any other grade), to allocate in a particular subject. Also, teaching and learning in Sixth Form could be terrible or brilliant but the overall results allocated would not change.

The school had to decide on the allocation of fixed grade numbers, regardless of student performance during Sixth Form. Because of this grading system, Sixth Form Certificate had little credibility among teachers.¹⁶

University bursary and scholarship (for the highest performing 3–4% students): Seventh Form (Year 13)

University Bursary was an external exam sat in up to six subjects at the end of Seventh Form. It was designed by the universities to determine who would receive the two levels of financial support, an 'A' or a 'B' bursary.

Until 1989, students could also sit exams in three Scholarship subjects, which, combined with their five top bursary scores, determined eligibility for a Scholarship grade. The highest grades brought financial awards.

This system was abolished in 1989; until 2003, the top 3–4% bursary students in each subject simply achieved scholarship grades.¹⁷

¹⁵ Treaty Resource Centre, "School Certificate – The Hurdle" (Auckland: TRC, 1984).

¹⁶ Mark Sheehan, Michael Johnston, and Rosemary Hipkins, *NCEA in Context* (Wellington: NZCER Press, 2016), 19.

¹⁷ Following the removal of separate scholarship examinations, a group of teachers set up their own scholarship exam, which became the New Zealand Educational Scholarship Trust (NZEST).

Standards-based and norm-referenced assessments

Standards-based and norm-referenced assessments are like the two ends of an assessment design continuum. The former measures students against pre-defined, fixed standards or criteria. The latter measures students against one another, allocating established but arbitrary percentages of grades according to *relative* rather than *absolute* performance.¹⁸

However, in reality, the boundaries are more blurred. Specifically, setting the criteria for a standard such as “Demonstrate knowledge of Australia as a visitor destination” can only be done with reference to norms in the wider population.

For example, most New Zealanders would associate the boomerang or a kangaroo with Australia based on knowledge probably gained in primary school. Therefore, the criteria set are unlikely to involve naming these two items. Then again, though relevant to a career in tourism, far fewer New Zealanders would be able to name the outback road-trip that connects Uluru and Alice Springs.¹⁹ So this criterion too is unlikely to be included in any standard. The selection of criteria is itself an exercise in comparing against societal norms.

Despite this, during the 1980s, standards-based assessment was increasingly advocated as the replacement for School Certificate’s unpopular norm-referenced approach, and Sixth Form Certificate’s peculiar system of moderation. Arguments in favour of standards-based assessment included:

- It generates absolute rather than relative measures of performance – a student either can or cannot do something. As such, students’ grades should not be influenced by the rest of the cohort’s performance; in theory at least, every student could achieve the top grade.

- It enables national trends in performance to be tracked over time. Under norm-referencing, the same proportion of students succeed each year. This obscures any improvement or deterioration in teaching and learning. Standards-based assessments eliminate this problem and, in theory at least, provide better accountability.
- At least in theory, a standards-based assessment is more useful to end-users because it bestows results with established, fixed meanings rather than merely *relative* grades.

The recurrence of the phrase ‘in theory’ is not a coincidence. One Canadian educator said standards-based assessment “seems so eminently sensible that there must be something wrong with it!”²⁰

Indeed, there is something wrong with it.

It is notoriously difficult to set assessments of equivalent difficulty, and therefore to make consistent standards-based judgments about performance in academic subjects from one year to the next.²¹ While norm-referenced assessments resolve this problem by scaling outcomes to match the same fixed allocation of grades each year, most of the advantages of standards-based assessment rely precisely on *not* doing this.

Unless assessments remain exactly the same each year (a problematic solution explored in Chapter 4), or norms are deployed to check a cohort’s outcomes against those of others, standards-based assessments in academic subjects permit unacceptably invalid variations in performance over time.

¹⁸ Norm-referencing refers to the normal distribution (or bell curve).

¹⁹ The Red Centre Way (or the Mereenie Loop).

²⁰ See “Assessment: How We Know What Students Learn” in Royal Commission on Learning, “For the Love of Learning: Report of the Royal Commission on Learning” (Ontario: Queen’s Printer for Ontario, 1994), 35.

²¹ For example, take the very basic skill of adding two numbers. If you ask a classroom of seven-year-olds to add 11 and 3, many will likely get it right. However, ask them to add 3 and 11, and often, fewer will succeed, even though both questions test the same skill and use the same numbers! Once considered in the context of assessments of broader academic subjects like algebra, biology and creative writing, it becomes obvious why it is so difficult to set tests of equivalent difficulty.

Scotland introduced standards-based assessment for vocational subjects in the 1980s. Following a visit to Scotland by New Zealand's Education Minister, the government's 1988 Picot report called for a "system similar to the Scottish 16+ arrangement – one that contains modules, or short units of study which lead to the award of a single national certificate."²² However, Scotland used this approach only for vocational qualifications. Extending it to academic subjects in New Zealand was a huge leap, the negative implications of which continue to plague students and teachers to this day (see Chapter 4).

A unifying framework

The Tomorrow's Schools policy was introduced in 1989. NZQA was formed in 1990 with a mandate to merge New Zealand's fragmented qualifications system into the new National Qualifications Framework (NQF).

Originally conceived to make sense of the proliferation of industry training qualifications, by the time the NQF was introduced in 1991 it was to recognise *all* qualifications, academic and vocational, and thereby eliminate the separation and hierarchy between 'academic' and 'vocational' education.²³

Box 2: Why only 50% could pass? Why not 60% or 80%?

From the 1970s to this day, Professor Warwick Elley from the University of Canterbury and a few others have been predicting and explaining the problems with the design of NCEA.

As Alison says:

In their critique of the secondary school examination system, Elley and Livingstone ... discuss assessment against pre-defined standards ... however they dismiss it as having only limited potential ... Interestingly, one modification that they suggested could be made with a minimum of fuss was to raise School Certificate pass rates to the levels common in other Western countries, sometimes as high as 80%. This is of interest here given the significance of the high rates of failure as an argument for reform. It is an idea that Elley reiterated frequently in his writing, and in his interview with me.²⁴

Other Western countries let many more students "pass." To quote Elley:

[Reducing failure] might have been used in favour of standards-based assessment to avoid the high failure rate, but you know I've always said the 50% failure rate of School Certificate as it used to be was quite arbitrary, there was no reason why it shouldn't have been 60% or 70% pass or 80%, that's what other countries do.²⁵

It is possible to design processes that fix grade distributions from year to year and allow changes in the distributions if absolute standards rise or fall. England uses Comparable Outcomes augmented by examiner discretion and reference tests that track trends. Since 2006, NZQA has been using a process called Profiles of Expected Performance to do something similar (p. 25).

However, in the late 1990s, Elley's cautions and such alternative solutions were ignored.

²² Brian Picot, "Administering for Excellence: Effective Administration in Education" (Wellington: Government Printer, 1988), cited in Judie Alison, "Mind the Gap!" op. cit. 69.

²³ National Certificate of Educational Achievement (NCEA), "Background Note 2005/07" (Wellington: New Zealand Government, 2005), 2.

²⁴ Judie Alison, "Mind the Gap!" op. cit. 64.

²⁵ Ibid

Two years later, NZQA announced that only the purest form of standards-based assessment was to be used in the NQF. The founding principle of ‘units of learning’ evolved to become unit standards. They were all assessed internally, and against only pass/fail criteria.²⁶ The first trials of unit standards began in a few schools in 1995.

In 1994, work had begun to incorporate all university degrees into the NQF. But within two years, the New Zealand Vice Chancellors’ Committee (NZVCC) was persuaded that the strict unit standards approach was not appropriate for university subjects, and so withdrew its support.²⁷ This withdrawal by the universities was a serious blow to the NQF.

Concerns were also raised by the school sector, where many teachers were just as opposed to using unit standards for academic subjects. In fact, a 1997 survey of more than 2,500 PPTA members found that only 165 (6.6%) believed the model suitable for all standards.

The NZQA’s decision in favour of standards-based assessment for all unit standards proved to be one of the biggest stumbling blocks to teacher support of the NQF.

The PPTA had broadly supported assessment change. However, in the mid-1990s, concerns about the possible impact of internal assessment on teacher workload saw it instigate a moratorium on unit standards.²⁸

It became clear that ... a pure internally assessed approach based entirely on unit standards would not work. The schools could not be allowed to go the same way as the universities; if they had, standards-based assessment for qualifications would have been dead in the water.²⁹

NCEA's inception and evolution

First compromise: NCEA Levels 1, 2 and 3

In 1997, a PPTA-commissioned report on the NQF, “Report of the Qualifications Framework Inquiry” or “Te Tiro Hou,” began paving a path to compromise.³⁰

While acknowledging that defining standards is “highly problematic, requiring consistent professional development and credible moderation,” the report nonetheless concluded that standards-based assessment was more “educationally desirable” than norm-referencing.³¹

“Te Tiro Hou” also suggested that from a selection of seven scenarios considered for the future of senior secondary assessment, the only viable ones were those that:

1. retained University Bursary in Year 13 (modified to be part of the framework); and
2. introduced the framework in Year 12 and 13 but not Year 11.

The government ignored both recommendations.

Instead, a 1998 Ministry paper proposed the eventual compromise – NCEA – to better integrate the ideas behind the new NQF with features of the old system.³²

To replace the qualifications awarded at the end of Years 11, 12 and 13, NCEA Levels 1, 2 and 3 were to be awarded for accumulating 80 credits, including literacy and numeracy requirements at Level 1.

In 2001, Black was asked by the Ministry to evaluate its plans for NCEA. In his report, he asked why a standards-based system should recognize

²⁶ At the time, the terminology used was ‘competent or not yet competent’ to reflect the intention that students receive feedback from the assessment which, along with further teaching or training, would enable them to be re-assessed successfully in the future.

²⁷ New Zealand Qualifications Framework (NZQF), “NZQF timeline 1980s–2008,” Website.

²⁸ Mark Sheehan, et al. *NCEA in Context*, op. cit. 63.

²⁹ Ibid. 65.

³⁰ Judie Alison, “Mind the Gap!” op. cit.

³¹ Post Primary Teachers’ Association (PPTA), “Te Tiro Hou – Report of the Qualifications Framework Inquiry” (Wellington: PPTA, 1997), 7.

³² Office of the Minister of Education, “Qualifications for young people aged 16 to 19 years,” Cabinet paper addressed to Chair, Cabinet Committee on Social Policy, cited in Judie Alison, “Mind the Gap!” op. cit. 150.

specific aggregations of credits.³³ “Why give a particular cachet to (say) 80 credits which (say) 75 does not deserve, and to which 90 will be seen to add little?”

National certificates were likely included as a compromise to pure standards-based assessment. The certificates gave some guidance on how many credits students might aim for each year and ensured that the public – long used to assessments at the end of schooling – bought into the new system.³⁴

‘Multi-levelling’ across years was always regarded as a useful possibility afforded by NCEA’s design. To this day, there is no requirement that students complete certificates in any specific sequence, let alone Level 1 in Year 11, Level 2 in Year 12, and Level 3 in Year 13.

However, so few schools divert from this pathway that Education Minister Chris Hipkins recently signalled his desire to move schools away from this fixed expectation.³⁵

Second compromise: Achievement standards

A further compromise central to breaking the impasse raging between schools and the NZQA in the 1990s was to replace unit standards in ‘conventional’ subjects with achievement standards.

Achievement standards would measure student performance in subjects where tasks are more open-ended. They would grade against a four-point scale of *not achieved*, *achieved*, *merit* and *excellence*. At least half the standards would be externally assessed.

Gary Hawke, former head of the School of Government at Victoria University, says *merit* and *excellence* grades were added to appease those unwilling to eliminate selection of an elite, or concerned about student motivation.³⁶ The commitment to externally assessing half the achievement standards was likely made to increase the new qualification’s validity among those educators and parents who valued external testing. It also eased some of the workload implications for teachers.

Opponents disagreed. As Mark Sheehan, et al. said: “For many involved in the early development of the unit-standard approach the advent of achievement standards was seen as an undesirable compromise. Some people saw achievement standards as pandering to the ‘elite’ schools lobby.”³⁷

But for Trevor Mallard, the Minister of Education from 1999–2005, NCEA provided “a range of new tools to customise programmes to meet individual learner needs.”

NCEA’s designers hoped that by combining traditional school subjects with vocational standards, they could replace existing hierarchies with ‘parity of esteem’; create a system in which every student could succeed; and give schools the flexibility to create pathways for certifying achievement that would be relevant and engaging to their students.

Third compromise: NCEA is phased in (2002–04)

It was no small undertaking to adopt standards-based assessment for the school curriculum. Decisions had to be made about whether to use unit or achievement standards, how to divide subjects, and how each standard should be assessed. Criteria had to be written, and decisions made about how many credits to attach to each unit, all the while mindful of the overarching principle of equal esteem.

³³ Paul Black, “Report to the Qualifications Development Group,” op. cit. 6.

³⁴ Gary Hawke, Personal conversation (October 2017).

³⁵ Simon Collins, “Labour’s education plans revealed: Primary school league tables axed, big NCEA shakeup,” *The New Zealand Herald* (30 October 2017).

³⁶ Gary Hawke, Personal conversation (October 2017).

³⁷ Mark Sheehan, et al. *NCEA in Context*, op. cit. 78.

This process was further complicated by the three rather than one grade for achievement standards. As half the units were internally assessed, assessment resources also had to be written to support teachers.

Newly established expert panels of teachers – most of whom were still working in schools – carved up the traditional school subjects into standards. This vast workload delayed NCEA's launch by one year and necessitated a phased introduction over three years, beginning with Level 1 in 2002.

This practical compromise may explain why schools have become locked into the mentality that each child should complete one level of NCEA in each of the last three years of schooling.

Fourth compromise: Scholarship is reintroduced

The government scrapped the New Zealand Scholarship in 1989 and ignored the “Te Tiro Hou” report’s advice to retain University Bursary alongside NCEA.³⁸ Furious at the blow to student competition and motivation represented by NCEA, high profile academic schools like Auckland Grammar started using alternatives, largely Cambridge International Examinations, for their end-of-school exams.

Auckland Grammar and King’s College headmasters John Graham and John Taylor, respectively, also formed the New Zealand Education and Scholarship Trust (NZEST) to run scholarship exams in 19 subjects and offer financial awards throughout the country.

As a compromise to the anti-ranking philosophy of standards-based assessment, and in response to the popularity of the NZEST exams, the government reintroduced the scholarship exams for top students in 2004.³⁹

Approximately 3% of students taking at least 14 Level 3 credits in each subject are now awarded scholarship, subject to also reaching a set standard.⁴⁰ This way the scholarship exam is a compromise between norm-referencing and standards-based assessment.

In most subjects, the scholarship exam involves a challenging external exam that demands “high-level critical thinking, abstraction and generalisation, and to integrate, synthesise and apply knowledge, skills, understanding and ideas to complex situations.”⁴¹

The scholarship exam is highly regarded in New Zealand. And although it is technically not part of NCEA, its existence helps ensure that New Zealand’s national assessment offer accommodates students at the top end of the academic continuum.

Fifth Compromise: Reintroducing elements of norm-referencing

Statistical experts like Elley had been warning for some years of the “unrealistic expectations about what is possible in ... establishing standards of achievement, independent of any norm referencing.”⁴²

So sure enough, as soon as NCEA data was available to make year-on-year comparisons, Elley, et al. identified large, statistically unexpected

³⁸ Post Primary Teachers’ Association (PPTA), “Te Tiro Hou – Report of the Qualifications Framework Inquiry,” op. cit. 9.

³⁹ Mark Sheehan, et al. *NCEA in Context*, op. cit. 98.

⁴⁰ New Zealand Qualifications Authority (NZQA), “New Zealand Scholarship,” Website. Up to 10 of the most successful scholarship participants are also named Premier Scholars and up to 60 Outstanding Scholars. Financial prizes are awarded to several hundred scholarship students each year.

⁴¹ Ibid.

⁴² Warwick Elley, Letter to Russel Marshall, R7 246 569, Archives New Zealand (13 November 1986), cited in Gregor Fountain, “Caught in-between: The Impact of Different Forms of Mandated National Assessment for Qualifications on Teacher Decision-Making in Year 12 History in New Zealand, 1986–2005,” MA thesis (Wellington: Victoria University, 2012), 37.

variations in the proportions of students gaining each grade in the same standards each year.⁴³

- The number of students gaining *excellence* in one maths standard fell from more than 5,000 in 2002 to 70 in 2003.⁴⁴
- The proportion of *merit* and *excellence* grades awarded in one standard dropped from 51.3% to 35% and then 16.1% from 2002 to 2004.⁴⁵

Elley, et al. also noted that performance in internally assessed standards coincided with declining performance in externally assessed standards.⁴⁶

However, the Minister and NZQA dismissed these dramatic anomalies when Elley presented them.⁴⁷ The anomalies continued in 2004 and 2005. As Elley and others had predicted, the first round of scholarship results – published in 2005 – revealed sizeable discrepancies in the proportions of students gaining scholarships in different subjects.

For example, in 2005, only 1% and 3% gained scholarships in biology and physics, respectively, while 51% and 65% achieved them in accounting and visual arts, respectively.⁴⁸

These variations were widely reported in the media and generated a crisis of public confidence.

However, according to *NCEA in Context*, standards-based orthodoxy prevailed at the NZQA, which

appeared blindsided by the criticism.⁴⁹ Their initial response was to defend the results as an accurate reflection of the standards achieved.⁵⁰ It was only following difficult questions in Parliament, and Cabinet itself demanding revised grades, that NZQA finally abandoned its position.

NZQA's chief executive and board chair resigned, and the scholarship crisis became the turning point that finally brought many of the simmering tensions around NCEA into the open.⁵¹

To ensure external assessment results never again varied beyond acceptable tolerances, in 2005 the State Services Commission recommended that NZQA “define and bring forward normative boundaries to function as a safety net for the four grades.”⁵²

In response NZQA, which until then had opposed any efforts to track, let alone manage consistency, developed quasi-norms – or Profiles of Expected Performance (PEPs) – for external assessments.⁵³

According to Roy Nash of Massey University, the introduction of PEPs was to:

Finally admit that there are technical problems in setting and marking standards-based examinations that cannot be solved other than by using comparative information (on year-to-year and subject-to-subject award rates) in order to control the proportion of candidates allocated to each grade.⁵⁴

⁴³ Warwick Elley, Cedric Hall, and Reg Marsh, “Rescuing NCEA: Some Possible Ways Forward,” *New Zealand Annual Review of Education* 14 (2004), 5–25.

⁴⁴ Roy Nash, “A Change of Direction for NCEA: On Re-Marking, Scaling and Norm-Referencing,” *New Zealand Journal of Teachers’ Work* 2:2 (2005), 100–106, 103.

⁴⁵ Douglas Martin, *Report on the Performance of the New Zealand Qualifications Authority in the Delivery of Secondary School Qualifications* (Wellington: State Services Commission, 2005), cited in Bali Haque, *Changing Our Secondary Schools*, op. cit. 102.

⁴⁶ Warwick Elley, et al. “Rescuing NCEA: Some Possible Ways Forward,” op. cit.

⁴⁷ Roy Nash, “A Change of Direction for NCEA” op. cit.

⁴⁸ Warwick Elley, et al. “Rescuing NCEA: Some Possible Ways Forward,” op. cit.

⁴⁹ Mark Sheehan, et al. *NCEA in Context*, op. cit. 98.

⁵⁰ Roy Nash, “A Change of Direction for NCEA,” op. cit.

⁵¹ Mark Sheehan, et al. *NCEA in Context*, op. cit. 100.

⁵² Douglas Martin, *Report on the Performance of the New Zealand Qualifications Authority in the Delivery of Secondary School Qualifications*, cited in Roy Nash, “A Change of Direction for NCEA,” op. cit. 104, and Mark Sheehan, et al. *NCEA in Context*, op. cit. 88.

⁵³ Mark Sheehan, et al. *NCEA in Context*, op. cit. 64 and 86.

⁵⁴ Roy Nash, “A Change of Direction for NCEA,” op. cit.

For each standard and with reference to previous years' data, PEPs guide the percentage of candidates achieving each grade. For example, for a given standard the PEP might state that 20–28% should get *not achieved*; 40–46% should get *achieved*; 17–25% should get *merit*; and 8–16% should get *excellence*.⁵⁵

If a grade distribution looks likely to fall outside PEP bands, the marking panel uses their discretion to determine whether this is due to changes in the cohort, the performance of the cohort, or the difficulty of the test.

If the marking panel find evidence of a change in test difficulty they may amend their marking schedules accordingly. If they find evidence of cohort-related change the PEP may be amended for the following year.

Nash explains that:

Scaling would produce the same outcome [as PEPs] and the reason why it has been rejected is instructive ... Outright scaling of the results ... would be difficult to present as consistent with standards-based assessment, and that alone is sufficient to make the practice unacceptable. The consequence of this, however, is an expensive bill for candidates whose fees pay for a re-marking that is technically unnecessary, in as much that scaling would accomplish the same end with greater efficiency."⁵⁶

However, *NCEA in Context* argues that “Despite a more-than-superficial similarity between the PEPs and norm-referenced assessment,” PEPs are not the same thing.⁵⁷ Rather, PEPs ensure any year-on-year variations are supported by students’ performances against the standard.

