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Navigating Contested Terrain: The Impact of Comprehensive Reforms on the Quality and Equity of Indigenous Education in Aotearoa, New Zealand

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Abstract: Despite Māori language immersion schooling being available since the 1980s, most Māori (Indigenous) students in Aotearoa New Zealand (NZ) are enrolled in English language schooling. Over time, more resources have been allocated to Māori language immersion schooling, yet chronic teacher shortages and interventions designed for English language schooling continue to present obstacles to sustaining success. the past decade, Māori language immersion students have achieved school leaver attainment rates comparable to those of the general English language school population. At the same time, Māori students in English language schools report discrimination and academic challenges. This study underscores the urgent need for education policy directly benefiting Māori to improve outcomes for Māori

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students in both Māori language immersion and English language immersion schooling. Using the Cultural Symmetry Framework to analyse literature on successive comprehensive reforms, we propose metrics for measuring quality and equity in the Aotearoa NZ education system prioritizing success *as Māori*. By focusing on mathematics curriculum and assessment policy, we examine the implications of this more equitable approach at both the schooling and university levels, including initial teacher education.
Keywords: Indigenous education; Māori education; education policy reform; curriculum development; national assessments; Aotearoa New Zealand

Navegando un terreno en disputa: El impacto de las reformas integrales en la calidad y la equidad de la educación Indígena en Aotearoa Nueva Zelanda

Resumen: A pesar de que la escolarización en inmersión en lengua maorí está disponible desde la década de 1980, la mayoría de los estudiantes maoríes (Indígenas) en Aotearoa Nueva Zelanda (NZ) están matriculados en escuelas de lengua inglesa. Con el tiempo, se han destinado más recursos a la educación en inmersión maorí; sin embargo, la escasez crónica de docentes y las intervenciones diseñadas para la enseñanza en inglés continúan presentando obstáculos para sostener su éxito. En la última década, los estudiantes de inmersión en lengua maorí han alcanzado tasas de finalización escolar comparables a las de la población general de escuelas en inglés. Al mismo tiempo, los estudiantes maoríes en escuelas de lengua inglesa reportan discriminación y desafíos académicos. Este estudio destaca la necesidad urgente de políticas educativas que beneficien directamente al pueblo maorí para mejorar los resultados tanto en la educación en inmersión maorí como en la educación en inglés. Utilizando el Marco de Simetría Cultural para analizar la literatura sobre reformas comprensivas sucesivas, proponemos métricas para medir la calidad y la equidad en el sistema educativo de Aotearoa NZ, priorizando el éxito como maorí. Al centrarnos en las políticas de currículo y evaluación en matemáticas, examinamos las implicaciones de este enfoque más equitativo tanto en el nivel escolar como en el universitario, incluida la formación inicial del profesorado.
Palabras clave: educación Indígena; educación maorí; reforma de políticas educativas; desarrollo curricular; evaluaciones nacionales; Aotearoa Nueva Zelanda

Navegando um terreno contestado: O impacto de reformas abrangentes na qualidade e na equidade da educação Indígena em Aotearoa Nova Zelândia

Resumo: Apesar de o ensino em imersão na língua maori estar disponível desde os anos 1980, a maioria dos estudantes maori (Indígenas) em Aotearoa Nova Zelândia (NZ) está matriculada em escolas de língua inglesa. Ao longo do tempo, mais recursos foram destinados ao ensino em imersão maori; contudo, a escassez crônica de professores e as intervenções concebidas para escolas de língua inglesa continuam a criar obstáculos à manutenção desse sucesso. Na última década, estudantes de imersão na língua maori alcançaram índices de conclusão escolar comparáveis aos da população geral de escolas em inglês. Ao mesmo tempo, estudantes maori em escolas de língua inglesa relatam discriminação e desafios acadêmicos. Este estudo evidencia a necessidade urgente de políticas educacionais que beneficiem diretamente o povo maori, a fim de melhorar os resultados tanto no ensino em imersão maori quanto no ensino em inglês. Utilizando o Marco de Simetria Cultural para analisar a literatura sobre sucessivas reformas abrangentes, propomos métricas para avaliar a qualidade e a equidade no sistema educacional de Aotearoa NZ, priorizando o sucesso como maori. Ao focar nas políticas de currículo e avaliação em matemática, examinamos as implicações dessa abordagem mais equitativa nos níveis escolar e universitário, incluindo a formação inicial de professores.

Palavras-chave: educação Indígena; educação maori; reforma de políticas educacionais; desenvolvimento curricular; avaliações nacionais; Aotearoa Nova Zelândia

Navigating Contested Terrain: The Impact of Comprehensive Reforms on the Quality and Equity of Indigenous Education in Aotearoa New Zealand

Quality education in Aotearoa NZ, is frequently assessed using international benchmarks. The Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS) significantly influence educational policies. PISA results are often used to gauge global standing, identify system strengths and weaknesses, and guide reforms (Thrupp, 2018). For example, lower achievement of Māori students in international tests such as PISA often features in government change rhetoric (Franken, 2023). However, the Aotearoa NZ case study of mathematics curriculum and assessment policy, presented in subsequent sections, demonstrates that Māori language and culture continue to be misrepresented in metrics measuring equity and quality in schooling. This study also explores comprehensive Māori-led education reforms that have attempted to improve education outcomes for Māori through a range of national (state), institutional (teacher education), and localized (school) curriculum development and assessment projects in mathematics. In doing so, we illuminate the broader aspirations of indigenization movements in education, the challenges posed by coloniality, and the impact of globalization on curriculum and assessment in Aotearoa NZ schooling.

We explore two research questions through a literature review and an analysis of mathematics achievement data. The first asks how effective historical comprehensive education reforms in Aotearoa NZ have improved education quality and equity for Māori. The second question examines whether adding co-requisite assessments—using the mathematics discipline as an example—will improve education quality and equity for Māori or perpetuate historical system failures.