Box 3: Grade Score Marking

Under Grade Score Marking (GSM), each item in an exam is given a mark, and all marks are then aggregated.

Rather than four grades (*not achieved*, *achieved*, *merit* and *excellence*), questions are allocated a number from 0–8 to show upper and lower levels within grades. For example, *lower achievement* = A3; *upper achievement* = A4; and 3 and 4 = student has met the criterion for an *achieved* grade.

The possible grade scores for each item are:

Not achieved			Achievement		Merit		Excellence	
NØ	N1	N2	A3	A4	M5	M6	E7	E8

Each number score is then added up. For example, if a paper has two questions and a candidate scores E8 on one and N2 on the other, the overall score will be 8 + 2 = 10. The marker writes 10 in the 'total' box on the front of the candidate's answer paper.

Next, senior markers take a holistic look at a sample of marked papers alongside the standard to establish grade boundaries, or cut scores. “It is essential to the integrity of Grade Score Marking that holistic judgment across actual papers is used to determine the cut scores.”⁵⁸

NZQA then publishes the grade boundaries on its website. For example, the *merit* range might be 8–12, rather than the 10–12 that would have been expected by simply looking at the raw score allocations.

GSM has a similar effect to scaling. However, rather than changing the scores, it changes the grade boundaries. It also does this with reference to the standard, rather than to the arbitrary distributions associated with the old system of norm-referencing.

⁵⁵ Mark Sheehan, et al. *NCEA in Context*, op. cit. 88.

⁵⁶ Roy Nash, “A Change of Direction for NCEA,” op. cit. 105.

⁵⁷ Mark Sheehan, et al. *NCEA in Context*, op. cit. 91.

⁵⁸ New Zealand Qualifications Authority (NZQA), “NCEA External Assessment: Grade Score Marking,” Website.

Ultimately, PEPs were adopted to yield results distributions acceptable to the public, rather than because NZQA found the variability to be unfair, or PEPs generated a truer reflection of student performance against a standard. However, NZQA now acknowledges the need for PEPs, because they signal the need for further investigations when results fall outside previous years' distributions.

Beyond PEPs, NZQA has also introduced other mechanisms to monitor and more accurately assess outcomes for external assessments. These include Item Response Theory (IRT) for analysing standards that include more than one question, and the introduction in 2013 of Grade Score Marking (GSM).

In addition to examiner discretion during marking (PEPs) or after marking (scaling), reference tests can also be used to help examiners identify changes at the national level in students' performance over several years. OFQUAL, England's equivalent to NZQA, introduced a National Reference Test in 2017 to do precisely this.⁵⁹

Sixth Compromise: Merit and Excellence endorsements extended

In 2006, the Ministry of Education commissioned a report into student motivation. This study by researchers at Victoria University listed the design features of NCEA that were "disincentives to maximising student motivation and achievement, for both high achievers and all students."⁶⁰

- The opportunity to avoid more difficult or less enjoyable parts of a course.
- The opportunity to avoid external assessments or simply not sit those where the student expects to do poorly.

- The 80-credit requirement, which leads some students to stop working once they have 80 credits.
- Attaining *merit* and *excellence* for individual standards carries no extra value.
- Having just four grades provides insufficient performance data. In fact, many students surveyed wanted more finely discriminating letter grades or percentage points.

The report concluded that such features encouraged a minimalist approach by students, which could have a negative impact on the persistence necessary for future success.

From 2007, to improve student motivation, NZQA began recording failure grades for internally assessed standards, and recognising high success in NCEA by endorsing whole certificates with *merit* or *excellence*. To achieve these endorsements 50 of the 80 credits at any level must be gained at the higher grades.

In 2011, course endorsements were also introduced; students must gain *merit* or *excellence* in at least 14 credits in a course (as defined by their school), including at least three credits each from internal and external standards.

Although NCEA had originally been designed to eliminate ranking, assessing and rewarding relative performance was well and truly back by 2011.

Seventh compromise: A two-tier system

Finally, between 2011 and 2013, a large-scale realignment occurred to put the newly introduced New Zealand Curriculum (from 2007) at the heart of achievement standards.⁶¹

As early as 2005, NZCER's Learning Curves project concluded that achievement standards

⁵⁹ UK government, search results for "National reference test 2017", Website.

⁶⁰ Luanna Meyer, John McClure, Frank Walkey, Lynanne McKenzie, and Kirsty Weir, "The Impact of the NCEA on Student Motivation," Final Report (Wellington: College of Education and School of Psychology Victoria University of Wellington, June 2006), 3.

⁶¹ Rosemary Hipkins and Lorraine Spiller, "NCEA and Curriculum Innovation: Learning from Change in Three Schools" (Wellington: New Zealand Council for Educational Research (NZCER), 2012).

were being seen as superior to unit standards.⁶² Where some unit standards duplicated concepts and skills assessed by achievement standards, the unit standards had come to be seen as easier options. And the poor reputation of this small number of curriculum-based unit standards tainted the whole unit standards ‘brand’. Since this opposed the intention of parity of esteem, during the review of standards all curriculum-based unit standards were phased out or turned into achievement standards.⁶³

However, by then two tiers had been established within NCEA. According to *NCEA in Context*:

The first was the achievement standard tier, being populated largely by students representing demographics that had done well under the previous qualifications system; and the other, the unit standard tier, populated by Māori and Pasifika students, and students in low-decile schools.⁶⁴

Eliminating the curriculum-based unit standards also had the effect of increasing the number of achievement standards, such that in some subjects the original ‘set menu’ of five to eight standards grew into a smorgasbord of standards.⁶⁵ According to the PPTA, this smorgasbord approach has led to an “increase in over-assessment ... [which] impacts negatively on the quality and depth of learning.”⁶⁶

Teacher workloads were also increased when NZQA decided – for practical exam-timetabling purposes – to limit to three the number of standards within each subject that could be externally assessed. As a result, some standards previously assessed by an exam became internally assessed.

Eighth compromise: Literacy and Numeracy requirements are diluted

During the realignment exercise, the list of standards eligible to accredit minimum literacy and numeracy requirements was expanded.

For example, previously only ‘English’ achievement standards were permitted as evidence of literacy. Now evidence can come from standards from across the curriculum, even when the skills are not specifically assessed.

For example, a health standard like “Take action to enhance an aspect of personal well-being” (see Box 4) and a biology standard like “Carry out a practical investigation in a biological context, with direction” now qualify for literacy and numeracy credits, respectively.

A set of unit standards was also developed for literacy and numeracy. These use “naturally occurring evidence” which means “evidence derived from activities within a learning programme and/or from a learner’s actual work performance and/or everyday life.”⁶⁷ These standards are not curriculum related. Instead, they reference literacy and numeracy benchmarks used in the tertiary sector, and were believed at the time to be an alternative for students unlikely to gain literacy and/or numeracy via the achievement standard pathway.⁶⁸

⁶² Rosemary Hipkins, Karen Vaughan, Fiona Beals, and Hilary Ferral, “Learning Curves: Meeting Student Learning Needs in an Evolving Qualifications Regime” (Wellington: New Zealand Council for Educational Research (NZCER), 2004).

⁶³ Mark Sheehan, et al. *NCEA in Context*, op. cit. 80.

⁶⁴ Ibid.

⁶⁵ Post Primary Teachers’ Association (PPTA), “NCEA Review 2018: An Opportunity for Change” (Wellington: 2017).

⁶⁶ Ibid.

⁶⁷ New Zealand Qualifications Authority (NZQA), “Guidelines for assessing Level 1 Literacy and Numeracy unit standards,” Website.

⁶⁸ Judie Alison (a member of the working groups for literacy and numeracy standards), Personal conversation (January 2018).

Box 4: Exploring an 'incidental' literacy achievement standard⁶⁹

"Take action to enhance an aspect of personal well-being" is a Level 1, internally assessed achievement standard worth 3 credits. The standard sits within the domain called health, which sits within the sub-field of health and physical education and the overall field called Humanities. To achieve it, students must provide evidence of:

- the development of a health-related goal and an action plan based on the principles of SMART goals;
- the implementation of the plan where the action must be sustained over a minimum of three weeks; and
- an evaluation of the implementation of the plan.

It is a matter of judgment whether a standard like the one described in Box 4 should warrant literacy credits. But NZQA provides further guidance for teachers: "You will need to alter this format and instructions about the progress logs if a different log such as a blog or audio/video diary is used by the students."⁷⁰

Such advice features on many materials that support teachers to deliver internal assessments. However, if a student uses an audio or video diary rather than a written one, it becomes harder still to justify why the standard might qualify for literacy credits.

Perhaps even more surprising is that the internally assessed Level 1 English standard "Create a visual text" also counts towards literacy credits.

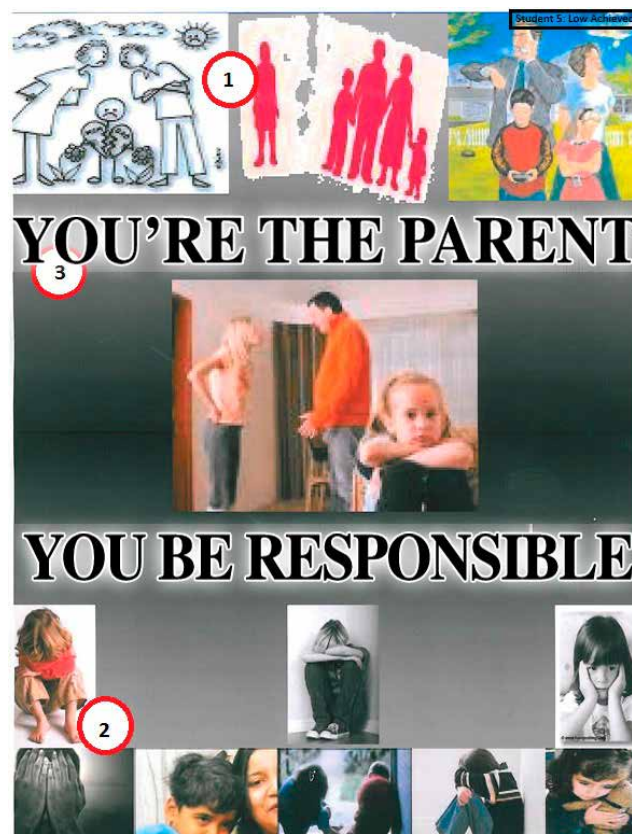
To reach *achieved* in this (3 credit) standard, students must develop and structure ideas in a visual text and use language features appropriate to purpose and audience.⁷¹

To illustrate this, NZQA has given an exemplar to help teachers judge what constitutes a (low) achieved grade (see Figure 2). According to commentary:

The student develops and structures ideas in a poster promoting family awareness. The student makes connections using a range of found images, to present just sufficiently developed ideas about parental responsibility.

Language features appropriate to audience and purpose are used. The upper half of the poster depicts conflict among parents (1). The lower half of the poster depicts the consequences of this for children (2). The slogan (3) connects the conflict and consequences by reminding parents of their responsibilities.⁷²

Figure 2: Level 1 English standard "Create a visual text": Low achieved exemplar



Source: New Zealand Qualifications Authority (NZQA), "English: Annotated exemplars Level 1 AS90855 – 'Create a visual text (1.7)'," Website.

⁶⁹ New Zealand Qualifications Authority (NZQA), Search results for "health", Website.

⁷⁰ Ministry of Education, "Internal Assessment Resource: Health Level 1" (Wellington: 2015), 4.

⁷¹ New Zealand Qualifications Authority (NZQA), "English – Annotated exemplars Level 1 AS90855 Create a visual text (1.7) Achievement Standard" Website (Wellington: 2014).

⁷² New Zealand Qualifications Authority (NZQA), "English: Annotated exemplars Level 1 AS90855," op. cit. The other exemplar static images are also available at this website.

In the words of one English teacher interviewed:
“A student can draw a picture with one or two words on it and get literacy credits.”

In 2016, 24,497 entries were made for this standard, of which 83% were successful.⁷³

Conclusion: A history of compromises

This chapter presents NCEA as a series of compromises. This is not to imply the modifications should not have been made. Rather, the focus on compromises is intended to draw the reader’s attention to the polarising position taken by NCEA’s originators, and demonstrate the inevitability of what ensued.

*NCEA was designed by progressive educational policy makers who were rightly concerned at the proportions of young people leaving school without qualifications, particularly those whose families lack economic and intellectual capital.*⁷⁴

With knowledge of the system that preceded NCEA, one can understand why equity objectives were paramount. After all, concerns about equity are shared by almost all educators, and School Certificate placed an arbitrary cap on school success.

However, as the authors of *NCEA in Context* also acknowledge:

The implementation process for NCEA not only sidelined technical experts ... but also more conservative educators. There was a tendency to disparage conservative critics as reactionaries ...

*In some cases the disparagement might have been warranted ... [Others] simply disagree that all learning has equal power to make a difference in the lives of young people, and believe that a competitive element brings out the best in many students.*⁷⁵

The implications of this sidelining are manifest in the catalogue of compromises described.

And the nature of most of these compromises has been to improve NCEA for already advantaged students. For example, motivated students and those who benefit from parental advice and encouragement can now choose predominantly or exclusively academic achievement standards and complete as many as possible through external assessments. They can strive for endorsements of standards, subjects and whole certificates, and sit the scholarship exam.

At the other end of the spectrum are children who, for whatever reason, do not start with the same advantages or motivation. Thanks to the flexibility inherent in NCEA, these students now risk making a series of perfectly sanctioned, seemingly rational, but ultimately poor choices.

They might choose predominantly unit standards in easy-sounding subjects or subjects that feel relevant to them at the time but are ultimately of little value. They might find themselves studying internal assessments wherever possible, ignoring the chance to gain endorsements (since they contribute nothing to the 80-credit target), and dismissed from an early age from the prospect of preparing for university. With pressure on teachers and schools to drive up NCEA pass rates, these students may even experience *encouragement* to make these ‘safer’ choices.

In his evaluation of the plans for NCEA, Black acknowledged their ambitious and groundbreaking nature. However, he also expressed concerns, and suggested that a number of areas should become the subject of continual evaluation and review as the system matures.⁷⁶

Sixteen years on, it is appropriate to look at how well our national assessment fulfils its founding purpose. It is to this question that we turn in Chapter 2.

⁷³ New Zealand Qualifications Authority (NZQA), “Secondary Statistics Consolidated Data Files for 2016,” Website.

⁷⁴ Mark Sheehan, et al. *NCEA in Context*, op. cit. 106.

⁷⁵ Ibid.

⁷⁶ Paul Black, “Report to the Qualifications Development Group,” op. cit. Section 5.1



Chapter 2

NCEA today

This chapter uses information from the NZQA website to explain how NCEA operates today. Levels 1, 2 and 3 are registered as qualifications on the NZQA website. Each has the same five objectives (see Box 5).

Box 5: NCEA's purpose⁷⁷

NCEA is designed to:

1. acknowledge achievement across a range of learning fields, particularly those identified in the New Zealand Curriculum and Te Marautanga o Aotearoa, and to attest to minimum levels of literacy and numeracy;
2. attest to the ability to participate in and benefit from further study thereby promoting lifelong learning;
3. motivate learners to achieve to their potential and help them market their achievements;
4. assist institutions to guide students and monitor achievement; and
5. provide data to assist government and providers to monitor progress in relation to qualification-related education policies.

Level 1 has the additional objective of:

6. act as a learning goal

NCEA at each level is achieved by accumulating 80 credits from across unit or achievement standards that meet the criteria detailed in Table 1.

Table 1: The requirements for NCEA Levels 1, 2 and 3, and for University Entrance (UE)

Qualification	Students must achieve:
NCEA Level 1 (80 credits)	<ul style="list-style-type: none"> • Minimum of 60 credits at L1+ • 10 approved numeracy credits at L1+ • 10 approved literacy credits at L1+
NCEA Level 2 (80 credits)	<ul style="list-style-type: none"> • Minimum of 60 credits at L2+ • 20 credits at L1+ • 10 approved numeracy credits at L1+ • 10 approved literacy credits at L1+
NCEA Level 3 (80 credits)	<ul style="list-style-type: none"> • Minimum of 60 credits at L3+ • 20 credits at L2+ • 10 approved numeracy credits at L1+ • 10 approved literacy credits at L1+
University Entrance	<ul style="list-style-type: none"> • NCEA Level 3 • At least 14 Level 3 credits, in each of three university approved subjects • 10 literacy credits at L2+ (5 in writing, 5 in reading)

⁷⁷ New Zealand Qualifications Authority (NZQA), "Explore Framework," Website.

There are 59 university approved subjects (see Table 2). Within each, most of the achievement standards qualify as part of UE.

Table 2: Approved subjects (domains) for University Entrance (UE)

Accounting	Drama	Japanese	Printmaking (Practical Art)
Agriculture & Horticulture	Earth and Space Science	Korean	Processing Technologies
Biology	Economics	Latin	Pūtaiao
Business Studies	Education for Sustainability	Mathematics/Pāngarau	Science/Pūtaiao
Calculus	English	Media Studies	Religious Studies
Chemistry	French	Music Studies	Samoan
Chinese	Geography	Ngā Mahi a te Rēhia*	Sculpture (Practical Art)
Classical Studies	German	Ngā Toi*	Social Studies
Construction and Mechanical Technologies	Hangarau	Ngā Toi Ataata*	Spanish
Cook Islands Maori	Hauora*	Ngā Toi Puoro*	Statistics
Dance	Health Education	Pāngarau	Technology/Hangarau
Design (Practical Art)	History	Painting (Practical Art)	Te Reo Māori
Design and Visual Communication	History of Art	Photography (Practical Art)	Te Reo Rangatira
Digital Technologies	Home Economics	Physical Education	Tikanga ā-Iwi*
	Indonesian	Physics	Tongan

Source: New Zealand Qualifications Authority (NZQA), “Approved subjects for University Entrance,” Website.

* Only students engaged in learning and achievement derived from *Te Marautanga o Aotearoa* (the national curriculum for Māori-medium) are eligible to be awarded the subjects marked with an asterisk (*), as part of the requirement for 14 credits in each of three subjects.

Differences between unit and achievement standards

Table 3 explores the main differences between unit and achievement standards.

Table 3: How unit and achievement standards differ

Unit standards	Achievement standards
<ul style="list-style-type: none"> Typically made up of highly specific criteria and all criteria must be met to achieve the credit. Any standard that is not derived from the New Zealand Curriculum. Most can only be awarded at <i>not achieved</i> or <i>achieved</i>. Always internally assessed by teachers or workplace assessors. 	<ul style="list-style-type: none"> Made up of a single criterion, with a progression of conceptual sophistication to distinguish between <i>achieved</i>, <i>merit</i> and <i>excellence</i> grades. All are based on the New Zealand Curriculum. Owned by the Ministry of Education. All awarded at <i>not achieved</i>, <i>achieved</i>, <i>merit</i> or <i>excellence</i>. Originally half were designed to be externally assessed, but now only 28% are externally assessed.

Table 4a: Sample unit standards and 2016 uptake figures

Unit standard title	Total uptake in 2016
Provide basic life support	6,467
Demonstrate knowledge of workplace health and safety requirements	7,281
Learn to drive a vehicle within the conditions of a Class 1 New Zealand learner driver license	6,467
Use number to solve problems	6,788
Actively participate in spoken interactions	3,530
Fill in a form	3,492
Demonstrate knowledge of Australia as a visitor destination	3,258
Demonstrate knowledge of Pacific Island Countries as a visitor destination	3,034
Plan a career pathway	2,753
Provide customer service	2,749
Experience day tramps	2,584
Apply a problem solving method to a problem	1,087
Prepare and present espresso beverages for service	867
Disassemble and reassemble a four stroke multi-cylinder engine to a running state	626
Complete a cycle tour	323
Cook food items by microwaving	106
Prepare and serve tea	93

Table 4b: Sample achievement standards and 2016 uptake figures

Achievement standard title	Total uptake in 2016
Apply numeric reasoning in solving problems	44621
Produce a selection of crafted and controlled writing	36958
Investigate a given multivariate data set using the statistical enquiry cycle	33622
Demonstrate understanding of biological ideas relating to genetic variation	30212
Demonstrate quality movement in the performance of a physical activity	20799
Carry out a practical investigation in a biology context, with supervision	13338
Carry out an investigation of an historical event, or place, of significance to New Zealanders	11381
Conduct geographic research, with direction	10232

Source: Data extracted from an NZQA OIA response supplied on 27/07/17, and the National Standards Achievement Stats files available at <http://www.nzqa.govt.nz/studying-in-new-zealand/secondary-school-and-ncea/find-information-about-a-school/secondary-school-statistics/consolidated-files/data-files-for-2016/>

How do credits work?

Credit accumulations can come from either unit or achievement standards. Provided a standard is passed, the number of credits gained is not affected by the grade. Up to 20 credits can be counted twice; for example, 20 Level 1 credits can count towards a Level 2 qualification.⁷⁸

Credit allocations for each standard vary. For most achievement standards, they range between 3 and 5. In some subjects, such as photography and sculpture, a single achievement standard is worth as many as 14 credits. The biggest credit allocation of all is a Level 3 unit standard “Blade shear sheep at a sustained output” worth 80 credits.

According to the NZQA, one credit is designed to reflect a notional 10 hours of work (including instruction, practice and assessment) for an average student.

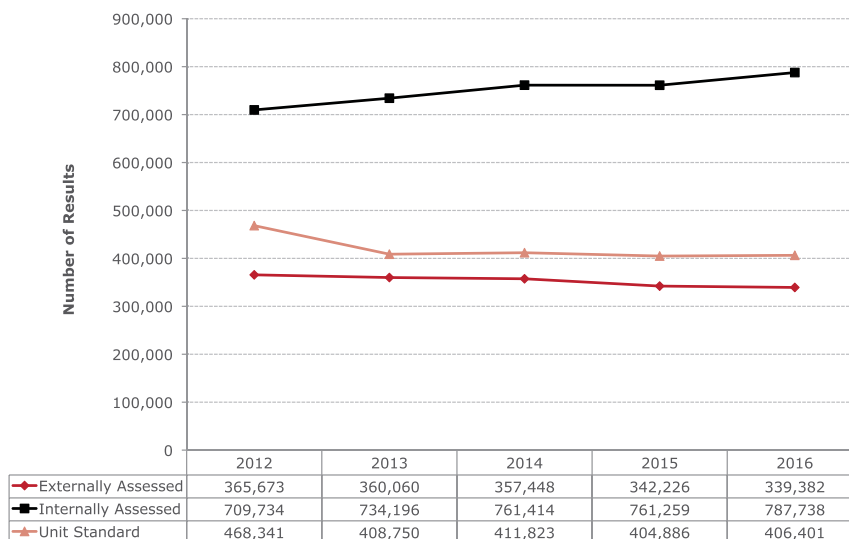
NCEA in numbers

Standards – unit and achievement – fall into 17 fields, which are then divided into 200 subfields and more than 800 domains.⁷⁹ The current list of standards that can contribute credits towards NCEA Levels 1, 2 and 3 contains 9,360 items. Of these, 89% are unit standards.

Unit standards are developed either by industry training organisations or NZQA. To assess any particular unit standard a school must first gain consent, which includes meeting industry-specific requirements and the moderation requirements of the standard-setting body responsible for that particular unit standard.

Of all the 9,360 current items, 1,053 or 11% are achievement standards. Of these achievement standards, 294, or 28%, are externally assessed and the remaining 72% internally assessed.

Figure 3: Number of results by standard type and assessment at Level 2 (2012-16)



Source: New Zealand Qualifications Authority (NZQA), “Annual Report on NCEA and New Zealand Scholarship Data and Statistics,” Website (2016), 88.

⁷⁸ Or 20 Level 2 credits towards a Level 3 qualification.

⁷⁹ Information extracted from information supplied by NZQA on June 2017, following an Official Information Act request.

The number of results recorded in 2016 was 1,758,574 for Level 1; 1,526,834 for Level 2; and 888,474 for Level 3.⁸⁰

Figure 3 shows how, at Level 2, the number of results broke down across the three types of standards. The most commonly used type of standard at Level 2 is the internally assessed achievement standard, followed by unit standards and externally assessed achievement standards.

Although there are 715 standards at Level 1, in 2016 the 100 most popular standards were 72% of all 1,758,574 results at that level. These 100 standards comprise 93 achievement standards and just 7 unit standards.⁸¹

When do students complete each level?

NCEA assessments do not relate to students of a particular age. They can be completed at any age and there are no formal prerequisites (unless established by schools). However, most commonly, Level 1 assessments begin in Year 11, Level 2 assessments in Year 12, and so forth.

NCEA enables schools to offer a mix of programmes that meet the needs of both tertiary and workplace pathways. Schools can still offer traditional one-year academic courses, but they can also run shorter or longer courses, cutting across levels and subjects, and even linking with tertiary and workplace training providers. Table 5 shows how the three NCEA levels correspond with the eight levels of the New Zealand Curriculum and the 10 levels of NZQF.

Table 5: Correspondence between NZQF, NZC and NCEA

NZQF	NZC Level	NCEA Level (and beyond)
1	6	1
2	7	2
3	8	3
4-6	-	Advanced trades, technical and business qualifications, diplomas and certificates
7-10	-	Degree-level and postgraduate qualifications

⁸⁰ Information extracted from NZQA, “Standard Achievement Statistics files, National,” Secondary Statistics Consolidated Data Files for 2016, Website.

⁸¹ Ibid

Conclusion

There is no doubt NCEA is a complicated system to understand for students, teachers, boards of trustees, parents, universities, employers and policymakers.

NCEA’s great advantage is that it permits vast flexibility. However, the extent to which this facet is widely or advantageously used is less clear. And the costs of NCEA’s flexibility are manifold. For example, costs will be incurred in students’ and teachers’ time trying to understand and navigate it; in parents’ and trustees’ inability to hold schools accountable having failed to understand it; in students making poor decisions that close off avenues they might want to pursue later; and in employers discarding applications from school leavers with the potential to succeed but who made poor course choices through NCEA.

This list could go on. However, the point is that the costs are potentially vast, and just because they are unquantifiable should not mean they are ignored.

The complexities of NCEA have placed it at the periphery of public scrutiny. However, the ‘too hard’ basket is not an appropriate place for a qualification that drives so much of what and how our children learn.

It is time now for an open, robust and informed national conversation.



Chapter 3

Impact on students

People with higher levels of qualification are more likely to participate in the labour market, face a lower risk of unemployment, have greater access to further training and receive higher earnings on average.⁸²

Unlike the university dominated system it replaced, NCEA was designed to provide flexibility so that all students could leave school with a certificate of proficiency in at least some areas.

Given this aim, we need to evaluate how student outcomes and equity (of access and outcomes) have changed under NCEA.

However, such evaluation requires a shared understanding of what it means to succeed in school. And the definition of success as measured by NCEA is so different from that against which students were measured previously that pre- and post-NCEA comparisons are virtually meaningless.

Therefore, this chapter uses various proxies to illuminate how student outcomes have changed. The chapter begins with the good news. It then looks at the challenge levelled by the near-constant decline of our 15-year-olds' performance since the OECD began measuring it in 2000. The final section looks at how NCEA is performing with respect to equity.

The good news story

Under NCEA, there is far greater flexibility, students stay in school longer, and more students leave school with qualifications. Support for NCEA has also risen reasonably steadily since its introduction.

Greater flexibility

NCEA is designed to provide flexibility that will enable all students to succeed.⁸³

Under the old system, in Year 11 schools could offer courses from about 23 School Certificate subjects that included Latin, Māori, English, shorthand/typing, physical science, history, maths, agriculture, and art.

Under NCEA, in Year 11, assuming they achieve consent to assess the particular unit standards, schools have the flexibility to create any course they like from a selection of 9360 individual Level 1, 2 and 3 standards.⁸⁴ At Level 1, standards cover more than 170 domains. Across Levels 1–3 standards cover more than 800 domains.

Students stay in school longer

New Zealand's school leaving age last changed, from 15 to 16 years, in 1989. In special circumstances parents can apply for permission for their child to leave when aged 15.

⁸² New Zealand Schools Ngā Kura o Aotearoa 2016, Education Counts, Website. 42.

⁸³ NCEA registration documents explain the five purposes of NCEA (at all levels). One of them is to “acknowledge achievement across a range of learning fields, particularly those identified in the NZC and Te Marautanga o Aotearoa, and to attest to minimum levels of literacy and numeracy.”

⁸⁴ Data extracted from an NZQA OIA response supplied on 27 July 2017.

Table 6: Percentage change in cohort size at ages 15 and 16, since 2001

	2001	2008	2010	2012	2014	2016
% drop in cohort size between ages 15 & 16	20%	13%	9%	8%	6%	4%
% drop in cohort size between ages 16 & 17	22%	22%	17%	17%	15%	15%
Total Attrition rate between ages 15 and 17	38%	32%	24%	24%	20%	18%

Source: Education Counts, “New Zealand Schools: Ngā Kura o Aotearoa (2009–16),” Website; Education Counts, “School rolls,” Website; and Education Counts, Annual Report 2001, Website.

Figure 4: Percentage of school leavers with NCEA Level 1 or above by school decile

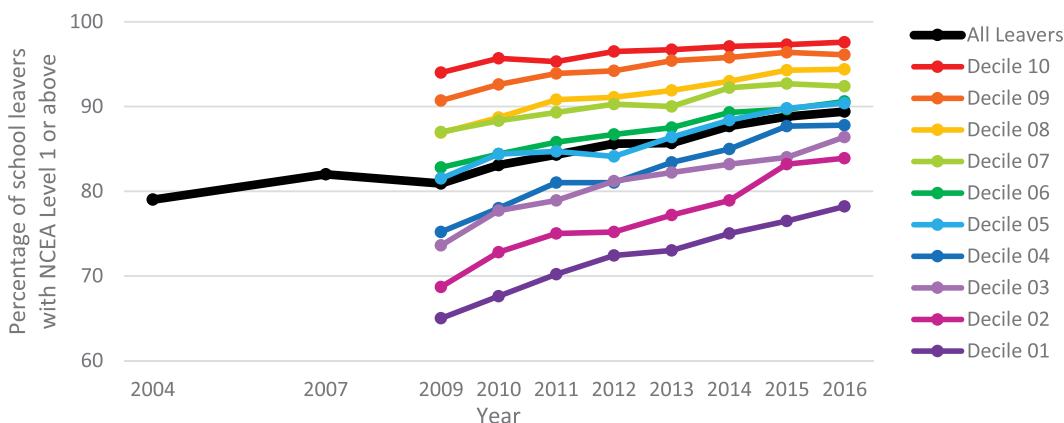


Figure 5: Percentage of school leavers with NCEA Level 2 or above by school decile

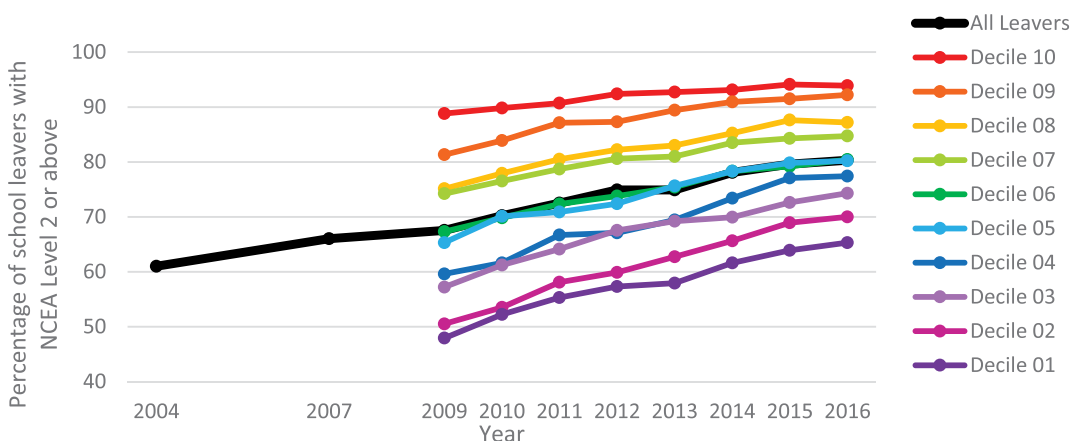
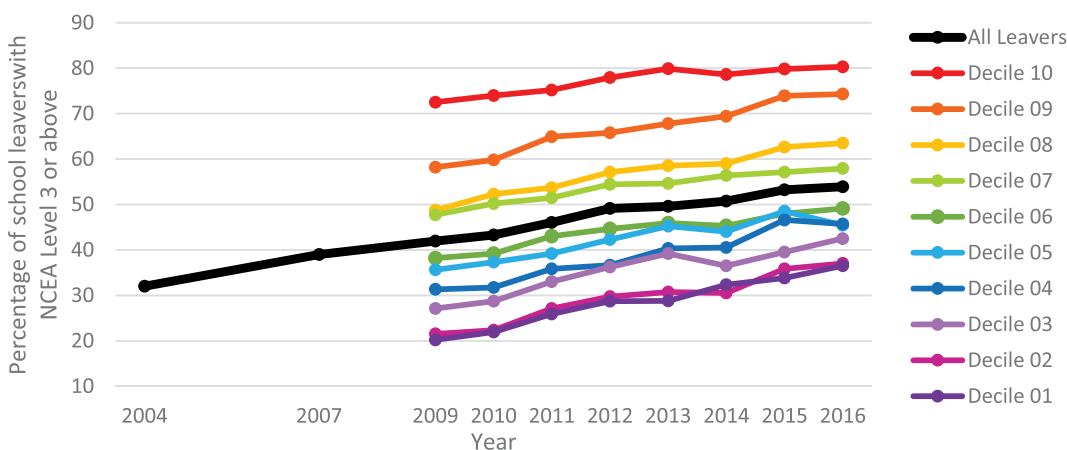


Figure 6: Percentage of school leavers with NCEA Level 3 or above by school decile



Figures 4–6 source: Education Counts, “School leavers: NCEA Level 3 or Above Numbers (2009–2016),” Website; Education Counts, Annual Reports for 2004 and 2007, Website.

Table 6 shows how the drop in the national school cohort size at ages 15 and 16 has gradually reduced since 2001. Between 2001 and 2016, the drop in cohort size between ages 15 and 17 more than halved from 38% to 18%.

The flexibility of NCEA may have played a role in increasing the retention rate. However, it is not possible to isolate this from other factors, not least as the change in law has become established.

More students leave school with qualifications

Figures 4, 5 and 6 show how, since 2004, the percentage of school leavers with NCEA or higher at each level has steadily increased. Back in 2004, 21% of school leavers did not have an NCEA qualification at Level 1 or higher. By 2016 this proportion had dropped to 11%.

Figures 4 to 6 also show how the difference in NCEA achievement across school deciles has changed over time. Since 2009 (when Education Counts began sharing records by decile) the gap in NCEA achievement between decile 1 and 10 schools has narrowed by 12 percentage points at Level 2, and 9 percentage points at Level 3. This is because the

achievement rate in decile 1 schools has improved more than in decile 10 schools. However, a gap remains – at 29 percentage points for Level 2 and 44 percentage points for Level 3.

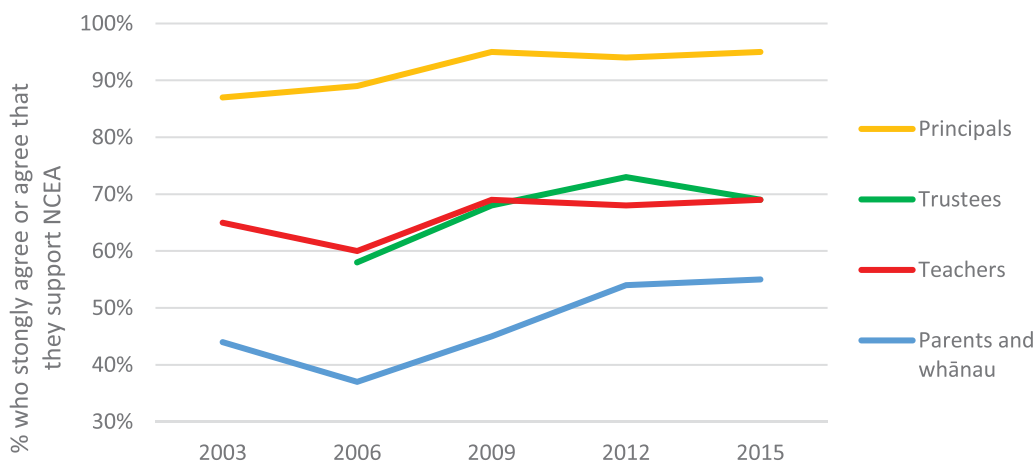
NCEA has not only achieved its original purpose of enabling more students to gain qualifications in school, but also lessened the qualification gap between students from high and low income backgrounds.

Perceptions of NCEA have improved over time

Every three years, the NZCER completes a national survey of secondary school trustees, principals, teachers, parents and whānau.⁸⁵ These surveys reveal that over time, support for NCEA and perceptions of its credibility have grown among all groups surveyed.

Figure 7 shows how support for NCEA has grown since 2003. It is particularly high among principals, of whom 92% now support NCEA, including 68% who strongly support it. However, support among teachers has never risen above 69%, of whom less than a third are strongly supportive. Among parents and whānau support has only ever risen to 55%.

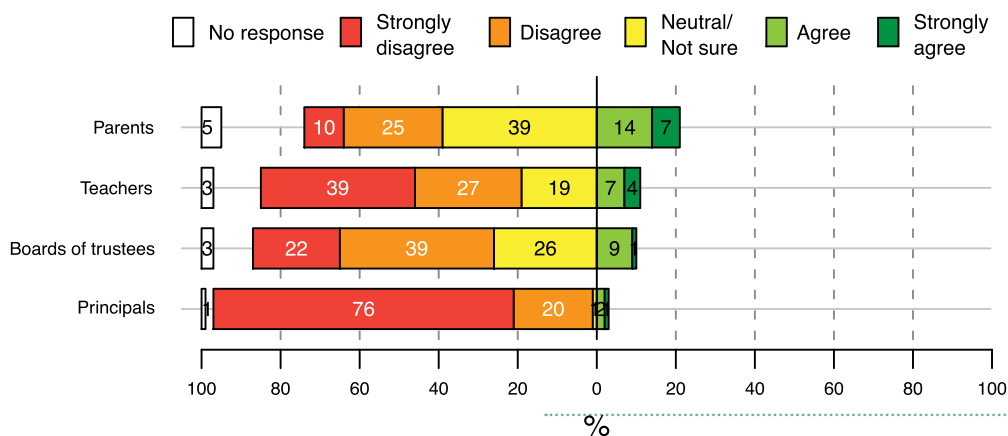
Figure 7: Percentage of stakeholders who ‘agree’ or ‘strongly agree’ they support NCEA (2003–15)



Source: Cathy Wylie and Linda Bonne, “Secondary Schools in 2015: Findings from the NZCER National Survey” (Wellington: NZCER Press, 2016), Table 5: “Support for NCEA 2003–15,” 20.

⁸⁵ NZCER completes and publishes this independent survey as part of a programme of work funded by a government grant. Cathy Wylie and Linda Bonne, “Secondary Schools in 2015,” op. cit. 20.

Figure 8: Responses of stakeholders to statement “I think we should return to the previous assessment system” (2009)



Source: Rosemary Hipkins, “The evolving NCEA: Findings from the NZCER National Survey of Secondary Schools 2009” (Wellington: NZCER Press, 2010), 13.

Challenges to our good news story

Elley has been commenting since the 1970s on the design and implementation of assessments in New Zealand. In 2016, he wrote, “NCEA was introduced as a way of raising student achievement levels to world class. It has achieved the opposite, as we watch our students join the race to the bottom.”⁸⁶

Elley is referring to the performance of New Zealand’s 15-year-olds in reading, maths and science, as measured by PISA. The data is presented in Figure 1, alongside NCEA Level 2 performance data.

When they began in 2000, PISA assessments placed New Zealand among the top three nations for reading and science, and almost as high for maths.

Since then, despite rising NCEA achievement, New Zealand’s PISA ranking and its absolute scores have been in almost constant decline. In maths, the score has dropped by 28 points since 2003, where 41 points correspond to the equivalent of one year of formal schooling.⁸⁷ The reading score has

dropped by 20 points since 2000 and the science score has dropped by 17 points since 2006.

PISA places all students in seven categories for maths, from ‘below Level 1’ at the bottom to ‘Level 6’ at the top. Between 2003 and 2015, the proportion of our 15-year-olds attaining at the highest levels (5 or 6) declined from 21% to 11%, and the proportion attaining below Level 2 increased from 15% to 22%.⁸⁸ These two worrying trends are considerably more dramatic than the change in the OECD average scores. Over the same period, those achieving at the top levels across the OECD decreased from 14% to 11%, while those at the lowest levels increased from 22% to 23%.

Three explanations are commonly given for the stark divergence between New Zealand’s NCEA and PISA outcomes over time.

PISA measures students when they are 15, which is before or early in most students’ experience of NCEA.⁸⁹ Most students begin their NCEA courses aged 15. However, as the main end of school

⁸⁶ Warwick Elley, “Survey results prove damning for NCEA,” *The New Zealand Herald* (15 December 2016).

⁸⁷ OECD, “PISA 2012 Results: What Students Know and Can Do – Student Performance in Mathematics, Reading and Science (Volume I),” rev. ed. (Paris: OECD Publishing, 2014).

⁸⁸ Education Counts, “Mathematics achievement: What we know from New Zealand’s participation in TIMSS 2014/15 and PISA 2015,” Website.

⁸⁹ Specifically, PISA measures students when they are between 15 years and 3 months, and 16 years and 2 months. OECD, “PISA 2012 Technical Report,” Chapter 4: “Sample Design” (Paris: OECD Publishing, 2014).

assessment, NCEA inevitably influences what is taught and prioritised *throughout* secondary education.⁹⁰ Science, English and maths are compulsory in the curriculum up to Year 10 (when students are aged 14 or 15), and literacy and numeracy credits are requirements for NCEA. Therefore, we should expect trends in NCEA and PISA data to at least move in the same direction.