We argue that international metrics for measuring the quality of the Aotearoa NZ education system have not led to increased equity for Māori learners. We also explore how systemic bias against Māori learners and mātauranga (Māori knowledge systems) is deeply ingrained in Aotearoa NZ's colonial education system, a concerning issue that requires immediate attention. Finally, we analyze current national reforms in mathematics assessment to demonstrate how historical system failures persist through ongoing government interventions. In doing so, we demonstrate that successive government reforms intended to improve education quality and equity have failed to adequately address systemic bias against Māori learners.

Background

Aotearoa NZ is an island nation in the South Pacific Ocean with just less than five million people spread across two larger and several smaller islands. The population is primarily concentrated in the North Island, with 1.6 million people in Auckland, the most populous region (StatsNZ, 2022). The largest population group, at nearly 3.4 million, identifies with European ethnicities, while other ethnic groups, including Māori, Asian, Pacific peoples, and Middle Eastern/Latin American/African (MELAA) ethnicities, are steadily increasing their share of the total population (StatsNZ, 2024). Māori are currently 19.6% of the Aotearoa NZ population, and the Māori population is increasing faster than the general population (StatsNZ, 2022). Māori have a younger median age of 27.2 years compared to the median age of the general population at 38.1 (StatsNZ, 2022). Therefore, Māori children (0–14-year-olds) will be in 33% of classrooms by 2043 (StatsNZ, 2022).

Schooling is delivered primarily through English in Aotearoa NZ. However, due to Māori-led resistance to language loss, discussed in subsequent sections, Aotearoa NZ has offered early childhood education in the Māori language since the 1980s. This Māori language immersion pathway has grown to include compulsory schooling and tertiary education. The Aotearoa NZ Ministry of Education (MoE) distinguishes Māori language immersion learning programs based on the amount of time instruction is delivered in te reo Māori (the Māori language). The MoE collects data for both Māori language immersion level 1(81-100% instruction in te reo Māori) and Māori language immersion level 2 (51-80% instruction in te reo Māori) (Education Counts, 2023b). According to the MoE (Education Counts, 2023b) data, the total number of Māori language immersion schools (330) and students (25,824) aged from Year 1 (age 5) to Year 13 (age 18) has been steadily increasing over the previous six years. With 1,458 more students enrolled in Māori language immersion schools in 2023 compared to 2022, refer to Table 1.

Table 1

Number of Students in Language Immersion by Level 2018-2023

Māori Language Immersion Level	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Level 1: 81-100%	15,043	16,020	16,746	17,313	17,621	18,298
Level 2: 51-80%	5,468	5,469	5,645	5,848	6,745	7,526
Māori Language Immersion Total	**20,511**	**21,489**	**22,391**	**23,161**	**24,366**	**25,824**

Source: Education Counts (2023b)

Despite the availability of Māori language immersion education, 87.5% of Māori students are enrolled in English-language schooling and experience lower school-leaver qualification attainment than the general population (Education Counts, 2025). School leavers are defined by the Ministry of Education as, students who have permanently left school to enter the workforce or undertake further education and training outside of the compulsory schooling system (Education Counts, 2025). Māori students in English-language schools also report experiencing discrimination, such as low expectations for their achievement (Education Counts, 2023a).

Funding for schools in Aotearoa NZ has been determined by the socio-economic status of the surrounding community, referred to as a decile rating[1]. The Māori student population is concentrated in low decile areas. Research conducted by the Office of the Controller and Auditor General (2016) discovered that across English language schools with similar decile ratings, Māori student achievement varied widely. Some Māori students experience poorer academic outcomes when compared to other Māori students from similar communities attending similar schools. Therefore, socioeconomic status does not indicate Māori student success in English language schooling. The Controller and Auditor General's (2016) findings indicate that Māori students who attend English-language schools with higher proportions of Māori students experience worse outcomes. Considering the Office of the Controller and Auditor General's (2016) findings, lower

[1] The term decile rating was replaced with equity index in 2023. As most of the literature and data presented in this article was published prior to this change, the term decile rating has been maintained.

rates of school leaver qualification attainment (Education Counts, 2025), and persistent reports of discrimination (Education Counts, 2023a), we argue that English language schooling in Aotearoa NZ exhibits systemic bias against Māori students.

In 2022, the Aotearoa NZ government set a target to increase Māori student participation in Māori language immersion education to 30 percent by 2040 (Education Counts, 2023a), doubling current participation rates. This target acknowledges the importance of Māori language immersion education in improving education equity and quality for Māori. In subsequent sections, this paper presents Māori student achievement data across Māori language immersion and English language schools. In doing so, we argue that lower levels of systemic bias against Māori students in Māori language immersion education underpin school leaver qualification attainment rates on par with those of the general population.

Education Equity, Quality and Indigenization

To situate this study within international discourse on education equity and quality, this section examines the ways that these terms are defined in the literature and how they are espoused in education policy in Aotearoa NZ. Indigenization is also examined as a metric for measuring education equity and quality for Indigenous students. Education discourse around equity often intersects with quality. Equity can be viewed through the lenses of inclusion and fairness. Education authorities aim to provide all students access to high-quality resources, curricula, and support and close any measurable achievement gaps between demographic groups (Nachbaeur & Kyriakides, 2019). Conversely, equity discourses can focus on meritocracy—where outcomes reflect individual ability and effort—often overlooking systemic barriers such as race, gender, and socioeconomic status (Nachbaeur & Kyriakides, 2019). Meritocratic discourses of education equity can hamper attempts to improve education quality for underserved groups, as students' academic failures are often attributed to their lack of ambition or aspiration (English & Bolton, 2015).

For Organisation for Economic Cooperation and Development (OECD) member countries, such as Aotearoa NZ, the solution to addressing achievement gaps between groups of students has been to reform education systems to reflect how high-quality education systems are framed by the OECD. Reforms are often underpinned by the belief that high test scores will result in higher economic growth and well-being (Feniger & Atia, 2018). Research across 50 countries showed a robust correlation between students' test scores in 1964–2003 and GDP growth (Komatsu & Rappleye, 2017). According to Komatsu and Rappleye (2017), "the strength of this relationship is so strong that it has been claimed as causal, thus utilizable for predicting future GDP growth gains and advocating for educational policies specifically targeting student test scores (p. 166)."