The next explanation relates to poverty. The literature linking educational outcomes to family incomes is significant. In 1991, the ‘mother of all budgets,’ a National Party policy, cut welfare benefits in New Zealand. Children born in 1991 would have reached age 15 (when PISA assessments occur) in 2006. Although impossible to isolate from other factors, it is likely that at least part of the concurrent and subsequent drops in PISA performance were caused by increased poverty and inequality.

However, this explanation still fails to address the divergent directions of NCEA and PISA trends.

The third commonly cited explanation is that NCEA measures a broad range of skills – and PISA a narrow one.

This explanation is logical and possibly true, but it is only *acceptable* to the extent it is acceptable for our national assessment to tell us nothing reliable about students’ grasp of essential skills like reading and maths.

Standards measuring literacy and numeracy are compulsory for NCEA. It is thus reasonable to expect all students with NCEA to have developed proficiency in reading and maths.⁹¹ Worryingly, PISA trend data suggests this is not the case.

If students really were developing broad knowledge and skills in literacy and numeracy (and science at least to Year 10) during their time

in school, we should see PISA and NCEA trends moving in the same direction. However, they are trending in opposite directions (see Figure 1).

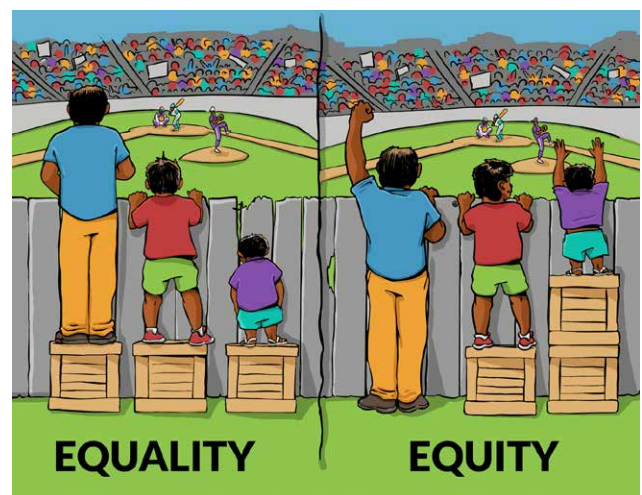
PISA’s challenge to NCEA starkly highlights one of the gravest problems with an assessment system with such a flexible definition of success.

Growing inequity

According to the OECD, equity in education has two dimensions: fairness and inclusion. Fairness means making sure circumstances – like socioeconomic status and ethnic origin – are not obstacles to achieving educational potential. Inclusion means ensuring a basic minimum standard of education for all – for example, that everyone can read, write and do basic arithmetic.⁹²

The difference between equality and equity in education is best illustrated through an image like that in Figure 9. Equality means giving all children the same, while equity means giving all children what they need to succeed. This includes addressing historical, ethnic and social inequities.

Figure 9: Illustrating the difference between equality and equity



Source: Interaction Institute for Social Change, “Illustrating Equality vs Equity,” Website (2016).

⁹⁰ In fact, the NZCER surveys of secondary schools in 2012 and 2015 reported that most principals, teachers and trustees thought assessment was driving the curriculum, even in Years 9 and 10.

⁹¹ The same should apply in science, though perhaps to a lesser extent since, although it is a compulsory part of the curriculum until Year 10, only some schools make science compulsory at Level 1.

⁹² OECD, “Ten Steps to Equity in Education,” *Policy Brief* (Paris: OECD Publishing, 2014).

Educators and voters have long desired to reduce the historical inequities between students. That some children need more support than others to succeed is well established and accepted.

NCEA’s design was motivated in large part by this same equity concern. However, whether its broad definition of success provides inclusion or benefits disadvantaged students is less clear. The extent of inequity today, and the ways NCEA may have compounded or reduced it, are explored in the remainder of this chapter.

Attainment levels continue to vary according to ethnicity

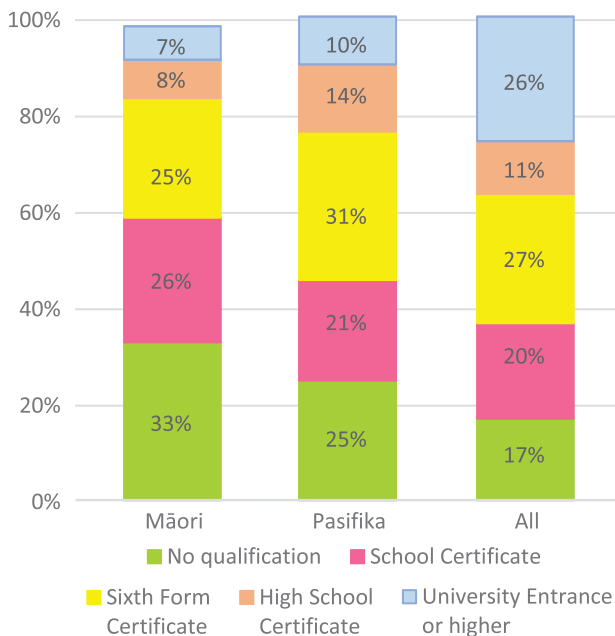
Figures 10 and 11 show the qualification level of Māori, Pasifika and All school leavers in 2001 – the year before NCEA was introduced – and in 2016.⁹³

Pre- and post-NCEA data are not directly comparable, which is why Figures 10 and 11 are separate. However, if we assume UE is a meaningful benchmark under both systems, the proportion of Māori, Pasifika and All school leavers achieving UE has increased since 2001.

However, a closer look reveals a concerning divergence. The gap between the proportion of Māori and All school leavers achieving UE or higher has increased from 19 percentage points in 2001 to 23 percentage points in 2016. This is because despite a much lower starting point (7% of Māori students compared to 26% of All), the proportion of students achieving UE or higher has grown less among Māori students than the whole population.

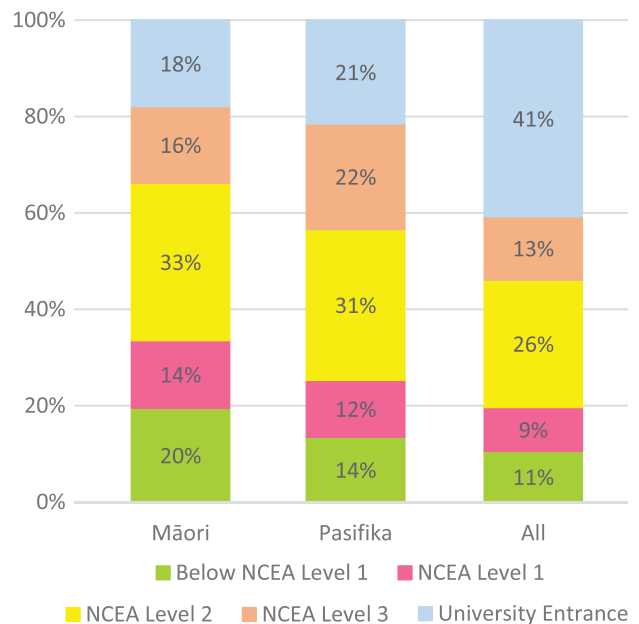
The existence of significant disparities in educational outcomes is corroborated by OECD PISA data. In 2015, European and Asian students scored above the OECD average in all three

Figure 10: Highest attainment of school leavers by ethnicity (2001)



Source: Education Counts, “Report of the Minister of Education on the compulsory schools sector in New Zealand, 2001,” Table 1.3: Highest Attainment of School Leavers by Ethnicity, 1997–2001” (Wellington: Ministry of Education, 2001), 85.

Figure 11: Highest attainment of school leavers by ethnicity (2016)



Source: Education Counts, “Highest Attainment Numbers (2009–2016),” Website.

⁹³ Although pre- and post-NCEA data are not directly comparable the colours show broadly how qualifications correspond.

subjects, while Māori and Pasifika students scored below it.⁹⁴ This likely reflects both ethnic and socioeconomic disparities.

Trends in equity since 2003: OECD

Since 2003, PISA has found worsening equity in New Zealand, both absolute and relative to common comparator countries.

The OECD gathers data on the maths, reading and science performance of 15-year-olds every three years. During each data collection cycle, one of the three areas is chosen as a major domain and tested in more detail. This means the best data to make comparisons of equity related to performance in each PISA subject is available every nine years.

Although PISA first began collecting data in 2000, its analysis in 2000 and 2009 was different, so a comparison of equity in reading is not possible. However, we can use PISA data to study the equity trends between 2003 and 2012, and between 2006 and 2015. The six graphs below (Figures 12a–f) present the data from the OECD’s three key measures of equity (in science and maths) for New Zealand, the OECD average, and the following English-speaking countries: Canada, the United States, the United Kingdom and Australia.

The graphs show how, compared to these comparator countries, New Zealand performed worst or second to worst in all six metrics in 2012 and 2015.⁹⁵ In all six measures, New Zealand’s equity has also stayed statistically the same or worsened.⁹⁶

Figure 12b shows, for example, that across OECD countries in 2012, 15% of differences in performance among students were explained by disparities in

students’ economic, social and cultural status (ESCS).⁹⁷ In New Zealand, ESCS explained 18% of the variation. In Canada it explained only 9%. This means in New Zealand in 2015 and 2012, the relationship between socioeconomic status and performance was stronger than in all four other comparator countries.

Figures 12c and 12d present data on the impact of the students’ socioeconomic status on their performance. PISA’s ESCS index is derived from several variables related to students’ family background. By scaling each index so that 0 indicates the OECD average and 1 the average standard deviation across OECD countries, it enables international comparisons between students with different socioeconomic profiles.

Across the OECD in both 2003 and 2012, the slope of the socioeconomic gradient was at 39 points. This means on average, students classified as socioeconomically ‘advantaged’ scored 39 points more than ‘average’ students, or 78 points more than students classified as socioeconomically ‘disadvantaged’.⁹⁸

By comparison, in New Zealand in 2012 the slope of the socioeconomic gradient was at 52 points (up from 44 in 2003). This meant on average ‘advantaged’ students scored 52 points more than ‘average’ students, or 104 points more than ‘disadvantaged’ students. To put these numbers in context, in 2015, 30 points equated with about one year of schooling.⁹⁹

⁹⁴ Steve May, Jonathan Flockton, and Sarah Kirkham, “PISA 2015: New Zealand Summary Report” (Wellington: Ministry of Education, 2016).

⁹⁵ Although the United Kingdom’s 2003 maths data is unavailable, in 2012 it too was outperforming New Zealand in all six equity measures.

⁹⁶ The only statistically significant changes are in Figures 12d and 12f.

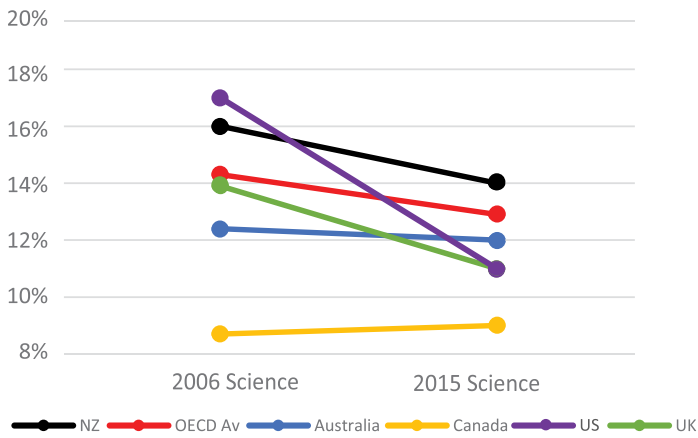
⁹⁷ ESCS refers to the PISA index of economic, social and cultural status.

⁹⁸ Students are considered socioeconomically advantaged if they are among the 25% of students with the highest values on the ESCS index in their country. Students are classified as socioeconomically disadvantaged if their values on the ESCS index are among the bottom 25% in their country. Those falling between are classified as having an average socioeconomic status.

⁹⁹ See Box I.2.1 “Interpreting differences in PISA scores: How large a gap?” in “PISA 2015 Results: Excellence and Equity in Education (Volume I)”. *This number must be understood as an approximate equivalent and does not take into account national variations or differences across subjects.*

Science trends (2006 and 2015)

Figure 12a: Percentage of variation in science performance explained by ESCS (2006 and 2015)



Maths trends (2003 and 2012)

Figure 12b: Percentage of variation in maths performance explained by ESCS (2003 and 2012)

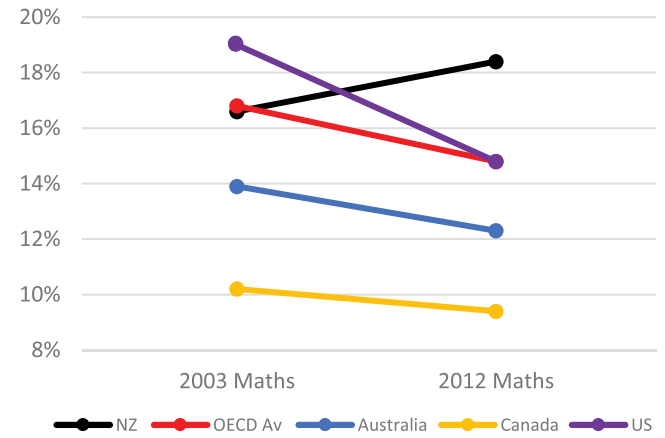


Figure 12c: Change in science associated with a one-unit increase in PISA's ESCS index (2006 and 2015)

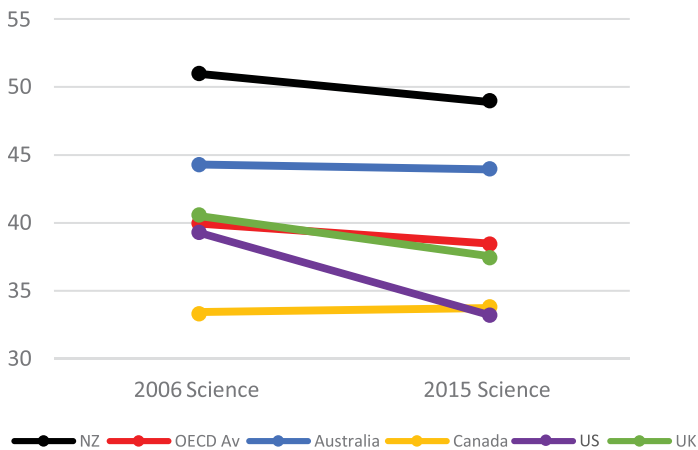


Figure 12d: Change in maths associated with a one-unit increase in PISA's ESCS index (2003 and 2012)

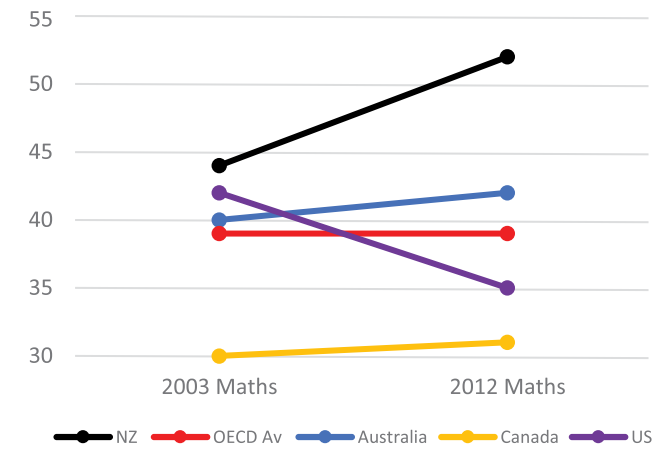


Figure 12e: Percentage of resilient students in science (2006 and 2015)

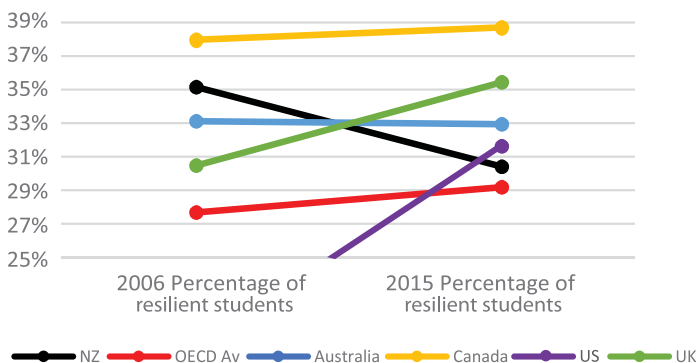
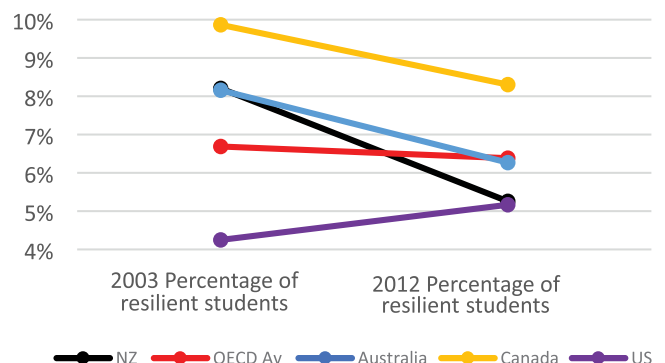


Figure 12f: Percentage of resilient students in maths (2003 and 2012)



Source: Data for Figures 12a–f extracted from OECD, “Snapshot of equity in education in PISA 2012 and change since PISA 2003”, in “PISA 2012 Results: Excellence through Equity, Giving Every Student the Chance to Succeed (Volume II),” (Paris: OECD Publishing, 2013); and OECD, “PISA 2015 Results: Excellence and Equity in Education (Volume I),” (Paris: OECD Publishing, 2016).

The OECD defines a student as resilient if he or she is in the bottom quarter of the PISA index of ESCS in their country/economy but still performs in the top quarter of students among all countries/economies, after accounting for socioeconomic status. Figures 12e and 12f show how the percentage of resilient students has changed over time. This is relevant because it gives a metric to the extent to which poverty is destiny in a country.

On average across OECD countries, between 2006 and 2015 the percentage of resilient students increased from 28% to 29%. At the same time New Zealand experienced a negative trend, from 35% to 30% resilient students (see Figure 12e).¹⁰⁰ Figure 12f also shows how the proportion of resilient students (in maths) dropped in New Zealand between 2003 and 2012 from 8% to 5%.

To unpick this trend, Figure 12g shows how the gap changed between the mean performance in maths of the top and bottom quarters of students by ESCS, from 2003 to 2012. New Zealand is an outlier in terms of the size of the gap, and the declining trend over time.

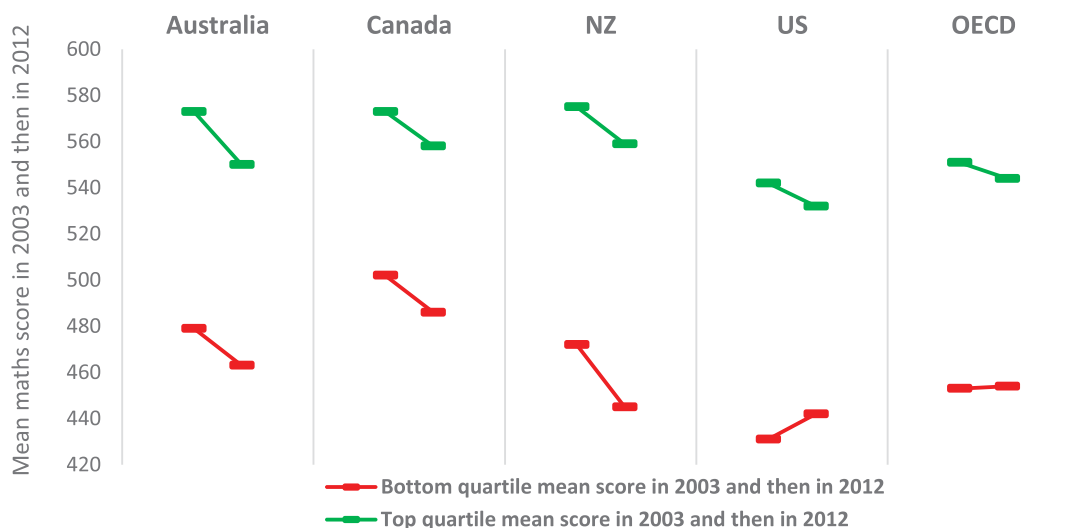
Across all OECD countries, the gap between the mean performance of the top and bottom quarters of students by ESCS has narrowed by 8 points. However, in New Zealand it has increased by 11 points. This is not because our top ESCS students have pulled further ahead. Actually, the mean performance of the top quarter has dropped by 16 points, but the mean performance of the bottom quarter has dropped by even more, at 27 points.

In-line with the picture illustrated using quartile data in Figure 12g, the 2015 PISA summary report for New Zealand explains that:

The distribution of student performance in New Zealand shows that we have relatively low equality (equity) in learning outcomes. There is a wider gap between the top ten percent and bottom ten percent of our students than in most other OECD countries.

Compared to the OECD average there is a larger difference in achievement between students from advantaged and disadvantaged backgrounds in New Zealand.¹⁰¹

Figure 12g: Mean maths PISA score (2003 and 2012)



Source: Data taken from OECD, “Change between 2003 and 2012 in students’ socio-economic status and mathematics performance” in “PISA 2012 Results: Excellence through Equity, Giving Every Student the Chance to Succeed (Volume II),” (Paris: OECD Publishing, 2013).

¹⁰⁰ However, although statistically significant at the 90% confidence level this trend was not statistically significant at the 95% confidence level.

¹⁰¹ Steve May, et al. “PISA 2015: New Zealand Summary Report,” op. cit.

What students study depends on socioeconomic status (SES) and ethnicity

In effect, NCEA is the name given to 80 credits from a vast array of standards, with some minimum literacy and numeracy requirements (see Chapter 2). As a result, aggregate data on NCEA certificate achievement masks huge variations in student performance, and fails to reflect the rigour or the challenge of the standards taken.

This reality is a direct consequence of NCEA's flexibility and underpinning principle of parity of esteem. Because of these, under NCEA 3 credits at Level 2 can be accumulated for passing standards titled anything from "Demonstrate understanding of atomic and nuclear physics" to "Experience day tramps."

One consequence of such an open and flexible system is to leave the door open to schools to provide certain students with 'safe passage' through NCEA. Safe passage refers to pathways in which students have maximum chances of NCEA success by avoiding academically challenging content. The students most vulnerable to safe passage are those whose families or mentors are ill equipped or unable to advise them otherwise.

Because NCEA outcomes are also used as a sorting mechanism for school leavers, and appear in league tables, they are widely regarded as having high stakes. This increases the pressure on schools to ensure safe passage, something that was probably worsened further by the (now nominally defunct) 85% Level 2 Better Public Service (BPS) target.¹⁰²

The *New Zealand Herald's* analysis in 2015 of all the standards sat in each subject confirmed that socioeconomic and ethnic factors correlate with the types of NCEA standards students encounter.¹⁰³

- Māori, Pasifika and low-decile students were less likely to take academic subjects than Pakeha, Asian and high-decile students.
- Māori, Pasifika and low-decile students were less likely to study externally assessed standards (involving exams).
- Māori, Pasifika and low-decile students were more likely to be entered in unit standards (i.e. vocational courses), none of which are in the university-approved list.
- At Level 2, Māori students in decile 1 schools were four times as likely as European students in decile 10 schools to take subjects in the 'services sector' field, which includes hospitality, tourism and retail. Popular standards in this field include cooking food by grilling and preparing espresso-based drinks.
- Even where students took the same subjects, the standards they entered differed. For example, in English, more low-decile students were assessed about a film; whereas more high-decile students were assessed about a written text, such as a Shakespeare play.

In response to the *Herald's* findings, Aaron Wilson, co-author of a University of Auckland report on 'opportunities to learn' in New Zealand secondary schools, explained that the qualification's design is partially to blame: "NCEA's greatest strength and greatest weakness is its flexibility," he said. "It can be

¹⁰² Although the BPS target was removed in 2017, many teachers interviewed report being unaware of this; the Ministry is also reported to be still using it.

¹⁰³ Kirsty Johnston, "What's beneath rising NCEA pass rates," *The New Zealand Herald* (26 September 2016), and Kirsty Johnston, "NCEA: The only brown kid in the room," *The New Zealand Herald* (26 September 2016).

used to recognise strengths and open doors, or pigeonhole kids and limit their pathways.”¹⁰⁴

Wilson’s report, with Irena Madjar and Stuart McNaughton, explored how socioeconomic status affects student participation in academic qualifications.¹⁰⁵ The researchers selected two challenging standards assessing reading in English, and analysed participation and pass rates, as well as teaching practices across 34 selected secondary schools.¹⁰⁶

In all the schools studied, participation in the two reading standards was below the national average. Even within this unrepresentative sample, students in the decile 1 and 2 (lowest SES) schools were 20–30% less likely to participate in the standards than those in decile 3 and 4 (medium SES) schools, and 25–35% less likely to participate than the children in decile 5+ (higher SES) schools. Where they did participate in the standards, the pass rates of students from low socioeconomic backgrounds were similar to the national average pass rate.

Wilson, et al. also looked at the content of students’ lessons. Instruction in low SES schools tended to involve shorter, simpler and less academically challenging texts. For example, in lower SES schools only 19% of the texts used were judged to have been written for adult audiences, compared to 40% in higher SES schools.

Unequal opportunities for students from low SES and certain minority communities are well recognised and documented internationally. However, the worrying conclusion was that this problem is worsened in New Zealand secondary schools by the flexibility of our assessment system. Wilson, et al. explained that “Although troubling, within the rules of the NCEA system and the wider policy environment, a decision not to enrol individual students in these standards may be legitimate, rational, strategic and evidence based.”¹⁰⁷

Reinforcing an intimation expressed elsewhere by the Starpath Project, Wilson, et al. concluded: “It is vital that all students have the opportunities to develop the learning that these standards represent. Although critical for students on the pathways to university, advanced literacy skills are equally important for other students whose future employment opportunities will be affected by their capacity to keep on learning...”¹⁰⁸

The message from this team of researchers, which includes the Ministry of Education’s chief education scientific advisor (McNaughton), is clear: NCEA’s flexibility is harming educational outcomes for already disadvantaged students.

¹⁰⁴ Kirsty Johnston, “What’s beneath rising NCEA pass rates,” *The New Zealand Herald* (26 September 2016).

¹⁰⁵ Aaron Wilson, Irena Madjar, and Stuart McNaughton, “Opportunity to learn about disciplinary literacy in senior secondary English classrooms in New Zealand,” *The Curriculum Journal* 27:2 (2016), 204–228, 222.

¹⁰⁶ Schools were selected through being part of the University of Auckland’s Starpath Project, which concentrates on predominantly low SES schools in Northland and Auckland. Twelve were in deciles 1 or 2, 11 in deciles 3 or 4, and 11 in deciles 5+.

¹⁰⁷ Aaron Wilson, et al. “Opportunity to learn about disciplinary literacy in senior secondary English classrooms in New Zealand,” *op. cit.* 20.

¹⁰⁸ *Ibid.* 22.

Few students in low decile schools even enter scholarship

Data on the uptake of the scholarship exam provides a further stark illustration of how opportunity to learn varies according to SES.

The uptake of New Zealand Scholarship, and the pass rate, varies dramatically by school deciles (see Figure 13). In 2016, all the decile 10 schools made 4,272 entries to scholarship, while all the decile 1 schools made just 154.¹⁰⁹ At a single decile 10 school, Wellington College, 50 more scholarships or outstanding scholarships were obtained in 2016 than in all decile 1–3 schools put together.

Students do not have equal access to the New Zealand Scholarship.

Box 6: Uptake of Cambridge

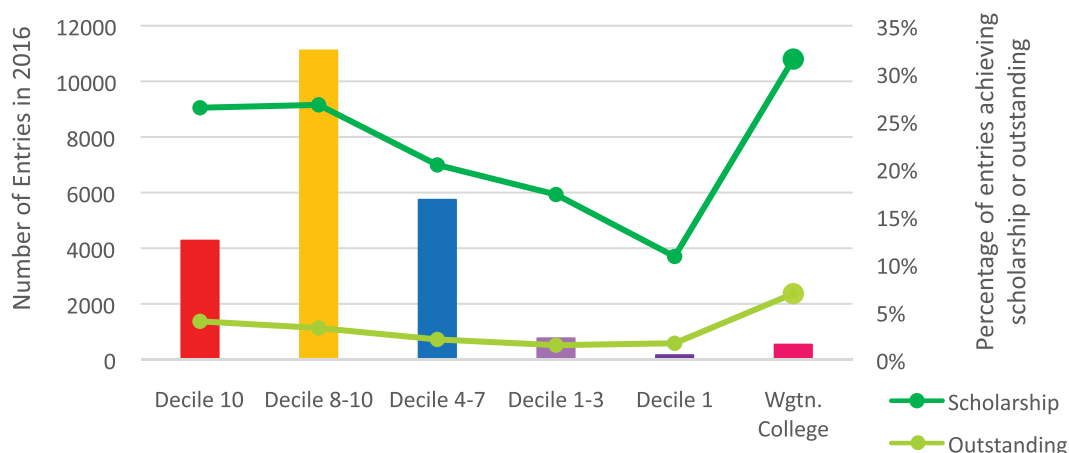
Cambridge International's assessments are commonly associated with an aspirational and prescribed curriculum. Its emphasis and level of detail are very different to those in the New Zealand Curriculum.

Since the early 2000s when NCEA was introduced, the number of schools offering Cambridge Assessment International Education's exams has grown from zero to around 50. Of these schools, around 40% are private. The remaining are state schools that offer Cambridge International exams either in a Dual Track alongside NCEA, with students choosing one or the other curriculum pathway, or as additional learning opportunities that enrich or expand the existing school curriculum.

Cambridge International reports that the number of New Zealand entries for its exams continues to rise. This rise may point to a further widening of the gap in curriculum access among students in New Zealand.

The differences between the progression models provided in the New Zealand Curriculum and those offered by Cambridge International are explored further in Report 2.

Figure 13: Entry numbers and achievement rates by decile band, and for Wellington College (2016)



Source: Data compiled from the NZQA website.

¹⁰⁹ According to Education Count's roll data by region and decile, in 2017, 7.8% of school students attended decile 1 schools, 14% decile 10 schools, and 22.5% deciles 1–3 schools.

Worsening motivation gap

Teachers report that NCEA is less motivating for underachieving than high achieving students, and that the motivation gap is worsening

Between 2006 and 2012, the NZCER's three-yearly survey of secondary schools asked teachers to rate how much they agreed that NCEA motivates high achieving students, and underachieving students, to do their best. Table 7 presents the results.

Table 7: Teacher survey on how NCEA affects student motivation

Percent of teacher who strongly agree or agree that:	2006	2009	2012
NCEA motivates high achieving students to do their best	21%	41%	51%
NCEA motivates underachieving students to do their best	42%	35%	30%

Source: Rosemary Hipkins, "NCEA One Decade On" (Wellington: NZCER, 2013), 35.

Between 2006 and 2012, the percentage of teachers reporting that NCEA motivates high achievers to do their best grew to just over 50%, and dropped from 42% to 30% for underachieving students.¹¹⁰ It is disappointing that in 2015 the NZCER did not collect data on these two metrics.

The rhetoric surrounding the introduction of NCEA suggested that because it would recognise student achievement hitherto unacknowledged, it would motivate a far wider range of students. It is concerning therefore that the NZCER's survey results suggest otherwise.

Changes to NCEA in 2007 aimed to address the motivation problem. However, parents and teachers interviewed for this report said many students are not motivated by anything other than accumulating credits, and reduce or increase their efforts once

80 credits have been achieved, sometimes not even halfway through the school year.

Without enquiring through the NZCER's three-yearly surveys, it is impossible to know how widespread this practice is. However, it seems likely that the students already 'least motivated to achieve' will be the most likely to 'take advantage' of the implicit message in NCEA that any effort and learning after gaining 80 credits is needless.

Conclusion

In an article for the *New Zealand Herald*, Michael Johnston, co-author of *NCEA in Context*, wrote:

The flexibility of NCEA is not something we should be prepared to relinquish. It has the potential to be used to assess programmes of learning that are innovative, engaging and enriching. However, since the 85 per cent target was announced, qualifications attainment has risen dramatically, especially for students at low decile schools.

It is hard to avoid the suspicion that at least some of this apparent improvement is based on learning that is of dubious value. If so, the equality of all credits under NCEA – parity-of-esteem – has resulted in a degree of injustice which, just as it did under the old hierarchy of subjects, seems to have fallen disproportionately on our poorest communities.¹¹¹

Evidence from proxy measures, collated in this chapter, suggests Johnston's suspicions are well founded: that features of NCEA's design have serious negative implications, which fall disproportionately on already disadvantaged students.

The introduction to this report acknowledged that under NCEA, the typical purpose of a national assessment, that of creating shared meaning for end-users, is secondary to flexibility and inclusivity.

¹¹⁰ According to Warwick Elley, one reason the motivation of high achievers is not higher may be that it is too easy for them to gain the top NCEA grade of excellence, beyond which there is no way to further stand out from peers.

¹¹¹ Michael Johnston, "What kinds of knowledge will serve our students best?" *The New Zealand Herald* (21 September 2016).

We might well agree that the frustrations of employers and universities (see Chapter 5), not to mention accountability, are a worthy trade for greater equity.

However, this chapter raises serious questions about whether NCEA is actually improving equity, or simply obscuring it behind a facade of equal esteem.

Ultimately, NCEA's flexibility has been afforded at the cost of a safety net.

In most developed countries, all students are assessed on a core curriculum (a safety net) of academic subjects at age 15 or 16. It is only after this that they significantly specialise. So regardless of family or socioeconomic background, all students encounter powerful skills and knowledge to enable them to partake as critical citizens of a democratic society and access broad career paths.

The minimum requirements of a national qualification send a clear signal to the whole system about what knowledge and skills all students can and should master.¹¹² Just as any school's performance reflects the expectations of its leaders, a country's educational performance will also reflect the expectations of its leaders.

In New Zealand, there is no nationwide core-curriculum assessment to signal minimum expectations, or mark the point beyond which students can significantly specialise. Of course, some schools impose these themselves. For example, they might make it compulsory to

complete standards in English, maths and science in Year 11, and perhaps even the humanities or a foreign language.

However, many schools do not. Instead, they give students and teachers the freedom to decide. It is little wonder certain highly valued and rigorous academic subjects like English and maths are taken up in far greater proportions by students in high decile schools.

It will always be difficult to meet the needs of all students within one national system. Tomorrow's Schools, NCEA and the New Zealand Curriculum try to address this by handing schools more flexibility and control.

However, one trade-off for this flexibility has been the safety net of an assessed, core curriculum, and this loss is likely to impact most on already-disadvantaged students. In a system designed to raise equity, this is a high price to pay.

Weighing up the needs of diverse stakeholders like employers and disadvantaged students will always be challenging for governments. However, with a system that not only frustrates end-users but also leaves disadvantaged students more vulnerable than ever, it is time for an honest conversation.

Chapter 4 explores the costs of NCEA to teachers and teaching. Chapter 5 examines how NCEA is used by universities and employers. The final section concludes the report, with recommendations, and looks ahead to Report 2.

¹¹² A small minority of students with particular learning difficulties will struggle or fail to achieve this. However, this is not itself justification for eliminating the idea of a minimum expectation.



Chapter 4

Impact on teachers and teaching

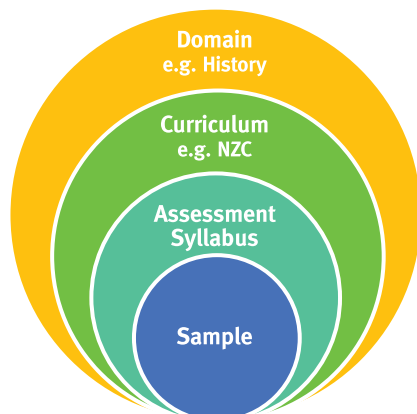
The most important interaction in schooling is between teacher and student. We need to understand how NCEA affects this.

It is problematic to make far-reaching generalisations across subjects, not to mention the richness and plurality of New Zealand schools and teachers. However, this chapter explores two of NCEA's most widely reported and troubling unintended consequences: the way it increases assessment volume and encourages teaching to the test.

NCEA increases assessment volume

In most countries (and previously in New Zealand), national assessments in academic subjects like maths or geography involve one or more end-of-year, term or programme exams. These 'terminal' exams do not try to assess students' understanding of the entire domain of the subject. Such an exam would be too long and too expensive to administer. Instead, most assess a sample of perhaps 10–30% of the domain, from which a valid inference can be made about a candidate's mastery of the *whole* domain.

Figure 14: Relationship between assessment domain and sample



Source: Developed from material in Daisy Christodoulou, *Making Good Progress* (Oxford University Press, United Kingdom, 2016), 59, 142, 190.

If the sample assessed is too small, the validity of any inference drawn is diminished. If the sample is too large, assessments become impractical to administer.

However, unlike the situation illustrated in Figure 14, under NCEA, a subject domain like Year 11 maths is divided into multiple standards, each standard is individually assessed, and stakeholders must be able to make valid inferences about the candidate's mastery of each *individual* standard.

Because NCEA data provides this much finer detail about students' performance, it necessitates significantly more assessment than the old exams, which provided for inferences only at the aggregate level.

Box 7: A 'typical' Year 12 student's experience of NCEA assessment

Willow is pursuing chemistry at Level 2. She might choose to complete two out of three external standards, accumulating 9 credits, and two internal standards, adding a further 6–8 credits. This means Willow completes one 2-hour exam at the end of the year (though she is permitted to stay for a third hour), and the two internal assessments (at some point in the year) designed by her teacher.

Since the target for Level 2 is 80 credits, Willow is also likely to study at least another four subject areas in a similar way. This could easily mean spending 10 hours in the exam hall at the end of Year 12 (plus Years 11 and 13 for Levels 1 and 3), in addition to the time she spends completing the 10 internal assessments during the year. This represents significant school-time, much of which might otherwise have been available for learning.

NCEA increases teachers' workload

Since 2009, the NZCER's three-yearly survey of secondary schools has tracked the percentage of principals and teachers who regard NCEA workload as a 'major issue facing the school'. For principals, this figure had risen from 39% in 2009 to 65% in 2015. For teachers, the equivalent figures were 46% in 2009 and 51% in 2015.

Despite 15 years to bed-down, teacher workload remains a serious ongoing issue for NCEA. As former teacher Richard Allardice wrote for *Stuff* in 2015:

I had to do so many assessments with the students there was barely time to teach them anything, and this bothered me more than anything else. NCEA is well intentioned - full of lovehearts and second chances - but the people who dreamed it up didn't consider how perpetual assessment and marking would impact on teachers.¹¹³

Beyond the NZCER survey, no systematic effort has been made to quantify the workload NCEA imposes on teachers, or its opportunity cost. However, it is likely to be significant. Teachers have finite capacity. The more they are consumed by activities other than planning lessons, teaching and marking, the more students' learning will suffer.

Added to this, New Zealand 'teachers are effectively the curriculum builders'.¹¹⁴ This is because, rather than being prescriptive, the New Zealand Curriculum addresses the big picture of the overarching purposes of learning. And while this brings some advantages (explored further in the Report 2), curriculum-building is time-consuming.

Under NCEA, teachers can devise interdisciplinary courses that cut across traditional subjects and meet the needs and interests of particular students. However, according to Alison this happens rarely. This may well be because devising coherent interdisciplinary courses is a time-consuming

exercise for teachers, especially if the courses are to meet the constraints of achieving UE.

NCEA also increases teacher workload by dramatically increasing the volume of internal assessment: 72% of all registered achievement standards and all unit standards are internally assessed.

On behalf of its members, the PPTA has consistently voiced concern about the workload implications of NCEA.¹¹⁵ A 2010 regional paper to the PPTA's annual conference listed what internal assessment entails for teachers:¹¹⁶

- set and supervise assessments
- write or adapt assessments to meet the national standard
- generate assessment schedules to meet the national standard
- have assessments pre-moderated
- have marking internally moderated and cross-checked
- allow resubmission and reassessment opportunities for students
- moderate other teachers' work
- maintain banks of files for external random moderation
- record grades
- respond to external moderation reports
- issue a final grade to students for qualifications
- undertake professional development to ensure they understand the national criteria
- maintain annotated benchmark samples of student work.

¹¹³ Richard Allardice, "Turning my back on teaching," *Stuff* (15 February 2015).

¹¹⁴ Mark Sheehan, et al. *NCEA in Context*, op. cit. 206.

¹¹⁵ Post Primary Teachers' Association (PPTA), "The Secondary Teacher Workload Working Group Report," Website (2016). For recommendations on reducing the workload implications of NCEA, see Post Primary Teachers' Association (PPTA), "Advice and Issues: Teacher workload," Website.

¹¹⁶ Post Primary Teachers' Association (PPTA), "NCEA Internal Assessment: A harder job than professional marking! A combined paper from the Manawatu-Whanganui & Auckland Regions," Annual Conference (2010).

The paper pointed out that designing assessments to a standard equivalent to external exams, marking them, and issuing final grades should not be the routine, unrewarded job of a teacher. Rather it is a role normally carried out by paid contractors or employees of the qualifications authority.

In response to the PPTA's advocacy, NZQA has created many more materials to support teachers with assessment design and accurate, reliable marking. It is likely these make the assessment and judgment process somewhat easier and more reliable. However, most of the additional workload remains. And these additional resources bring at least two unintended negative consequences.

One is to limit the extent to which teachers use the freedoms intended for internal assessments. This topic will be explored in Report 2.

The other is to equip educators with more resources from which to teach to the test, rather than the full domain of any subject. The unquantifiable and potentially enormous consequences of this are examined below.

NCEA encourages teaching to the test

Unlike height or weight, learning is invisible, so we can only ever measure proxies for it. Because of this there will always be ways to distort the measurement of learning.