The publication of comparison tables for PISA and TIMSS motivates OECD member states to design education interventions to improve their ranking (Thrupp, 2018). These international test score comparisons are based on the belief that one schooling system can be objectively compared to another, and nations tend to compare academic results as if education is a competition with the prize of economic advantages (English & Bolton, 2015). However, the challenges facing society today are not purely economic, and different regions of the globe face challenges specific to their geography and history.

Whether environmental or social, the pace of change produces complex challenges outstripping globally accepted ways of knowing (Coles et al., 2022). This was illustrated recently by the COVID-19 pandemic, where existing disparities in education and social services were further exacerbated (Schulze & Yadav, 2021), particularly for groups that are geographically or linguistically isolated (Allen & Trinick, 2021). For example, an estimated 270 million Indigenous peoples in the Asia Pacific Economic Cooperation region (APEC) spread across the Pacific Ocean (Schulze & Yadav, 2021), where Aotearoa NZ is located. When APEC member economies shifted compulsory

schooling to remote delivery and implemented lockdowns, the education and health interventions were more effective for dominant groups living in urban locations rather than Indigenous minority groups residing in remote rural areas (Schulze & Yadav, 2021). For Māori communities who are either linguistically isolated in large urban areas or geographically isolated in remote rural areas, the COVID-19 pandemic response in Aotearoa NZ revealed the profoundly ingrained structural inequities in how health and education interventions are funded (Allen & Trinick, 2021). With inadequate government support, Indigenous peoples utilized community and environmental resources alongside ancestral ways of knowing and being to protect their health and continue their education (Schulze & Yadav, 2021). While this community-led approach was somewhat successful in responding to a moment of education crisis (Allen & Trinick, 2021), a coordinated and resourced approach is required to ensure sustained education equity and quality for Indigenous peoples in the long term.

Indigenous self-determination, as evidenced during the pandemic, often challenges the existing power structures and control established by colonial authorities, threatening their political, economic, and social dominance (Smith, 1996). One of the critical roles of education in colonial countries was to support the assimilation of the Indigenous people into colonial beliefs, practices, and ways of life through the suppression of their language and culture (Trinick, 2015). Another goal of schooling in colonized countries was to prepare Indigenous groups for a future as a labouring underclass to maintain those in power with privileged positions (Bishop & Glynn, 1999), serving the needs of a capitalist market-focussed economy by reproducing social structures that keep people in their place within the social hierarchy (English & Bolton, 2015). As McWhorter (2003) argued, "urgencies of capitalism require governments to exact as much work and allegiance from their populations as possible, and the imposition of a single language has traditionally been seen as critical to this goal" (p. 261). Therefore, sustaining Indigenous languages through Indigenous language immersion education has been viewed as contrary to the underlying goals of settler-dominant education systems.

In recent times, there has been more recognition of the negative impacts of assimilatory education systems on Indigenous peoples, their languages, and cultures. The United Nations Sustainable Development Goal (SDG) 4 Target 5 promotes equal access to all levels of education and vocational training for Indigenous peoples (UNESCO, 2020). SDG 4.5 also emphasizes the right to free, unimpeded choice of language use, expression, and opinion (UNESCO, 2020), including within education. However, in the APEC region, a significant global hub where 70-80% of Indigenous peoples reside, education resources are rarely made available in Indigenous languages (Schulze & Yadav, 2021), lessening the likelihood of SDG 4.5 being reached. In the Aotearoa NZ case study, presented in subsequent sections, we discuss the barriers to community-led development of teaching resources in Indigenous languages, including a lack of funding and coordination at the national level.

There is also growing acknowledgment of persistent bias in the Aotearoa NZ education system against Māori learners and how this undermines efforts to achieve equitable and inclusive education as envisioned by UNESCO SDG 4 (Smith & Hayward, 2023). For instance, Meissel et al. (2017) identified bias against Māori learners in teacher assessment of mathematics proficiency. Turner et al. (2015) identified lower expectations for Māori learners by their mathematics teachers in English language schools. Allen (2023) identified the omission of mātauranga (Māori ways of knowing and being) from mathematics curriculum and assessment programmes as a further contribution to the inequities of the Aotearoa NZ education system for Māori learners.

However, Hall et al. (2024) reviewed recent research on equity in mathematics education in Australia and New Zealand and observed increased calls for attending to Indigenous knowledge within mathematics education. The authors also observed the development of new frameworks for

considering the positioning of Indigenous ways of knowing and being in teaching practice, including addressing challenges for advancing culturally sustaining pedagogies (Hall et al., 2024).

In response to the inequities of compulsory education for Indigenous students, some Indigenous groups have appropriated schooling as a vehicle for intergenerational language transmission (Trinick, 2015) through a comprehensive process of indigenization. Gaudry and Lorenz (2018) positioned decolonial indigenization as a transformative indigenization program that includes teaching, research, and education administration. Gaudry and Lorenz (2018) characterize decolonial indigenization as benefiting Indigenous languages, knowledge, and peoples. Similarly, UNESCO (2020) acknowledged the need for complex system-level education interventions to be better designed for Indigenous and ethnic minority groups. Where international and national curriculum and assessment policy regenerates and sustains Indigenous peoples' languages and cultures (UNESCO, 2020). Aotearoa NZ, Hawai'i, and Wales are examples of education systems where Indigenous peoples can access schooling in their Indigenous languages. An Aotearoa NZ case study outlining how successive national curriculum development projects have been appropriated by Māori to improve education quality and equity for Māori, including regenerating the Māori language, is presented in subsequent sections.

Theoretical Framework

Curriculum and assessment shape schooling experiences (Jorgensen, 2011) by defining essential knowledge and skills. The inclusion of Indigenous artefacts and practices in curricula and assessments, such as mathematics, is often accompanied by the promotion of global citizenship (le Roux & Swanson, 2021). Global citizenship, as presented in the mathematics education literature, argues the need for Indigenous peoples to transition *from* ancestral knowledge *to* school mathematics (Sinclair et al., 2016) to gain success according to global education metrics. In this way, national and international curriculum and assessment programs can shape students' educational experiences, potentially providing knowledge and skill-based economic advantages yet perpetuating the abrogation of Indigenous knowledges (Allen, 2023).

Prominent Māori researchers and educators have asserted that education for Māori must ensure readiness to engage with the broader world while also providing preparation for participation in Māori society (Smith et al., 2021). This balance is also reflected in the dual goals of Māori language immersion education, which have evolved as an ideology based on graduates being able "to live as Māori and to be citizens of the world" (Smith et al., 2021, p. 10). As stated in education policy documents such as *Ka hikitia – Ka hāpaitia. The Māori Education Strategy* (MoE, 2020), these goals have been subsumed into the Māori education policy as Māori achieving success *as Māori*.

To evaluate the efficacy of successive curriculum and assessment reforms in Aotearoa NZ, in creating opportunities for Māori students to succeed *as Māori*, this study utilises the cultural symmetry framework. Conceptualized and elaborated by Meaney and collaborators (see Meaney et al., 2021), the cultural symmetry framework positions Indigenous languages, Indigenous knowledges, and mathematics as equally valuable learning outcomes within the educational system. For this study, the three focal areas of the framework are defined as te reo Māori (Māori language), mātauranga (Māori ways of knowing and being), and school mathematics. This approach allows us to evaluate how effectively the Aotearoa NZ education system provides Māori students with opportunities to experience success *as Māori while* also attaining internationally recognized notions of academic success, often measured through the acquisition of school mathematics. Consequently, this study offers valuable insights into how well the education system ensures that Māori students succeed academically while sustaining their cultural identity and language.

Aotearoa NZ Case Study of Education Quality and Equity for Māori

The Aotearoa NZ case study, presented here, draws on literature and national assessment data to highlight structural inequities faced by Māori in both Māori language immersion and English language schooling. The study also examines the effects of government and Māori-led comprehensive reforms to improve education quality and equity for Māori. Initially, the analysis contrasts literature on colonial schooling policies, which have institutionalized systemic biases against Māori learners, with the development of Māori language immersion schools established outside the state system. This is followed by a literature review on mathematics curriculum development over the past 40 years, particularly after integrating Māori language immersion schooling into the state (national) system. The literature review identifies shifts in the conceptualization of equity and quality in education for Māori learners towards cultural symmetry, as reflected in both education policy and curriculum.

We use school leaver attainment data collected by the New Zealand Qualifications Authority (NZQA) compiled and published by the Ministry of Education (MoE) (Education Counts, 2025) from 2014-2024 and the National Certificate of Educational Achievement (NCEA) co-requisite assessment pilot results for 2021-2023 (MoE, 2024) to identify the efficacy of national assessment reforms for Māori learner's academic achievement. The school leaver attainment data shows the percentage of school leavers who have achieved a particular qualification level when they exit the compulsory schooling system (Education Counts, 2025). In this study, school leaver attainment data for Māori students in Māori language immersion schooling is compared to that of Māori students in English language schools and the general schooling population between 2014-2024.

The case study presents a historical overview of comprehensive education reforms underpinned by discourses around education quality, equity, and systemic bias against Māori. This is contrasted with a review of Māori-led education reforms that confronted systemic bias and historical inequities in education for Māori students. The introduction of national curricula in the 1990s and subsequent national curriculum reform projects follow the review of historical and Māori-led antecedents. A review of national assessment and teacher education reforms is followed by data showing the impact of successive reforms on Māori student achievement, including the recently introduced high-stakes mathematics co-requisite assessments. Finally, questions are raised about the perceived disconnection between introducing mathematics assessment as a measure of education quality and the potentially negative impacts of the new mathematics assessments on education equity.

Historical Antecedents

Before European arrival, Māori had a well-established educational system that valued their knowledge and ways of being (Jones & Jenkins, 2011). With the arrival of settlers in the early 1800s, missionary schools were introduced, which aimed to assimilate Māori into European beliefs and practices, thus reshaping the educational experiences for Māori (Ka'ai-Mahuta, 2011). Initially, Māori leaders hoped this new system would enhance literacy in te reo Māori (the Māori language; Jones & Jenkins, 2011). However, colonial schooling primarily sought to enforce subtractive bilingualism, excluding te reo Māori to accelerate assimilation (Ka'ai-Mahuta, 2011).

From the mid-1950s, several reports were commissioned by the Aotearoa NZ government that proclaimed a national crisis in education regarding the considerable Māori student underachievement rates in numeracy and literacy compared with Pākehā (European descent; Smith, 1996). At that time, the dominant narrative in the reports defined the crisis as the "Māori problem" (Smith, 1996, p. 348), signalling a refusal to attribute poor student educational outcomes to the education system itself. Instead, the solutions proposed by successive government reports and

policies have framed the issue as one of Māori cultural deficiency. For example, the infamous Hunn (1961) report described the Māori language as a "relic of ancient Māori life" and Māori student underachievement, in the main, was put down to parental apathy, indifference and Māori people "debarring themselves of their own volition" (pp. 22–25). The solution at this juncture in remedying the so-called "deficient cultural background of Māori children" was to conform to the European way of life (Bishop & Glynn, 1999, p. 38).

In a critical review of state education, Ka'ai-Mahuta (2011) argued that historically, the burden has been placed on Māori to agitate for equity in Aotearoa NZ schooling. However, the responsibility of providing equitable curriculum and assessment in the Māori language underpinned by mātauranga (Māori ways of knowing and being) rests with the British Crown. This is because Te Tiriti o Waitangi and its English-language counterpart, The Treaty of Waitangi, signed in 1840, formalized a partnership between Māori and the British Monarchy (Orange, 2015) and paved the way for state-mandated schooling for Māori.

Article 3 of Te Tiriti o Waitangi guaranteed Māori equal rights and privileges with British subjects (Orange, 2015). While British descendants have been afforded a state (national) schooling system in the English language underpinned by knowledge valued in Western countries, the same right has not been equitably extended to Māori (Ka'ai-Mahuta, 2011). In contrast, for over 150 years, English language-only education policies intentionally disrupted the transmission of the Māori language, leading to significant language and culture loss.