'Teaching to the test' describes the practice of coaching students in the detail of exam questions and selected content to boost their short-term performance in assessments, rather than their long-term learning. Although the term refers to tests, it equally applies to any form of assessment. Its student-initiated equivalent is massed practice, or 'cramming'. Both invalidate the long-term inferences to which national assessment data are put.

There is no way to quantify the extent of teaching to the test, or the damage it causes. However, the NZCER surveys of secondary schools in 2012 and 2015 did report that most principals, teachers

and trustees thought assessment was driving the curriculum, even in Years 9 and 10.¹¹⁷

The extent of teaching to the test in New Zealand is often blamed on the government's BPS target of 85% of 18-year-olds achieving NCEA Level 2 or an equivalent qualification by 2017.¹¹⁸

However, although this will undoubtedly have increased the incentive to teach to the test, it is an oversimplification to suggest it was the cause. Teaching to the test occurs where there is an incentive and opportunity to do it. Even without the BPS target NCEA is a high stakes assessment. This means the incentive remains.

Added to this, at least three features of NCEA's design – the way it chunks subjects, the fact it is based on standards rather than norms, and its reliance on internal assessment – encourage teaching to the test. Added to this, the limited content of the New Zealand Curriculum further compounds the problem, particularly in subjects like history.

Chunking exacerbates teaching to the test

"Teaching to the test is ... like death and taxes – unavoidable," wrote Alison Wolf, King's College London assessment expert.¹¹⁹ Alongside this, Wolf explained that:

"... the more tests and exams there are, the more time is spent teaching to them ... the more discrete and separate tests you have, and the more you make all of them high-stakes (because they count towards a diploma or carry points), the more you lose any balance in the curriculum."

¹¹⁷ Cathy Wylie, "Secondary Schools in 2012: Main Findings from the NZCER National Survey" (Wellington: NZCER, 2013), 15, and Cathy Wylie and Linda Bonne, "Secondary Schools in 2015," *op. cit.* 157.

¹¹⁸ This target, established in 2013, was achieved in 2016, and has since been removed. However, the pressure for high NCEA pass rates undoubtedly remains, not least because they inform parents' and the Education Review Office's (ERO) judgments about schools.

¹¹⁹ Alison Wolf, "Looking for the best result," in *Make the Grade* (Institute of Educational Assessors, Summer 2008).

Knowing what we do about how NCEA chunks subjects down into multiple smaller standards, it is surely hard to imagine a national assessment that better matches Wolf's description.

To illustrate the point, let us compare the incentives in a system that assesses a whole subject at the *end* of a year-long course, with NCEA, which encourages teachers to assess standards throughout the year.

In the first scenario, students work on the basis that they will, in November/December, be expected to recall an unknown sample selected from everything they have studied in the year. This encourages the types of teaching and learning that ensures knowledge and skills are committed to long-term memory.

By comparison, under NCEA, standards assess much smaller domains of knowledge, usually covered far more recently. As a result, it encourages more short-term styles of teaching and learning.

Of course, cramming or teaching to the test are a feature of preparation for most assessments, mainly because we have not identified effective ways to test students on their learning 10, 20 or 50 years in the future (plus end-users need the information sooner than that). However, even more so than terminal assessments, NCEA encourages what assessment expert Dylan Wiliam calls:

... a 'banking' model of assessment in which once a student has earned a grade for an assignment, they get to keep that grade even if they subsequently forget everything they knew about this topic. It thus encourages a shallow approach to learning, and teaching. Students know that they only have to remember the material for two or three weeks until they take the test on that material, and they can then forget it, so there is no incentive for the students to gain the deep understanding that is needed for long-term recall.¹²⁰

¹²⁰ Dylan Wiliam, "What assessment can – and cannot – do" (2011), cited in Daisy Christodoulou, *Making Good Progress* (United Kingdom: Oxford University Press, 2016), 135.

Echoing this, one head of English interviewed for this report explained that:

In NCEA, many students can only produce the standard of work required on a one-off basis, and only because the teacher drags them 'over the line'. Give the student a similar task two months later and ask her/him to replicate the result independently, inevitably s/he can't.

To me, this undermines the whole point of education.¹²¹

This is arguably a perversion of the intention of any assessment. However, it reflects what many teachers shared with us, and a problem intensified by the chunked-up nature of NCEA assessments.

Standards-based assessment exacerbates teaching to the test

To ensure teachers and students prepare to answer questions on the full domain of a standard, 'surprise' about the assessment sample is essential. Standards-based assessment encourages teaching to the test by limiting surprise.

Under norm-referencing, assessments can be altered from year to year (they can incorporate surprise) without undue concern for consistency. This is because the normative process ensures distributions do not vary.

However, this is not an option in pure standards-based assessment. Instead, to maintain grade distributions within acceptable limits, assessments remain relatively consistent over time. The downside of this is it reduces surprise, thereby encouraging teaching to the sample, rather than the domain.

Since 2006, NZQA has incorporated elements of norm-referencing – such as PEPs and GSM – into the way it grades external standards. However, the principle that assessments should remain similar from one year to the next largely remains.

Standards-based assessment is entirely appropriate for many vocational and professional skills, such

¹²¹ Personal interview (October 2017).

as being able to “Provide basic life support” or “Key in text at 15 words per minute (wpm).” These skills are relatively discrete procedures that an employee might one day undertake. As such it is appropriate they are assessed discretely and without surprise. It is also appropriate to make pass/fail judgments about them; a candidate either can or cannot type at 15 wpm.

As *NCEA in Context* explains, “unit standards are most suitable for the domain of human knowledge for which they were originally designed to assess: that is, skills and processes often associated with vocations and trades.”¹²²

But academic subjects do not lend themselves so easily to standards-based assessments. It is not straightforward to judge whether a child can work with fractions, read and enjoy literature, or understand photosynthesis.

As assessment expert, Dylan Wiliam, explains:

Even in subjects like mathematics, criteria have a degree of plasticity. For example, a statement like ‘Can compare

two fractions to identify which is larger’ sounds precise, but whether students can do this or not depends on which fractions are selected. The Concepts in Secondary Mathematics and Science (CSMS) project investigated the achievement of a nationally representative group of secondary school students, and found out that when the fractions concerned were 3/7 and 5/7 then around 90% of 14-year-olds answered correctly, but when more typical fractions, such as 3/4 and 4/5 were used, then 75% answered correctly. However, where the fractions concerned were 5/7 and 5/9 then only around 15% answered correctly (Hart, 1981).¹²³

In response to this complexity, NZQA equips teachers and assessors to make their own four-way judgments. The process begins with defining the criteria for the standard.

Box 8 shows how NZQA uses prose descriptors to define quality. However, prose descriptors can be interpreted in many ways. Achieving *merit* hinges on the adverb ‘convincingly’ and the use of language features ‘with control’. Achieving *excellence* hinges on the adverb ‘effectively’ and the

Box 8: A much-used internally assessed Level 1 English standard¹²⁴

Internally assessed Level 1 Achievement Standard 90053 is called “Produce formal writing”.

For the assessment, students must draft, rework and present at least one piece of formal writing that expresses ideas, information and/or opinions. The criteria for gaining *achieved*, *merit* and *excellence* are:

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Develop and structure ideas in formal writing. Use language features appropriate to audience and purpose in formal writing. 	<ul style="list-style-type: none"> Develop and structure ideas convincingly in formal writing. Use language features appropriate to audience and purpose with control in formal writing. 	<ul style="list-style-type: none"> Develop and structure ideas effectively in formal writing. Use language features appropriate to audience and purpose with control to command attention in formal writing.

¹²³ Kathleen Hart (ed.), *Children’s Understanding of Mathematics: 11–16* (London, United Kingdom: John Murray, 1981), cited in Dylan Wiliam, “Principled Assessment design (London, SSAT (The Schools Network) Ltd. 2014), 65.

¹²⁴ Achievement standard 90052 “Produce creative writing” is another popular internally assessed Level 1 English standard. Its descriptors are identical to those for the formal writing standard except the word ‘formal’ is changed to ‘creative’.

¹²² Mark Sheehan, et al. *NCEA in Context*, op. cit. 77.

use of language features ‘with control to command attention’. This illustrates the difficulty inherent in judging performance in academic subjects against standards.

Of course, quality-grading writing or performances can be problematic regardless of whether an assessment system is standards- or norm-based. However, for countries prepared to use rankings to inform their judgment systems, one promising and innovative online solution is Comparative Judgement (CJ).

Box 9: Comparative Judgement

Under traditional approaches to marking open-ended tasks like essays, quality is judged against worded prose descriptors. This makes marking time-consuming and relatively unreliable. Under Comparative Judgement (CJ), the marker reads two essays online and simply decides which is better. They and four other colleagues (who could be online anywhere in the world) do this 100 times each. Finally, the CJ algorithm works out the rank order of the 500 essays, plus a score for each student.

CJ has been found to produce impressively reliable results, and in far less teacher time than traditional grading methods.

CJ does not eradicate teaching to the test. However, it does eliminate the need for detailed prose criteria and, thereby, affords greater opportunity to reliably grade creative and open-ended tasks.

Source: The Royal Society for the Encouragement of Arts, Manufactures and Commerce (RSA), “The Ideal School Exhibition” (16 November 2017), 108.

Because distinguishing descriptors remain problematic, and in response to the PPTA’s activism on behalf of teachers, NZQA has over the years increasingly provided teachers with assessment support materials that help them understand exactly what is required to meet the standards.

For internal standards, these materials include exemplar assessment tasks (with model answers) and assessment reports. For external standards, they include past papers with marked and graded exemplar answers, and assessment schedules.

However, although these materials improve the accuracy of judgments, they also implicitly encourage teachers to narrow their focus to the sample; they encourage teaching to the test.

Internal assessment exacerbates teaching to the test

Internal assessments encourage teaching to the test in two ways.

First, the more materials NZQA provides to support teachers to make accurate, reliable assessment judgments, the easier and more logical it is to teach from or using these materials, thereby teaching the sample rather than the domain.

Second, many internally assessed standards cover a breadth of content, but suggest through their exemplars that assessments address only part of it. For example, the teacher guidance for the standard (see Box 8) – “Produce formal writing” – explains that formal writing might include reports, commentaries, text reviews, (auto)biographical profiles, articles, expository essays, digital text forms, and other appropriate formal writing text types.

If this standard was externally assessed, teacher and student need not know in advance which type of writing would be assessed (i.e. the nature of the sample). They would therefore prepare for the entire domain of the standard. However, because it is internally assessed, the element of surprise is removed, and teacher and student need only prepare for one type of formal writing. Often this will be the one exemplified in the support materials.

In the words of one English teacher interviewed for this report:

The government is quite keen to see teachers explore different ways of assessing a standard than what is offered by the exemplar ... But there are strong disincentives to do this.

- a. It is much easier and safer to stick to making student work look exactly like the provided exemplar.
- b. There is no real way to check whether the task you are inventing really matches the standard – you can’t ask anyone from the NZQA.

c. If this standard gets called up for external moderation, there is a chance you will get slammed and get a 'Not yet consistent' grade from the NZQA if they don't like your interpretation of any particular, horribly vague standard. This means a deputy principal will be grumpy with you, and you will seem like an incompetent head of department/teacher.

And there is little benefit to doing something different to the exemplar. So almost everyone sticks to what the exemplar looks like. These exemplars, some 10 years old and quite random, have an enormous impact on what students are taught to do at secondary school in New Zealand. Even more than the standards, they are the curriculum.¹²⁵

NZC exacerbates teaching to the test

Teaching to the test occurs when, for whatever reason, teachers treat the assessment sample as the domain their students should master. Since assessment outcomes are only ever proxies for learning, and measure samples from wider domains, there will be invariably be shortcuts to doing well in them, which do not lead to genuine learning. However, one important protection against this is to provide teachers with a coherent curriculum – a progression model – to guide their planning and teaching.

As British English teacher Daisy Christodoulou says in *Making Good Progress*, “Establishing an accurate and useful progression model is the foundation of any assessment system.”¹²⁶

But contrary to this, one of NCEA’s most prized features is how it breaks down traditional subject-based progression models into multiple discrete standards. In empowering teachers with the flexibility to create ‘engaging and relevant’ cross-curricular courses, NCEA also discourages the very notion of the coherent progression model.

And the New Zealand Curriculum does not provide the needed progression model. The curriculum is organised around ‘eight learning areas’ – English, the arts, health and physical education, learning languages, mathematics and statistics, science, social sciences, and technology – rather than subjects.

Next within social sciences for example, the discrete subjects (social studies, economics, geography and history) do not manifest until Level 6 (around Year 11), and even then, the New Zealand Curriculum provides only high-level and vague achievement objectives (see for example Box 10).

Box 10: The finest level of detail NZC provides for Levels 6–8 (Years 11–13) history¹²⁷

Students will gain knowledge, skills and experience to:

Level 6

Understand how the causes and consequences of past events that are of significance to New Zealanders shape the lives of people and society.

Understand how people’s perspectives on past events that are of significance to New Zealanders differ.

Level 7

Understand how historical forces and movements have influenced the causes and consequences of events of significance to New Zealanders.

Understand how people’s interpretations of events that are of significance to New Zealanders differ.

Level 8

Understand that the causes, consequences, and explanations of historical events that are of significance to New Zealanders are complex and how and why they are contested.

Understand how trends over time reflect social, economic, and political forces.

¹²⁵ Personal interview (November 2017).

¹²⁶ Daisy Christodoulou, *Making Good Progress*, op. cit. 201.

¹²⁷ New Zealand Curriculum, “Social sciences: Achievement objectives,” Website.

Another example comes from the chemistry achievement objectives.¹²⁸ For Level 6 (Year 11), the New Zealand Curriculum’s only guidance, found under a science sub-category called “Material world”, explains that students will:

- identify patterns and trends in the properties of a range of groups of substances, for example, acids and bases, metals, metal compounds, and hydrocarbons;
- explore factors that affect chemical processes; and
- link atomic structure to the organisation of the periodic table.

These seemingly innocuous statements are, in fact, highly problematic because they essentially describe all of chemistry. With this vague guidance, what should teachers actually teach? What are the key concepts children should know and apply?

With the vagaries of these statements in mind, it is no surprise many teachers resort to NCEA standards to inform their planning and teaching.

At least in subjects like chemistry, the standards elaborate on the generic bones of the New Zealand Curriculum. But in a subject like history, not even the standards are helpful, (see Table 8).

Table 8: Level 2 history standards, along with the 2016 uptake data

Number	Standard Title	Number of credits	Internal/ External	Uptake (2016)
91229	Carry out an inquiry of an historical event or place that is of significance to New Zealanders	4	Internal	10,814
91230	Examine an historical event or place that is of significance to New Zealanders	5	Internal	7,159
91231	Examine sources of an historical event that is of significance to New Zealanders	4	External	465
91232	Interpret different perspectives of people in an historical event that is of significance to New Zealanders	5	Internal	6,735
91233	Examine causes and consequences of a significant historical event	5	External	7,388
91234	Examine how a significant historical event affected New Zealand society	5	External	403

Source: New Zealand Qualifications Authority (NZQA), Search results for “History Level 2” Website.

¹²⁸ New Zealand Curriculum, “Science: Achievement objectives,” Website.

Each standard involves the study of a significant historical event. However, the selection of events is left to classroom teachers. It is conceivable therefore that while some teachers may introduce their students to many historical events and periods, encouraging them to complete different standards on different topics, others may limit the curriculum to just one or two events which are then used as the context for multiple assessments. This kind of short-cutting undermines long-term domain-based learning in pursuit of assessment success.¹²⁹ However, it is also perfectly permissible and even rational within NCEA.

Continuing with history, Table 9 reproduces the external exam question set for one of the Level 2 standards every year since 2012. It takes little analysis of Table 9 to notice that each year the exam question hardly changes.

Normally, when students get hold of an exam question before an assessment, we call this cheating. However, in NCEA history, external assessments change so little from year to year that it effectively replicates the cheating scenario, just without any suggestion of a problem.

As to whether the public, the Ministry of Education and NZQA regard this situation as troubling, the episode described in Box 11 is instructive.

Table 9: External exam questions for history standard 91233 (2012–16)

Year	Essay question for Standard 91233: Examine causes and consequences of a significant historical event
2016	Examine the long-term and short-term causes of a significant historical event, and explain the consequences.
2015	Examine the causes of a significant historical event, and explain the short-term and long-term consequences.
2014	Examine the most important causes and consequences of your chosen significant historical event.
2013	Examine the causes of a significant historical event, and the positive and negative consequences of the event on people.
2012	Examine the causes and consequences of a significant historical event that had an impact on the lives of a significant number of people.

Source: New Zealand Qualifications Authority (NZQA), Search results for “History Level 2 exams” Website.

¹²⁹ There is a view held by some educators that this type of learning – on one or only a small number of topics – is not itself necessarily problematic, because students have the opportunity to gain deeper and more nuanced insights. The evidence for and against this viewpoint will be explored in Report 2.

Box 11: June 2017 NCEA history news story

In June 2017 two South Auckland high-school students discovered (on the NZQA website) a Level 1 History *excellence* exemplar from 2012 that was, in the words of their teacher “clearly plagiarised” from the previous year’s equivalent.¹³⁰ At the time, the *New Zealand Herald* interviewed History Teachers’ Association Treasurer Greg Burnard. He explained that since the curriculum was changed from prescribing content, such as specific historical events, to a ‘generic’ system allowing each teacher to choose which topics to teach, memorising the exemplars and reproducing them in exams had become reasonably widespread across the country.

Memorising an exemplar is not going to be punished, essentially. It’s not seen as cheating. It’s just seen as being well prepared. There are minor tweaks with the question year by year, but essentially the question is pretty predictable, so it is open to abuse in that regard.¹³¹

In response to the media noise the students’ discovery created, then Minister Nicki Kaye called a meeting with senior NZQA staff. NZQA conducted an internal review. In addition, given the role and importance of annotated exemplars, NZQA appointed Gregor Fountain, then principal of Paraparaumu College, to conduct an independent review. However, the scope of both reviews was obstructively narrow. The first review was into “why the exemplar was not identified as being largely reproduced from the previous year’s” and the second was into “the process for selecting and publishing exemplars.”

It seems unlikely that the media story, and public outcry that triggered the reviews, was motivated by concern that NZQA failed to spot the plagiarisation of one of its *exemplars*. Rather it is likely that the outcry resulted from the public’s legitimate concern that such plagiarism of any exam script (rather than just an exemplar) is possible, and even permitted within our national assessment system.

At the time, Labour education spokesman Chris Hipkins said NZQA “do seem to have some quality control issues when it comes to exams.”¹³²

But, ultimately, this problem was not of NZQA’s making. Rather it arose from the inherent difficulty of reliably assessing a curriculum that does not specify substantive knowledge.¹³³

Due to the review’s restricted scope, when Fountain reported in July 2017, only one of his 12 recommendations even came close to illuminating the real root cause of the public outcry – the curriculum’s failure to specify any substantive content.¹³⁴

Fountain’s recommendation 11 reads:

NZQA should consult with subject associations and other relevant professional organisations to explore ways in which generic questions used to assess candidates in identified achievement standards can be varied from year-to-year.¹³⁵

However, even this recommendation presupposes that the curriculum must remain as it is, and therefore that the questions must remain generic.

Finally, it is worth noting that of Fountain’s 12 recommendations, at least eight have additional workload implications for classroom teachers. This places them in conflict with the ongoing efforts of the Workload Working Group.

¹³⁰ Simon Collins, “NZQA agrees to independent review of process of publishing ‘exemplar’ NCEA exam answers,” *The New Zealand Herald* (22 June 2017).

¹³¹ Simon Collins, “Minister issues ‘please explain’ after NCEA plagiarism praised as ‘excellence’,” *The New Zealand Herald* (22 June 2017).

¹³² Ibid.

¹³³ According to History teacher Michael Fordham, in history, substantive knowledge refers to knowledge of the past: people, dates, events, ideas, and so on. Disciplinary knowledge refers to knowledge of the discipline: historians’ methods, epistemological assumptions, conceptual frameworks, etc.

¹³⁴ Gregor Fountain, “Review of NZQA’s provision of annotated exemplars of student work for NCEA and New Zealand Scholarship” (Wellington, NZQA, 2017), 4.

¹³⁵ Ibid. 4.

In a recent guide to NCEA revision for *Stuff*, Haque explained some of his thinking on external exams:

By far the best way of preparing for examination is to work through previous examinations. Students should contact their teachers, or visit the NZQA web site to source past papers for the last two to three years.

When I was Deputy Chief Executive of NZQA with responsibility for NCEA one of the principles we established was that examinations should not be about “tricking” candidates or asking obscure questions. The content of an examination should not, in other words, be a surprise to any student who has been taught well and who has revised adequately.¹³⁶

However, ‘tricking’ and ‘asking obscure questions’ is not the same as including an element of surprise. Because while tricking is unfair, including an element of surprise is essential to ensuring students learn the domain rather than the sample.

Conclusion

This chapter is not intended as a criticism of teachers, or their students. In many cases, teaching to the test and memorising answers from a sample can involve a lot of hard work by both parties.