Māori-led Education Reforms

In the 1970s, Māori communities initiated bilingual schooling to reverse the significant language loss due to English-language-only schooling alongside other assimilatory social policies. These early bilingual programs facilitated the development of Māori curriculum terminology, including for mathematics (Barton, 2008). Despite the work of teachers and bilingual school leaders in developing curriculum terminology in te reo Māori, the government continued to control Māori education through English-language syllabi, neglecting to fund Māori language resources (Trinick, 2015). This led to inequitable funding and resource development, resulting in the early bilingual programs being criticized for eventually transitioning students to English (May & Hill, 2005).

In response to the failure of bilingual schools to meaningfully improve the acquisition and use of the Māori language by school children, Māori communities established early childhood language immersion programs or Kōhanga Reo (language nests) in 1981 (Smith, 1997). Kōhanga Reo paved the way for establishing Kura Kaupapa Māori, language immersion schooling in 1985 (Smith, 1997). The Māori language immersion schools ensured ongoing Māori language instruction through the primary school years. The founding document of Kura Kaupapa Māori, *Te aho matua*, emphasized te reo Māori and Māori ways of knowing (Department of Internal Affairs, 2008). Thereby redefining the purpose of schooling for Māori education by privileging te reo Māori (the Māori language) and mātauranga (Māori ways of knowing and being). The success of Kura Kaupapa Māori led to the creation of wharekura (secondary schools) and wānanga (tertiary institutions). In addition to Kura Kaupapa Māori and the remaining bilingual schools, today, there is a range of Māori language instruction schooling models such as Kura ā-Iwi (tribal affiliation), Kura ā-Rohe (regional), and Māori language immersion programs located on English-language school campuses.

Until 1989, Kura Kaupapa Māori operated outside the state system (McMurchy-Pilkington, 2004). The independent establishment of Kōhanga Reo and Kura Kaupapa Māori supported the argument for broader neoliberal education discourse, promoting restructuring and change (Openshaw, 2014). The Tomorrow's Schools legislation, the Labour Government's fundamental policy, transferred the school administration responsibility from the Department of Education to schools' boards of trustees (BOT; Openshaw, 2014). Composed of elected representatives of the

school community, the BOT was responsible for the governance of their local schools (Openshaw, 2014). In this way, Tomorrow's Schools shifted the administrative burden from the state to the community. Neoliberalism promoted the idea of market-based reforms and devolution of decision-making power to local levels, which aligned with the desire to recognize and accommodate choices, including those of Māori communities advocating for Kura Kaupapa Māori (Trinick, 2015). The devolution of authority from the state to the community provided an avenue for Kura Kaupapa Māori to gain access to state funding while retaining a modicum of autonomy over how school subjects were being taught and assessed through the day-to-day running of the kura (school) (McMurchy-Pilkington, 2004). However, to become state-funded, all the various forms of Māori immersion schooling have been required to teach state-mandated subjects, such as mathematics, and participate in national assessment programs.

Around the time that Kura Kaupapa Māori entered the state (national) education system, significant agitation and lobbying by Māori language revitalization groups led to te reo Māori being recognized as an official language through the Māori Language Act 1987 (Ka'ai-Māhuta, 2011). More recent education legislation has similarly affirmed the responsibilities of the state education system in actively promoting and protecting Māori rights under Te Tiriti o Waitangi (Education and Training Act 2020). State agencies are also obligated to work with Māori to protect mātauranga (Māori ways of knowing and being) in ways that support Māori rights and interests and enable Māori to derive collective benefit (Waitangi Tribunal, 2011). Despite these impressive achievements, the government continues failing to rid Aotearoa NZ education of systemic bias against Māori learners. The following sections review the impacts of successive curriculum and assessment interventions on education quality and equity for Māori.

National Curriculum Reforms

The first national curriculum development project began in Aotearoa NZ in the early 1990s and was also motivated by ideologies of neoliberal education reform (Openshaw, 2014). In the 1990s, New Zealand was following international trends in curriculum development. Influenced by the British mathematics curriculum development project, the education minister of the day believed that the Aotearoa NZ document should be based mainly on overseas examples, thus saving time and money (McMurchy-Pilkington, 2004). Consequently, Māori language immersion schooling aims to provide their students with access to Māori cultural capital alongside internationally valued cultural capital through the curriculum. Despite one of the arguments for considerable curriculum reform, being based on the historical underachievement of Māori, there was still no recognition of the improved equity for Māori students in Māori language immersion schooling and the associated resourcing needs of these settings (Trinick, 2015).

There was a tendency by government officials to ignore Māori-led success and to continue promoting assimilatory policy rhetoric. The Māori language immersion schooling sector was not represented in the key decision-making positions in developing the New Zealand curriculum framework (McMurchy-Pilkington, 2004). Echoing the government's approach to resourcing bilingual schools a decade earlier, it was assumed that Māori language immersion schools would implement a translated version of the state-mandated English language curriculum (McMurchy-Pilkington, 2004). Teachers had to create specialized terms for subjects such as mathematics, a laborious task that led to significant variability in terms used across schools or classrooms (Christensen, 2004). After extensive lobbying by Kura Kaupapa Māori and other stakeholder groups, the Minister of Education acquiesced to developing a separate Māori language mathematics curriculum (McMurchy-Pilkington, 2004). However, the Māori language curriculum document still had to mirror the English language document structure and have the same mathematics content (McMurchy-Pilkington, 2004), thereby excluding the cultural symmetry framework foci of

mātauranga (Māori ways of knowing and being) as a valued outcome of schooling for Māori and limiting Māori students' experiences of success *as Māori*.

Despite the requirement to translate the English language document being removed in the second round of curriculum development, the basic structure of the 1996 curriculum was maintained. Although there was increased capacity by this time to develop Māori language immersion curricula, the opportunities to explicitly illuminate mātauranga were still limited (Trinick, 2015). The second document placed more emphasis on localising the curriculum with the support of the school community. Therefore, the onus seems to have been returned to Māori communities to resource their local schools with mātauranga expertise (Allen, 2023).

As discussed in previous sections, requiring Indigenous communities to resource state schooling without resources is inequitable. In this way, mātauranga was excluded through the translation requirement of the first national pāngarau document and further invisibilised by omission in the second. A third national curriculum development project is underway at the time of writing. It remains to be seen if the cultural symmetry focus area of mātauranga (Māori ways of knowing and being) will be illuminated alongside te reo Māori (Māori language) and school mathematics, or if the persistent inequities in resourcing Māori language immersion curriculum will prevail.

National Assessment Reforms

For the 20th century, Aotearoa NZ's national credentialing system for higher education access consisted of one-off exams delivered at the end of the school year. In 2002, the National Certificate of Educational Achievement (NCEA) was introduced by the Ministry of Education (MoE) and the New Zealand Qualifications Authority (NZQA). The NCEA has three levels and allows students to accumulate credits against achievement standards over multiple years through internal and external assessments (Education Counts, 2025). Both curated portfolio evidence and one-off tests are used to assess students' achievement against the NCEA standards. The NCEA has become Aotearoa NZ's primary national qualification system for secondary students in Years 11-13 (15–18-year-olds).

Despite its initial promise, NCEA achievement rates have declined over the past five years for the general population (Education Counts, 2025). In 2023, NCEA Level 1 (usually achieved in Year 11 by 15-16-year-olds) declined below 85% (Education Counts, 2025). This limits some students' ability to attain NCEA Level 2 (usually achieved in Year 12 by 16-17-year olds), equating with increased average earnings after secondary school (Education Counts, 2025). While the recent decline in NCEA school leaver attainment has been attributed to factors such as the COVID-19 pandemic, natural disasters, and the high cost of living, the impact has been disproportionately severe for Māori and Pacific school leavers (Universities NZ, 2018).

Teacher Education Reforms

Beyond curriculum and assessment, research highlights the importance of effective teaching in enhancing educational equity for Māori learners (Controller and Auditor General, 2016; Hall et al., 2024). Initial Teacher Education (ITE) ensures teachers provide equitable opportunities for Māori learners to succeed. From 2012 to 2022, as the NCEA data included in subsequent sections was being collected, initiatives such as—*Tātaiako. Cultural Competencies for Teachers of Māori Learners*—were introduced (MoE, 2011). *Tātaiako* aimed to improve Initial Teacher Education and in-service teacher practice by offering explicit guidance on cultural competencies. While this policy influenced teacher practice, it has not significantly closed the NCEA achievement gap for Māori learners in English language schools (Hall et al., 2024). Hall et al. (2024) highlight that policies like *Tātaiako* can oversimplify learner diversity and call for more research on teaching strategies that engage Indigenous and low socioeconomic status students with mathematics.

ITE programs face the challenge of integrating Indigenous and imported epistemologies to prepare teachers who can effectively support Māori students while addressing international education trends. Therefore, ITE must balance cultural aspirations with educational policies and assessment requirements, such as national curricula and NCEA standards. For Māori language immersion ITE providers, this means offering a comprehensive education that promotes te reo Māori (the Māori language) and mātauranga (Māori ways of knowing and being) alongside pedagogical content knowledge.

A significant challenge is the shortage of qualified Māori language immersion teacher educators, particularly those with tertiary-level qualifications. The demand for educators fluent in te reo Māori and knowledgeable in mātauranga often surpasses supply, affecting the quality of teacher education programs (Allen, 2023). Additionally, there is a persistent shortage of Māori language immersion teachers specializing in STEM (science, technology, engineering, and mathematics) subjects, especially mathematics (Allen, 2023). Secondary STEM ITE programs typically require an undergraduate STEM qualification and, for Māori immersion teaching, fluency in te reo Māori. However, undergraduate STEM programs in Aotearoa NZ rarely provide space and support for students to achieve high-level fluency in te reo Māori.

Currently, two Māori language immersion postgraduate ITE qualifications are approved by the Teaching Council of Aotearoa NZ, with one focusing specifically on STEM education, including mathematics. This program is designed for graduates aiming for roles in digital technology, te reo Māori, or mathematics teaching at primary or secondary levels. Addressing the shortage of Māori language immersion mathematics teachers requires increased funding and resources for Māori language immersion ITE and greater flexibility in undergraduate STEM programs to allow students to gain high-level fluency in te reo Māori, mātauranga, and the necessary mathematics expertise.

Current Status of Māori Education

From 2014 to 2024, Māori learning predominantly in te reo Māori seem to have had similar school leaver attainment rates to the national student population. However, Māori students attending English language schooling have significantly lower school leaver attainment rates across all three NCEA levels, including University Entrance (Education Counts, 2025). For this study, we are focusing on NCEA Level 1 (see Table 2).

Table 2

Percentage of Māori School Leavers with NCEA Level 1 or Above by Māori Language Immersion (2014–2024)

School Leaver Attainment of NCEA Level 1	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
	%	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Māori predominantly learning in te reo Māori	87.4	87.2	88.3	86.0	88.9	87.9	87.3	87.4	86.9	84.1	87.9
Māori predominantly learning in English	78.5	80.2	81.6	82.0	81.3	79.8	79.3	77.1	74.1	72.6	71.5
All School Leavers	88.7	89.8	90.0	90.2	89.9	88.9	89.4	88.1	85.7	84.6	84.2

Source: Education Counts (2025)

When the existing NCEA Level 1 school leaver attainment rates are examined (see Table 2), Māori school leavers who attended Māori language immersion education had higher NCEA Level 1 school leaver attainment rates (over the 2014-2024 period) than Māori students who attended English language schooling.

The assumption here is that the Ministry of Education would interrogate the disparities in the achievement by Māori from similar communities attending different schools and achieving quite different results. As noted earlier, the Controller and Auditor General identified this disparity in educational experiences for Māori students in their review of education for Māori in 2016. However, the following section presents the latest intervention designed to improve literacy and numeracy achievement equity, particularly for Māori, despite concerns about its design and implementation.