Rather, this chapter intends to draw the reader’s attention to some of NCEA’s damaging unintended consequences for what and how our children learn, and to the unquantified burden it imposes on teachers’ workloads.

Standards-based assessments, reliance on internal teacher judgments, and the paucity of detail in the curriculum all independently encourage teaching to the test. Taken together, and with the incentive effects of chunking, it should come as no surprise that our teachers and students direct their energies towards what they know will come up in assessments, rather than mastering domains.

¹³⁶ Bali Haque, “The good and bad of NCEA exams and how to revise for them,” *Taranaki Daily News* (10 November 2017).

In fact, with all this in mind it becomes hard to imagine why *any* student would bother mastering an entire domain, or any teacher would aim to teach it, when they can adopt such obvious shortcuts.

When NCEA is defended, it is often by implicitly criticising teachers. According to *NCEA in Context*:

Teachers who are skilful curriculum thinkers can design coherent, intellectually demanding courses while meeting a range of learning needs.¹³⁷

...

Teachers need the courage and persistence to get past the hand-holding instincts that come with the territory of supporting young people to succeed in NCEA. It is not easy to push back when students expect and demand short-term success. But the case study with which we end this chapter shows it can be done.¹³⁸

...

The potential for perverse effects from aspects of the way NCEA is put into operation ... these effects are not an inevitable consequence of NCEA. In every case we have been able to include examples of teachers who resist the pressures as presented, making principled teaching decisions with their students’ learning needs in mind.”¹³⁹

However, that *skilful curriculum thinkers can design coherent, intellectually demanding courses*; and that some teachers *resist the pressures presented* is no reason to accept a system that generates such serious perverse incentives for teaching and learning.

According to Michael Johnston quoted in *Newsroom*:

The problem with NCEA is that it’s very, very far from foolproof. It’s a tool that if you know how to use it, you can get a lot out of it, but if you don’t, you can make a real mess. And at the moment, we’re not using the system as well as we could.

...

¹³⁷ Mark Sheehan, et al. *NCEA in Context*, op. cit. 177.

¹³⁸ Ibid. 174.

¹³⁹ Ibid. 179.

Teachers have never been taught how to use NCEA in a way that doesn't focus on single-topic standard assessment and achievement.

Teachers should really be designing their own approaches for assessing their courses. That's what NCEA is designed to do, and that's a big ask for teachers, and they've got to be supported to do it.

...

If we got most of the schools using NCEA in the way it should be used, I think it would be an enviable system.¹⁴⁰

However, the same could be said about almost any system. For example, a transport researcher looking into rising road death tolls could say, "If only we could get all drivers to drive safely we would have an enviable road safety record."

Fortunately, transport policymakers do not lay blame for road deaths only at the feet of drivers. As well as speed limits, alcohol limits, driver training, and other approaches to changing driver behaviour, they also implement carefully evaluated policies – junction upgrades, barriers and new infrastructure, etc. – to improve road network safety.

To date, such robust evaluation and infrastructure improvements have not been applied to NCEA. But until we acknowledge that NCEA, and its marriage with the New Zealand Curriculum, is distorting teaching and learning and placing an unreasonable burden on teachers, we should not expect outcomes to improve much.

This chapter has not even begun to detail the level of professional contradiction NCEA places on teachers to both achieve the best scores for their students and operate as the objective external agent of NZQA. Rather, this will be explored in Report 2.

The solution must be two-fold. We must encourage teachers to reclaim their profession by starting always with the higher aims of education (see for example the NZC). However, alongside this, policymakers need to remodel NCEA so that it better supports this.

Teachers have finite capacity, a reality that will not change through more teacher training. We must be honest about this, and the opportunity costs of the trade-offs teachers make day in and day out for our children.

¹⁴⁰ Teuila Fuatai, "NCEA under review: Current approach missing the mark," *Newsroom* (31 October 2017).



Chapter 5

How useful is NCEA to employers and universities?

Alison Wolf explains that, although education is about learning:

... formal education is also, and intrinsically, about selection and certification ... Your skills are crucial in determining your promotion and success in life – but it is the credential that gets you on the shortlist and through the door.¹⁴¹

It is important therefore to evaluate how useful NCEA is to its end-users.

Employers and NCEA

It is reasonable to assume that achieving success in a national assessment would signal something meaningful about a student's skills in literacy and maths. It is also reasonable to assume that national assessment data should help employers to select between candidates, by shining light on their school achievements.

Concerns about levels of functional literacy and numeracy

To pass NCEA at any level, students must gain 10 Level 1+ literacy and 10 Level 1+ numeracy credits.¹⁴² This ought to reassure employers that students with NCEA certificates are functionally literate and numerate.

However, several employers interviewed for this report expressed concerns. Freightways CEO Mark Troughear explained:

We experience two groups of young people coming out of the NCEA environment; one who have very good academic ability, initiative, communication & social skills.

In complete contrast, there is another group that have not progressed through the NCEA system as well. They have poor communication skills, lack good work place ethics and often struggle with basic numeracy and literacy skills and require remedial numeracy and literacy training to be able to function adequately in the workplace. From the outside it seems that students may be being moved through the education system year by year regardless of their ability to achieve basic skills at each distinct stage.¹⁴³

2014 research commissioned by the Tertiary Education Commission (TEC) suggests that NCEA's literacy and numeracy requirements do not ensure students are functionally literate and numerate.

The TEC's research examined how NCEA's minimum requirements measured up against the proficiency levels used in the international Adult Literacy and Life Skills (ALL) survey.¹⁴⁴ From a tertiary cohort of 36,000 students aged 16–20, it found that only those with NCEA Level 3 were highly likely to operate at the international benchmarks required to “operate in an information-rich society.”

To measure the correlation with NCEA Levels 1 and 2, a representative sample of approximately 800 Year 11 and 800 Year 12 students was selected. Within this sample, only 49% of Year 11 students with NCEA Level 1 achieved the international

¹⁴¹ Alison Wolf, “Looking for the best result,” op. cit.

¹⁴² For UE, students must also gain 10 Level 2+ literacy credits, including five in reading and five in writing.

¹⁴³ Personal interview (January 2018).

¹⁴⁴ Gill Thomas, et al. “Alignment of Literacy and Numeracy Measures Research for the Tertiary Education Commission,” op. cit.

benchmark for reading, and 53% the benchmark for numeracy. Among the Year 12 students with NCEA Level 2, the numbers were not much higher: 60% achieved the international benchmark in reading, and 58% in numeracy.

Despite the worrying implications of this research, the Ministry of Education reports that since its publication in 2014, no further such benchmarking has been done and no further substantive research on the subject could be found.¹⁴⁵

One potential cause of NCEA's poor capacity to predict functional literacy and numeracy may be the changes that took place in 2011. As part of the curriculum realignment, the list of standards eligible for literacy and numeracy credits was expanded.

The questionable literacy aspects of one eligible health standard, "Take action to enhance an aspect of personal well-being" were explored in Box 4. In numeracy, the range of qualifying standards is equally broad. For example, the media studies standard "Demonstrate understanding of how individuals interact with the media" contributes three Level 1 credits towards both the literacy and numeracy requirements. Finally, three literacy and three numeracy unit standards were introduced in 2011. These also may not be fit for purpose.

Without analysis by the Ministry or NZQA, it is impossible to know the extent to which more tenuous routes are used to achieve NCEA's minimum literacy and numeracy requirements. It is also impossible to know how this practice breaks down across school deciles and ethnic groups. However, it seems logical that the students schools judge as least likely to continue with academic learning or UE will be those most likely to follow the more tenuous pathways to meet the minimum requirements.

Employers struggle to understand NCEA information

Figure 15 is an example of a Record of Achievement (RoA) generated through completion of NCEA Levels 1, 2 and 3. It is quickly apparent why employers in New Zealand find NCEA confusing and unhelpful. Josh Williams, chief executive of the Industry Training Federation, explained that many employers believe RoAs provide too much information; that it is written for educators, not employers, and often to the point where employers do not read them.¹⁴⁶

In response to member feedback, Kim Campbell, chief executive of the Employers and Manufacturers Association (EMA), reported in 2014: "The present NCEA report issued to school leavers is simply not up to the job for helping employers choose among young job seekers."¹⁴⁷

Instead, EMA proposed students be issued with a new document containing a meaningful assessment of skills, which employers can easily understand.

How can 'too much information' be a legitimate criticism of NCEA

Standards-based assessment, the foundation of NCEA, enables inferences about whether pupils can do highly specific tasks like "Key in text at 15 words per minute (wpm)" or "Provide basic life support."¹⁴⁸ This works fine for vocational skills. But where it is applied to the individual standards into which NCEA carved up all academic subjects, it produces unhelpfully narrow and yet still vague descriptors like "Read texts with understanding" and "Use number to solve problems."

¹⁴⁵ Ministry of Education, Email (11 October 2017).

¹⁴⁶ Personal interview (August 2017).

¹⁴⁷ Nicholas Jones, "NCEA report not up to the job, says employers' advocate," *The New Zealand Herald* (25 June 2014).

¹⁴⁸ Which are two examples of Level 1 Unit Standards available on the NZQF.

Figure 15: Sample Record of Achievement (RoA) generated through completion of NCEA Levels 1, 2 and 3

New Zealand Record of Achievement

NZQA
NEW ZEALAND QUALIFICATIONS AUTHORITY
MĀHĀ TOHU HĀTAURANGA O AOTEAROA
QUALIFY FOR THE FUTURE WORLD
KIA HONO TAKATU KI TŌ ĀHUA AOI

Ima Learner
Upper Valley Road
RD1
Rotorua

NSN: 128206
Issued: 07 August 2017

Qualification and Achievement Summary

New Zealand Qualification Framework Registered Qualifications

Qualification	Date
National Certificate of Educational Achievement (Level 3)	31 Dec 2016
National Certificate of Educational Achievement (Level 2) achieved with merit	31 Dec 2015
National Certificate of Educational Achievement (Level 1) achieved with merit	31 Dec 2014

Vocational Pathways

Pathway	Date
Service Industries	08 Jan 2016

Course Endorsements

Endorsement	Date
Reo Māori 2	12 Dec 2016

Standards Achieved

Each standard can have a range of results including 'A' for Achieved, 'M' for Achieved with Merit or 'E' for Achieved with Excellence. As some standards cannot be awarded all of those results, the result code is shown in bold where a candidate has reached the maximum possible result for that standard.

Standard	Credits	Result	Date
Communication Skills			
Level 3 1307 Speak to a known audience in a predictable situation	3	A	06 Jul 2016
1312 Give oral instructions in the workplace	3	A	06 Jul 2016
9051 Contribute within a team or group which has an objective	3	A	01 Aug 2016
11097 Listen actively to gain information in an interactive situation	3	A	27 Jun 2016
Level 2 1294 Be interviewed in a formal interview	2	A	29 Oct 2016
Core Generic			
Level 3 7126 Respond to oral one-to-one complaints	2	A	06 Jul 2016
Level 2 10781 Produce a plan for own future directions	3	A	19 May 2015
Level 1 29525 Use number to solve problems	4	A	12 Dec 2015
29526 Interpret statistical information for a purpose	3	A	12 Dec 2015
29527 Use measurement to solve problems	3	A	12 Dec 2015
Dance			
Level 3 91591 Perform a group dance	4	E	09 Nov 2016
91592 Perform a repertoire of contrasting dances	6	E	09 Nov 2016
Level 2 91209 Perform a repertoire of dance	6	M	02 Nov 2015
Level 1 90859 Demonstrate ensemble skills in a dance	4	A	02 Feb 2014
English			
Level 3 91478 Respond critically to significant connections across texts, supported by evidence	4	M	17 Mar 2016
91101 Produce a selection of crafted and controlled writing	6	A	06 Aug 2015
91104 Analyse significant connections across texts, supported by evidence	4	A	30 Jun 2015
Level 1 90503 Produce formal writing	3	A	25 Sep 2014
90549 Show understanding of specified aspect(s) of studied written text(s), using supporting evidence	4	A	12 Nov 2014

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Standard	Credits	Result	Date
English			
Level 1 90851 Show understanding of significant aspects of unfamiliar written text(s) through close reading, using supporting evidence	4	A	10 Nov 2016
90855 Create a visual text	3	A	17 May 2014
90856 Show understanding of visual and/or oral text(s) through close viewing and/or listening, using supporting evidence	3	A	30 May 2014
Health and Physical Education			
Level 1 90954 Demonstrate quality movement in the performance of a physical activity	3	A	17 Nov 2014
90956 Demonstrate interpersonal skills in a group and explain how these skills impact on others	4	A	21 Nov 2014
90973 Demonstrate understanding of interpersonal skills used to enhance relationships	5	A	25 Sep 2014
Horticulture			
Level 1 1 Prepare and sow outdoor seedbeds manually	5	A	04 Nov 2014
23783 Grow and maintain plants in containers from seed	5	A	04 Nov 2014
Hospitality			
Level 2 14462 Maintain personal presentation and greet customers in the hospitality industry	2	A	21 May 2014
Languages			
Level 3 91563 Demonstrate understanding of a variety of extended spoken Samoan texts	5	A	31 Dec 2016
91565 Interact clearly using spoken Samoan to explore and justify varied ideas and perspectives in different situations	6	A	12 Dec 2016
91566 Demonstrate understanding of a variety of extended written and/or visual Samoan texts	5	A	30 Dec 2016
91567 Write a variety of text types in clear Samoan to explore and justify varied ideas and perspectives	5	A	12 Dec 2016
Level 2 91143 Demonstrate understanding of a variety of spoken Samoan texts on familiar matters	5	A	24 Dec 2015
91145 Give a spoken presentation in Samoan that communicates information, ideas and opinions	4	A	04 Apr 2015
91149 Demonstrate understanding of a variety of written and/or visual Samoan text(s) on familiar matters	5	M	24 Dec 2015
91147 Write a variety of text types in Samoan to convey information, ideas, and opinions in generic contexts	5	M	22 Jun 2015
Level 1 90903 Demonstrate understanding of a variety of spoken Samoan texts on areas of most immediate relevance	5	M	19 Nov 2014
90905 Interact using spoken Samoan to communicate personal information, ideas and opinions in generic situations	5	A	25 Nov 2014
90906 Demonstrate understanding of a variety of Samoan texts on areas of most immediate relevance	5	M	19 Nov 2014
90907 Write a variety of text types in Samoan on areas of most immediate relevance	5	M	08 Sep 2014
Māori Performing Arts			
Level 3 22756 Perform a Māori performing arts bracket	10	M	01 Dec 2014
Level 2 13359 Demonstrate knowledge and skills of mōteatea	6	M	01 Nov 2016
13363 Demonstrate knowledge and skills of waiata ā-ringa	6	M	01 Nov 2016
Mathematics			
Level 1 91026 Apply numeric reasoning in solving problems	4	M	15 Apr 2016
91029 Apply linear algebra in solving problems	3	A	04 Sep 2016
Occupational Health and Safety			
Level 3 17591 Demonstrate knowledge of the prevention and management of Discomfort, Pain and Injury (DPI) in the workplace	8	A	29 Nov 2016
Reo Māori			
Level 2 91204 Whakarangona kia mōhio ki te reo o te ao torotoro	4	M	01 Dec 2015
91286 Pānui kia mōhio ki te reo o te ao torotoro	6	A	12 Nov 2016
91287 Tuhi i te reo o te ao torotoro	6	E	12 Nov 2016
Level 1 91085 Whakarangona kia mōhio ki te reo o tōna ao	6	E	10 Aug 2015
91086 Kōrero kia whakamahi i te reo o tōna ao	6	E	10 Aug 2015
91087 Pānui kia mōhio ki te reo o tōna ao	6	E	25 Nov 2014
91088 Tuhi i te reo o tōna ao	6	A	25 Nov 2014
91089 Wāhanganga tuhinga i te reo o tōna ao	6	E	10 Aug 2015

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Retail, Distribution, and Sales

Standard	Credits	Result	Date
Level 2 11938 Assist customers to select goods and/or services face to face	3	A	19 Aug 2015
11941 Establish and maintain positive customer service interactions	2	A	19 Aug 2015
11968 Demonstrate and integrate knowledge of legislation applicable to sale of goods and services	4	A	19 Aug 2015
11971 Use safe work practices in a retail or distribution environment	3	A	31 Jul 2015
11974 Participate in a team in a retail or distribution environment	4	A	19 Aug 2015
19583 Demonstrate knowledge of products in a retail or distribution environment	4	A	19 Aug 2015
Science			
Level 1 90918 Carry out a practical agricultural or horticultural investigation	4	A	30 Oct 2014
90926 Report on a biological issue	3	A	30 Oct 2014
Service Sector Skills			
Level 3 376 Employ customer service techniques to accommodate customer behavioural styles in a workplace	2	A	19 Aug 2015
11818 Demonstrate and apply product and/or service knowledge	2	A	06 Jul 2016
Level 2 57 Provide customer service	2	A	21 May 2014
Level 1 56 Attend to customer enquiries face-to-face and on the telephone	2	A	21 May 2014
Social Science Studies			
Level 1 91042 Report on personal involvement in a social justice and human rights action	4	M	27 Aug 2014
91043 Describe a social justice and human rights action	4	A	01 May 2014
Te Marautanga o Aotearoa			
Level 2 91737 Te whakamātau i ngā pūkenga toi o ngā toi ātaata	4	M	01 Dec 2016
91739 Te whakamātau i ngā tukanga toi o ngā toi ātaata	4	M	01 Dec 2016
Tourism			
Level 2 18237 Perform calculations for a tourism workplace	3	A	14 Aug 2015
24728 Demonstrate knowledge of work roles in tourism	3	A	01 Sep 2015
24729 Demonstrate knowledge of world tourist destinations	4	A	01 May 2015
24730 Demonstrate knowledge of the business of tourism	4	A	06 Aug 2015
24731 Demonstrate knowledge of destination(s) New Zealand	4	A	09 Jun 2015
24732 Demonstrate knowledge of tourist characteristics and needs	3	A	20 Feb 2015
Visual Arts			
Level 2 91185 Communicate a considered personal response to art works	4	A	02 Apr 2015
Level 1 91017 Demonstrate understanding of links between context(s) and art works	4	A	02 Sep 2014

End of Transcript

Signature of NZQA Chief Executive

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Source: New Zealand Qualifications Authority (NZQA), "New Zealand Record of Achievement," Website.

The problem, to quote Dylan Wiliam, is that:

We are hardly ever interested in how well a student did on a particular assessment. What we are interested in is what we can say, from that evidence, about what the student can do in other situations, at other times, in other contexts.¹⁴⁹

In an extreme example, it would not be useful for an employer, university or parent to know a student scored a *pass*, *merit* or *excellence* in a test of “Adding two fractions.” Rather they will be able to make more useful inferences from knowing how well a student scored on an assessment of “Applying numeric reasoning in solving problems” or “All the skills required for Year 11 Maths.”

The middle example, “Applying numeric reasoning in solving problems,” is a Level 1 NCEA maths standard of the sort that might currently be reported on a student’s RoA. However, after more than a decade, some employers still say they do not understand NCEA RoAs, and find the level of detail unhelpful.

Vocational pathways to make NCEA more understandable

To lessen employers’ bafflement by NCEA RoAs, as well as students’ and parents’ confusion with the breadth of NCEA options available, the Industry Training Federation has worked with the Ministry of Education and NZQA to create six vocational pathways for NCEA.

These six pathways were created in consultation with representatives from all the industry sectors and with teachers. They are designed to help students connect their subject choices with the world of work by identifying standards that could help them build strong pathways to careers.

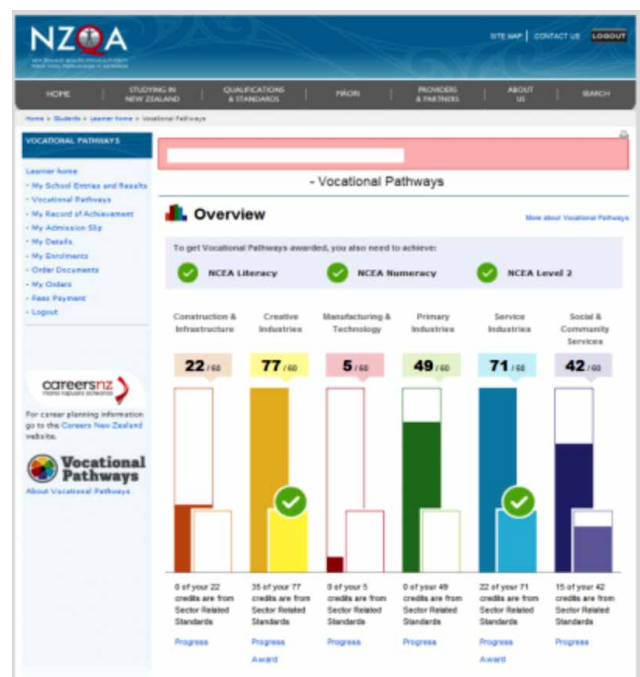
For example, at Level 2, students interested in entering the service sector are directed towards a long list of language standards (from Korean to Te Reo Māori) and a specified list of 100 standards from across:

- Accounting
- Design and visual communication
- Generic technology
- Media studies
- Art history
- Digital technologies
- Geography
- Physical education
- Biology
- Drama
- Health
- Processing technologies
- Business studies
- Economics
- History
- Social studies
- Chemistry
- Education for sustainability
- Home economics
- Visual arts
- Classical studies
- Mathematics and statistics
- English

When students access their NCEA record of achievement they can also access a graph showing the vocational pathways into which their standards fit (see Figure 16). The hope is this will also help employers identify students’ achievements.