Reducing Education Equity through Assessment Reform: Co-Requisite Assessments

The co-requisites numeracy standards emerged as part of a broader NCEA change program designed to address declining literacy and numeracy achievement alongside concerns about the contextualized way literacy and numeracy were being assessed in the NCEA (Franken, 2023). In a literature review examining the motivation for changing the NCEA program, Franken (2023) notes that the lower achievement of Māori students in international tests such as PISA has featured in change rhetoric. The MoE and the NZQA introduced a national co-requisite standard for numeracy and literacy in 2021. From 2024, students must achieve the co-requisite standards to be awarded the NCEA, potentially creating a new education barrier for Māori students to overcome.

While primarily delivered as common assessment activities (CAA) through an online testing platform, portfolio assessments can also be submitted. The portfolio approach requires a more significant time investment by teachers than the CAA, and no schools have opted for this approach in the three-year pilot (Evaluation Associates, 2023). Beginning at Year 9-10 (13-15-year-olds), English language and Māori language immersion school students can work towards meeting the co-requisite standards across multiple years (MoE, 2024). The primary purpose of these co-requisites was to ensure that students acquire numeracy and literacy skills necessary for success in further education, training, and employment, and to support achievement in the three NCEA levels (Franken, 2023). It is unclear how a test achieves this. We assume that the co-requisites are designed to change teacher practice for numeracy teaching, as the test will inform what is taught in classrooms rather than the broad achievement objectives of the curriculum. Becoming more familiar with decontextualized testing could also encourage students to become better test takers, thus improving outcomes in international tests such as PISA and TIMSS. The data from the co-requisite numeracy standard pilot delivered over three years is presented in Table 3.

The *2022 NCEA Te reo matatini me te pāngarau Literacy and Numeracy Pilot Evaluation Report Two* (Evaluation Associates, 2023) revealed similar themes to those prevalent in the literature review about the under-resourcing of Māori language immersion schooling. Ten Māori language immersion education settings participated in the evaluation. They commented on the need for professional learning and development (PLD) support to better prepare students for the CAA (Evaluation Associates, 2023). Further, PLD was also requested to help better utilize the portfolio option for the co-requisite standards rather than the CAA.

The portfolio option could allow students to demonstrate their understanding over time, utilizing multiple representations rather than in a one-off online assessment. Many students in Māori language immersion schools are learning the language of instruction and assessment (Allen, 2015). This is because te reo Māori is absent in many Māori language immersion students' homes and communities. Therefore, for Māori language immersion students, mathematics language proficiency

can impact mathematics knowledge proficiency. Māori language immersion students who are learners of the language of instruction may need to interact with, manipulate, or present multiple representations of mathematics language to demonstrate their understanding of mathematics concepts. When limited to deciphering assessment questions and producing answers in a singular language mode, such as written or symbolic language, this can significantly increase the difficulty of the assessment for second language learners (Allen, 2015). Therefore, a portfolio rather than a test would seem more appropriate for some Māori language immersion students. However, based on the data presented in the evaluation report, a lack of PLD and time to implement the portfolio approach are barriers to its use.

Table 3

2021-2023 Co-Requisite Mini-Pilot Results for Numeracy

Test Language		**Overall 2021**	
	Participating	Achieved (n)	Achieved (%)
English	1055	689	65.3%
Māori	29	8	27.6%
		Overall 2022	
	Participating	Achieved (n)	Achieved (%)
English	25,535	16,371	64.1%
Māori	186	61	32.8%
		Overall 2023	
	Participating	Achieved (n)	Achieved (%)
English	58,552	36,390	62.1%
Māori	227	47	20.7%

Source: (MoE, 2024)

Achievement gaps were also observed in English language schools. More affluent schools achieved higher results. Māori students in English language schools had lower achievement rates than overall participant achievement rates (Evaluation Associates, 2023). The authors also noted that teachers in English language schools believed the design, delivery, and approach of the CAA would lead to fewer Māori learners and those from low socioeconomic status backgrounds gaining the NCEA (Evaluation Associates, 2023). The digital readiness and high literacy skills required to comprehend numeracy questions were listed as barriers that the CAA introduced to numeracy assessment, which could further reproduce existing inequities. The evaluation report of the CAA pilot also identified the likelihood of teachers 'teaching to the test.' Forty-seven percent of the 128 English language school teachers interviewed by Evaluation Associates (2023) believed that their future teaching and learning units would incorporate numeracy skills and practice questions that mirror the questions and problems expected to be in the CAA.

The evaluation report highlighted the need for a readiness approach to enrolling students in the CAA rather than the year-level approach predominantly used for the pilot (Evaluation Associates, 2023). This readiness approach to test-taking seems to contradict the concepts of a one-off nationwide assessment. The teachers interviewed questioned the equity of implementing a readiness approach and how to ensure this would be inclusive rather than exclusive (Evaluation Associates, 2023). The readiness approach could encourage schools to exclude some students from attempting the CAA, thereby improving their school's overall results. This may become apparent over time.

The authors of the evaluation report also highlighted that the co-requisite standards would require the Māori language immersion sector "to consider more broadly the definition of what ākonga (student) achievement and progress looks like, sounds like, and feels like (Evaluation Associates, 2023, p. 16)." The report recommended revisiting the existing Māori language immersion numeracy and literacy strategy and the current curriculum development project to ensure alignment with the new co-requisite assessments (Evaluation Associates, 2023). In doing so, the co-requisite assessments could further erode Māori students' opportunities to experience success *as Māori* through narrowing access to mātauranga to better focus teaching on the questions and problems likely to appear in the CAA.

As noted, two significant concerns have driven the promotion of high-stakes numeracy assessments: concerns about the previous contextualized and inconsistent manner of assessing numeracy in the NCEA and an overall decline in qualification achievement rates. Despite achieving school leaver attainment rates on par with the general population for NCEA Level 1 (2013-2023), the preliminary co-requisite results from 2021-2023 (MoE, 2024) showed much lower achievement rates for Māori language immersion students. The co-requisite assessment intervention, intended to improve equity, seems to have had the opposite effect for Māori.

Discussion

The Aotearoa NZ case study of curriculum and assessment policy has presented a mix of benefits and ongoing challenges for the Māori language immersion sector and the overall equity and quality of the education system for Māori learners. Overwhelmingly, the policies that have demonstrated Cultural Symmetry by providing opportunities for Māori to gain academic success and retain cultural identity have been led by Māori. For example, the insistence of the Māori language immersion sector on developing Māori language versions of English language curriculum documents in the early 1990s secured ongoing resourcing for Māori language immersion education. These resources include funding for teacher training, assessment, professional development, language elaboration, and teaching resource creation. The funding of the pāngarau register elaboration project and curriculum resource development has thus alleviated the burden of word creation, translation, and resource creation from individual teachers (Christensen, 2004; Trinick, 2015). Therefore, the development of Māori language curriculum documents has enabled Māori language immersion teachers to contribute to language regeneration alongside teaching mathematics. Over the previous decade, Māori language immersion student leaver attainment rates of NCEA qualifications have been on par with those of the general student population. This shows the potential for education equity for all Māori students in Aotearoa NZ regardless of whether they attend English or Māori language education.

According to English and Bolton (2015), schools function in the dominant culture they are embedded into, and the curriculum is a symbolic representation of the dominant culture of the school. In the case of Māori language immersion schools that Māori communities have established, Māori culture is taken for granted (Smith, 1997). Therefore, Māori students who attend Māori language immersion schools are not a subordinate group tasked with adapting to the schooling values and aspirations of the dominant culture.

As discussed previously, the Māori language immersion education system grew from the desire of Māori communities to stem the decline of the Māori language due to assimilatory education and social policies such as English language-only schooling. Māori language immersion education represents decolonial indigenization, as Gaudry and Laurenz (2018) described, where schooling undergoes structural and administrative changes to benefit Indigenous peoples directly. When

schooling policy is designed to directly benefit Māori students, as is the case for Māori language immersion education, the data shows that Māori students can thrive.

An ongoing challenge for Māori language immersion education, as shown in the most recent assessment intervention, the co-requisite standards, is ensuring policy settings address the unique linguistic challenges of Māori language immersion education. Thereby ensuring that any new curriculum and assessment policy harnesses the strengths of Māori language immersion education. However, in their initial phase, poor results and fundamental flaws in their design were revealed.

The assumption that a national examination based on standardized criteria, with minimal support for teachers, students, and families, would effectively address achievement issues for Māori is flawed. We also question the need for an assessment likely to be administered when students, particularly Māori students in English language schools, do not seem sufficiently prepared. Coupled with existing systemic bias, such as lower expectations (Turner et al., 2015) and lowered teacher judgments of mathematics ability (Meissel et al., 2017), failing this test successively could further contribute to negative self-perceptions for Māori students in English language schools. For students in Māori language immersion schooling, negative self-perceptions in mathematics ability caused by poorly resourced assessment programs not designed explicitly for Māori language immersion settings could further limit the number of Māori language immersion teachers pursuing STEM subject specializations.

Based on the findings of the evaluation report (Evaluation Associates, 2023), the co-requisite assessments seem to privilege non-Māori students from high socio-economic backgrounds, further entrenching existing inequities. As argued here, any assessment or curriculum policy designed to address systemic inequities for Māori must be developed in collaboration with Māori language immersion schooling experts to benefit Māori students, including supporting their language and culture, thereby enacting cultural symmetry. Conversely, this latest assessment policy intervention has, thus far, continued to benefit groups that have historically enjoyed high levels of success in schooling.

The revitalization and maintenance of mātauranga (Māori ways of knowing and being), a key focus of the cultural symmetry framework, is central to Māori language immersion schooling. However, successive curriculum and assessment policy reforms seem to omit the importance of explicitly illuminating mātauranga. This remains a tension for the Māori language immersion sector (Allen, 2023). The prominence of mātauranga in the third national pāngarau curriculum development project, currently underway, is yet to be seen.

A consistent theme in the literature examining Māori education policy is the devolution of responsibility for school resourcing to communities. Policy denoting who can determine the contributions of mātauranga to the school curriculum and how (in what ways) shows a clear preference for vesting the responsibility for mātauranga in local school communities (Education and Training Act, 2020) through the localizing curriculum. Similarly, The Waitangi Tribunal (2011) has vested the care and responsibility for mātauranga with kaitiaki. Those enduring kin-based relationships with areas of mātauranga are generally understood as iwi (tribes), hapū (sub-tribes), and Māori communities. However, Māori language immersion school communities are not funded to develop school resources, and therefore, the benefits of localized curriculum and assessment may not be equally distributed across communities. Thereby reinforcing existing inequities where some Māori students may experience more opportunities to achieve success *as Māori* than others depending on their communities' capacity to resource schooling adequately. To rectify this situation, equitable funding needs to be allocated to those who have the expertise to develop mātauranga focused teaching resources at the local (school) level.

We argue that any curriculum and assessment interventions implemented in the next 20 years must meaningfully address the three foci of the cultural symmetry framework including by

positioning te reo Māori (Māori language) and mātauranga (Māori ways of knowing and being) alongside high-status subjects that are internationally tested such as mathematics. Doing so would ensure that the education system benefits more Māori students by providing more opportunities for Māori to succeed *as Māori* in schooling. As Māori children (0–14-year-olds) become a larger and larger proportion of classrooms, projected to be 33% by 2040, failing to dismantle systemic bias against Māori learners will result in increased disparities in economic outcomes for Māori communities, and therefore, Aotearoa NZ.

Egalitarian and meritocratic equity measures of education quality have emphasized comparing Māori student achievement with other groups rather than addressing Māori educational aspirations. To better serve Indigenous communities, equity and quality measures that recognize and support Indigenous knowledge systems, address educational disparities, and align with the educational aspirations of Māori and other Indigenous communities are needed. Therefore, education policy must include indicators of success *as Māori* as defined by Māori leaders, educators and communities. Any future schooling reforms must include Māori leadership and reflect Māori educational goals and values.

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