However, the process of selecting standards has shown that some standards qualify for multiple pathways, and still more for none at all. Table 10 details the number and percentage of all the 2,975 Level 1 and 2 standards (in 2018) that qualify for zero to all six pathways.

Figure 16: Sample vocational pathway



Source: Youth Guarantee, “Employers: What is a Vocational Profile?” Website.

¹⁴⁹ Dylan Wiliam, *Principled Assessment design*, op. cit. 22.

Table 10: Level 1 and 2 standards qualifying for zero to all six vocational pathways (2018)

Number of pathways the standards appear in	Number of standards	Percentage of all standards
0	815	29%
1	1365	49%
2	284	10%
3	158	6%
4	86	3%
5	27	1%
6	60	2%
	2,795	100%

Source: Youth Guarantee, “Resources: “Vocational Pathways Materials,” Website.

A student could graduate from school with NCEA having accumulated very few standards in any vocational pathways, or indeed *all* their standards in just one pathway. The implications of this vast flexibility will be explored further in Report 2.

Universities and NCEA

UE has always been determined by NZQA, in consultation with universities and the Vice Chancellors Committee. Reviewed and updated regularly, the UE bar was last changed in 2014. The specific requirements for UE are presented on p.33.

Universities reverse-engineer NCEA scores into rank scores

Although UE guarantees entrance to university, universities can and do institute additional requirements for entry to certain programmes.¹⁵⁰

One of the main motivations for introducing standards-based assessment was to eliminate the ranking and sorting of candidates. However, New Zealand universities continue to do it, using information from NCEA certificates.

Faced with tens of thousands of RoAs (see Figure 15) containing a multitude of *achieved*, *merit* and *excellence* grades, the universities have designed a pragmatic process that converts NCEA outcomes into an aggregated single number known as a rank score.

Box 12: Rank scores

In addition to UE, universities have also developed rank scores (or Cumulative or Guaranteed Entry scores) to help determine entry to specific courses.

For example, to join the Bachelor of Engineering course at the University of Auckland, students must have achieved from their Level 3 NCEA a rank score of at least 260, including at least 17 external Level 3 credits in calculus and 16 external Level 3 credits in physics.¹⁵¹ Students are allocated a rank score based on their best 80 credits at Level 3 or higher, in a maximum of five approved subjects and 24 credits per subject, weighted by the level of achievement attained in each set of credits. *Achieved* credits are worth 2 points each, *merit* 3 points each, and *excellence* 4 points each. The maximum rank score is 320 (80 x 4). Unit standards are not included in the calculation.

However, there are several challenges to the validity of rank scores as a selection tool and predictor of academic achievement:¹⁵²

The weightings allocated to *achieved*, *merit* and *excellence* grades are arbitrary. Added to this, achievement of *achieved*, *merit* and *excellence* grades varies from subject to subject, but this is not reflected in the rank scores. Similarly, internally and externally assessed achievement standards are treated equally in the rank score, even though the proportion of students achieving endorsements in externally assessed standards is generally lower.

Rank scores do not provide a balanced representation of students' abilities in the courses for which they are applying.

Rank scores ignore the literacy and numeracy components of UE, even though these skills are vital for successful study at university.

¹⁵⁰ For example, entry into some university programmes also requires prerequisites in specified Level 3 subjects or achievement standards.

¹⁵¹ University of Auckland, “Study: Study Options: Find a Study Option: Bachelor of Engineering honours,” Website.

¹⁵² John Boereboom, “University Entrance: Always a Bridesmaid?” Education Review (October 2016).

Ultimately, rank scores are a primitive numerical ranking system retrofitted to a system designed in part to eliminate such ranking. Because of this they fulfil their role imperfectly and throw up anomalies. These anomalies are explored further in The New Zealand Initiative's 2018 report *Score! Transforming Education Data*, which documents and justifies the creation of a Weighted Relative Performance Index (WRPI) as an alternative measure of student performance derived from NCEA results.

Raising entry requirements

Following NZQA's 2016–17 review of UE requirements, one of the two areas indicated for further consideration and consultation was the list of standards that meet the literacy requirement of UE.¹⁵³

Moreover, it is not only New Zealand universities that have found basic UE wanting. From 2017, the requirements for admission to a German university for students who completed secondary schooling in New Zealand were formally increased to better align with Germany's Abitur requirements. To enter a German university, along with UE, students must now gain "14 credits in mathematics or calculus made up of seven credits at Level 3 and seven credits at Level 2 or above."¹⁵⁴

The University of Auckland (UoA) also has a history of raising its entry requirements. For example, in 2002 it introduced a Diagnostic English Language Needs Assessment for all new students; in 2010, it increased the rank score required for BA programmes from 120 to 150 credits; and in 2016, it raised its UE threshold from 10 literacy credits to 17 English credits.

That students need higher NCEA grades to cope with university level work may indicate grade inflation. However, others have argued that this inflation reflects little more than positioning play by the UoA to attract the highest-achieving students.

Some problems associated with UE are described below:

- The entry requirements for a student to have a reasonable chance of gaining a university place are not uniform across all university degrees. Universities supplement UE with rank scores for different courses, and some would like to enrol students without UE.
- UE's numeracy and literacy requirements are sometimes said to be inadequate.
- UE's requirements are somewhat convoluted. As a result, it is poorly understood by students, parents and even some teachers. The Productivity Commission's 2017 report on tertiary education "heard of the surprise and anguish many young people and their parents experience when they find that a school qualification they achieved does not contain the prerequisites to enrol in their desired field of tertiary study."¹⁵⁵
- The list of approved subjects for UE appears reasonably arbitrary and changes regularly.
- UE has little relevance to employers.
- Not having UE does not even prohibit access to universities because each university has alternative admission pathways for promising students without UE.
- Entry to degree-level courses in polytechnics does not necessarily require UE.

¹⁵³ New Zealand Qualifications Authority (NZQA). "Review of university entrance requirements 2016–2017: Outcome of review of University Entrance requirements 2016–2017," Website.

¹⁵⁴ New Zealand Qualifications Authority (NZQA), "German recognition requirements for university entrance," Website.

¹⁵⁵ Productivity Commission, "New Models of Tertiary Education: Final Report" (2017), 65.

- The existence of UE implies that a young person who gains the qualification is better off attending a university. This may not be the case. UE reinforces the traditional view that university education is better, and has higher standards than other types of tertiary education.

Because of these problems, various sector bodies and individuals want UE abolished. In “New Models of Tertiary Education,” the Productivity Commission concluded: “University Entrance holds little or no value, and may do harm.”¹⁵⁶

For some, the solution is to use NCEA Level 3, and allow universities to set prerequisites for specific courses and programmes, based on the attainment of achievement standards relevant to the courses of study.

The Productivity Commission’s recommendation in 2017 was for the government to abolish UE, “leaving all universities free to set their own entry requirements. All providers’ entry requirements should be transparent and communicated consistently, including in the consolidated information source referred to in Recommendation 13.1.”

However, following NZQA’s review of UE requirements 2016–17, Universities New Zealand Director Chris Whelan said UE and NCEA Level 3 were created for different purposes: “UE is a signal about whether someone is academically going

to be able to cope with university. NCEA is set up as something that allows schools to build really interesting curriculum for their students.”¹⁵⁷

In an article for *Newsroom*, Johnston also explored the possible alternatives to UE, concluding that so long as the high status of universities persists, “abolishing UE would either be ineffectual or damaging to social equity, depending on what the universities do to replace it.”¹⁵⁸

It is clear universities have had to reverse-engineer NCEA data to create rankings to select students, and that some universities believe grade inflation is occurring. The starkly different criteria for UE and Level 3 may inhibit some students, particularly from lower SES backgrounds, from going to university.

In the words of Associate Professor Melinda Webber, director of the Starpath Project at Auckland University:

NCEA Level 3 is promoted as the pinnacle of secondary school success, even though it isn’t. UE is the minimum requirement to attend a New Zealand university and students must complete the right mix of approved subjects and the literacy and numeracy requirements to gain the UE award. The UE qualification should be encouraged for all students regardless of whether they intend to go to university straight from school because it demonstrates that they are hard-working to employers and keeps their options open for later on in life.¹⁵⁹

¹⁵⁶ Ibid. 65.

¹⁵⁷ Adele Redmond, “Students gaining University Entrance without necessary literacy, numeracy skills,” *Stuff* (16 March 2017).

¹⁵⁸ Michael Johnston, “Abolish UE and brace for inequity,” *Newsroom* (24 March 2017).

¹⁵⁹ Melinda Webber, “From the director,” *Starpath Newsletter* 14 (June 2017).



Conclusion and recommendations

Assessment can feel like the dry and dessicated part of education. However, it is necessary; it can be the key to improvement; and it always has huge practical consequences.

Often, curriculum and vision statements are vague and open to interpretation; as a result, they become defined through assessment.¹⁶⁰

Introduced 15 years ago, New Zealand's national qualification NCEA has, through a series of compromises, evolved into the complex system described in Chapter 2.

Today, our national qualification system provides far more flexibility than the one it replaced, students stay in school longer, and more students leave school with qualifications.

However, summarised NCEA achievement data masks vast variation in actual student achievement. The Tertiary Education Commission found in 2014 that 40% of a sample of Year 12 students with NCEA Level 2 were still not functional readers, and 42% lacked basic numeracy skills.¹⁶¹

Evidence also suggests that the content of students' certificates too often correlates with ethnic and socioeconomic factors. For example, since NCEA was introduced the size of the gap between Māori and all students achieving Level 3+ has reduced. However, the size of the gap between Māori and all students achieving UE – which is arguably the more important milestone – increased from 19 percentage points in 2001 to 23 in 2016. Teachers also report that NCEA is less motivating for

underachieving than high-achieving students, and that this motivation gap is steadily getting worse.¹⁶²

Other than the OECD's PISA data, which has chronicled New Zealand's declining performance since the early 2000s, there is no data to compare outcomes before and after NCEA's introduction. However, the catalogue of proxy measures collated in Chapter 3 raises serious concerns. Is NCEA improving outcomes for previously underperforming groups, or simply obscuring them behind an alluring facade?

The benefits and cost of flexibility

Optimal assessment design depends on trade-offs between competing priorities. Currently, NCEA prioritises flexibility, which is realised through chunking subjects down into smaller, separately assessed units, and a heavy reliance on internal assessment.

NCEA's flexibility enables teachers to create courses that cut across traditional curriculum boundaries, and empowers students to pick and choose parts of subjects. Internal assessments provide the freedom for students to engage in a far wider variety of assessment tasks than just written exams. And by eliminating terminal exams, assessment under NCEA is less high-stakes, so students need never repeat a school year to continue.¹⁶³ NCEA creates a framework in which even the lowest-performing students can achieve success in some standards.

However, NCEA's flexibility comes at an unquantified cost.

¹⁶⁰ Daisy Christodoulou, *Making Good Progress*, op. cit. 16.

¹⁶¹ Gill Thomas, et al. "Alignment of Literacy and Numeracy Measures Research for the Tertiary Education Commission," op. cit.

¹⁶² Between 2006 and 2012, after which data on this was no longer reported. Rosemary Hipkins, "NCEA One Decade On" (Wellington: NZCER, 2013), 35.

¹⁶³ Mark Sheehan, et al. *NCEA in Context*, op. cit. 209.

One of these costs is to the safety net of core knowledge and skills that might otherwise protect students from making ill-informed and immature decisions.

‘Liberated’ by NCEA’s flexibility, students as young as 14 now risk making a series of perfectly sanctioned, seemingly rational but ultimately poor choices. And the students most vulnerable to these choices are likely to be the already disadvantaged, and those whose parents cannot advise them. This is a high price to pay in a system designed to *raise* equity.

NCEA’s flexibility also brings with it serious unintended consequences for teaching and learning. These include an increased focus on assessment at the expense of the curriculum; heightened incentives to use strategies that deliver short-term improvements in grades rather than long-term, deep learning; and a heavy reliance on internal assessment, with its negative consequences for teachers’ workloads.

As it stands, NCEA prioritises flexibility and choice at the expense of everything else. And one particularly pernicious side-effect is that well-advised middle-class children can continue to get an academic education up to and beyond age 16, while disproportionate numbers of children from less affluent backgrounds are moved into vocational or ‘non-academic’ subjects.

To quote a team of researchers from Auckland University’s Starpath Project:

Unequal opportunities for minority students and those from economically disadvantaged communities are a well-recognised and documented problem ... What our findings point to is the extent to which the problem not only persists in New Zealand secondary schools, but is aided by the unintended consequences of the flexibility of the curriculum and assessment systems.¹⁶⁴

In most developed countries, all students are assessed on a core curriculum of academic subjects

at age 15 or 16. It is only after this that they begin to significantly specialise.

By comparison, when NCEA was conceived, the idea of a core curriculum (beyond the most basic literacy and numeracy requirements) was abandoned. So too was the reality that different subjects hold different values. Instead, NCEA was built to enable near-unbounded flexibility, and on the principle that all subjects have equal worth.

However, the value of subjects *cannot* be dictated, no matter how well-meaning the attempt. And the outcome is a system that continues to tolerate injustice, but just does a far better job of covering it up.

Few people would disagree that schools should do whatever they can to raise educational equity. However, to create a national assessment system that pretends all subjects – from meat processing to mathematics – are equal, is a deception, and one that falls hardest on the very students most deserving of protection.

There is no magic bullet or shortcut to educational equity. But NCEA disregards this difficult reality, and instead places a deceit at the heart of our national assessment by suggesting to children that filling plastic containers holds the same value as studying literature, physics or Te Reo.

As Filip Vachuda, the Onehunga High School student who missed out on Dux to another student with less ‘academic’ NCEA standards, said: “NCEA’s sentiment towards absolute subject equality is as unrealistic as it is a heart-warming gesture, and something needs to change.”¹⁶⁵

However, until New Zealanders acknowledge and address this well-intentioned but crippling deception, and until we have a government prepared to identify and commit our schools to achieving broader and higher expectations for all Kiwi children, we should expect nothing but a continuation of the widening gap in achievement.

¹⁶⁴ Aaron Wilson, et al. “Opportunity to learn about disciplinary literacy in senior secondary English classrooms in New Zealand,” *op. cit.* 92.

¹⁶⁵ Filip Vachuda, “Some school subjects are worth more than others,” *The New Zealand Herald* (10 December 2017).

Recommendations

So what would it take to move New Zealand towards an approach that better protects vulnerable students and narrows disparities in the real value of NCEA qualifications?

Recommendation 1: Raise English (and Te Reo) and maths requirements: The government should amend NCEA so that achievement at Level 1 or higher requires a minimum number of Level 1 credits in the core subjects of English (or Te Reo) and maths. This new list of eligible standards should replace the current literacy and numeracy requirements. It should also demand levels of mastery that ensure all students with NCEA also meet international benchmarks for functional literacy and numeracy.

Recommendation 2: Expect a broader core of subjects: The government should signal higher expectations of the breadth of core subjects all students must master in school. They could achieve this by:

- Adding further subjects (e.g. science and social science) to the list of Level 1 minimum requirements needed to achieve NCEA at any level; or
- Reporting a broader range of statistics on schools' performance so that alongside Level 1, 2 and 3 achievement rates, school-level data is also available on the proportion of school leavers achieving UE, and the proportion whose NCEA qualifications included minimum numbers of credits in certain subjects (e.g. science and social science).

Since this recommendation involves a change to NCEA (or its reporting), it is included in this report. The rationale for compulsorily assessing, or reporting on the achievement of, a broader range of subjects will be covered in detail in the subsequent curriculum report.

The next four recommendations concern supporting teachers to move away from methods that deliver short-term improvements in grades, and towards those that promote long-term

learning. These recommendations also tackle the persistent problem of teachers' excessive assessment-related workloads.

Recommendation 3: Reduce the number of standards: The government should reduce the number of standards so that within a particular subject there is minimal to no choice and each standard covers a bigger and broader set of skills and knowledge (there is far less 'chunking down').¹⁶⁶ The optimal size and number of standards may vary for different subjects, to be determined by subject and assessment experts. However, broadly the ambition might be set to reduce the number of standards in a subject at each level from 6–8 to 1–3.

Recommendation 4: Make it harder to teach to the test: NZQA should rely more heavily on the reassurance provided by elements of norm-referencing (e.g. PEPs and the cut score procedure during grade score marking) to move away from such close matching of external assessment to past assessments and specifications. Instead, they should inject elements of 'surprise' that encourage teachers to teach the breadth of their subject's curriculum, rather than to its assessments. Reference tests could also be deployed to help examiners identify national level changes in students' performance over time.

Recommendation 5: Reduce reliance on internal assessment: The government should reduce NCEA's reliance on internal assessment, so it is used only where external assessments cannot capture performance in essential areas.

¹⁶⁶ Recommendation 3 echoes a solution proposed by teachers during consultation carried out by the Secondary Teacher Workload Working Group. This reported in December 2016 that the primary area of concern teachers identified with workload was the amount of NCEA assessment and moderation, particularly internal, undertaken within schools. The solution suggested by teachers was for schools to reduce the number of standards offered per subject to focus on providing quality teaching and learning, which they considered would significantly alleviate demands on their time.

Recommendation 6: Use Comparative

Judgement software: NZQA should use Comparative Judgement (CJ) software to improve the reliability and efficiency of the processes available to judge external and internal assessments. CJ would also better capture genuine quality in essay-type assessments, and equip assessors to ask more open-ended and creative questions.

The final recommendation aims to create far more transparency around NCEA. This will facilitate ongoing robust evaluation, to the advantage of teachers, students and all New Zealanders.

Recommendation 7: Commission independent

analysis: The Ministry of Education should openly evaluate NCEA's effects by commissioning and publishing independent analysis of, for example:

- which standards correlate most closely with later success in careers and university;
- how the coverage and rigour of teaching and learning for individual standards varies across different schools and classrooms;
- how uptake of standards correlates with other factors such as school decile, socioeconomic background and ethnicity;
- how some schools and teachers manage to avoid the incentives to advise safer pathways or teach to the test, and yet still achieve outstanding outcomes;
- how socioeconomic backgrounds correlates with the standards students complete to meet the minimum literacy and numeracy requirements, and how these correlate with international benchmarks of functional literacy and numeracy; and
- the validity and reliability of assessment in individual standards.

The final trade-off

In their concluding chapter, the authors of *NCEA in Context* explain how the principle of parity of esteem is central both to NCEA's responsiveness to a range of learning needs, and to the misuse of its flexibility.¹⁶⁷ However, they go on to say it would be *wrong* to take away NCEA's flexibility, and that the challenge lies instead in showing how to use the flexibility wisely.

Indeed, many teachers would benefit from more and higher quality training in curriculum design and assessment. This report is not intended to undermine this view.

However, it also takes a more practical view, one that better acknowledges the demands already placed on our hard-working teachers. Recommendations 1–5 trade elements of NCEA's vast flexibility in return for immediate and real improvements in the qualification's performance in other areas.

In the short-term, they may generate a drop in NCEA achievement rates and even a widening of the ethnic and socioeconomic disparities in NCEA achievement. However, over the longer-term they will raise standards, and equity of outcomes, by providing a core curriculum safety net that holds all students to achievable but higher expectations. They will also improve long-term learning by re-orienting the work of teachers and students away from assessments.

These recommendations represent nudges of the pendulum in different directions to those that originally brought us NCEA. However, after 16 years, such evaluation and recalibration is needed so NCEA can provide students with the appropriate balance between flexibility, high expectations, and valuable long-term learning.

¹⁶⁷ Mark Sheehan, et al. *NCEA in Context*, op. cit. 215–216.

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New Zealand's national qualification, NCEA, is prized for its flexibility. However, flexibility is bought at significant cost: to students and educational equity, to teachers, and to employers and universities.

Flexibility also makes NCEA one of the most complicated national assessment frameworks ever created. Unless we are careful, this places it at the periphery of public scrutiny, dangerously close to the 'too hard' bin. This is no place for a qualification with such influence over what happens in our schools.

After more than 15 years of implementation, 2018 is the year when NCEA will be statutorily reviewed by its owner – the Ministry of Education. It is important therefore that the public has all the information, and a robust national conversation ensues.

This report provides the background to NCEA's creation, its history and evolution to date. It then goes on to analyse how NCEA affects students, particularly those from disadvantaged backgrounds; teachers, their work and workloads; and employers and universities.

It finds worrying evidence of negative unintended consequences in all three places. It ends with a series of seven recommendations that will improve expectations and standards, reduce teacher workload, raise the validity of NCEA data, and place the curriculum (rather than assessment) at the heart of schools' endeavor.

The report will be followed in due course by a sequel on the New Zealand Curriculum.

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