New Zealand

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Introduction

Overview of Education System

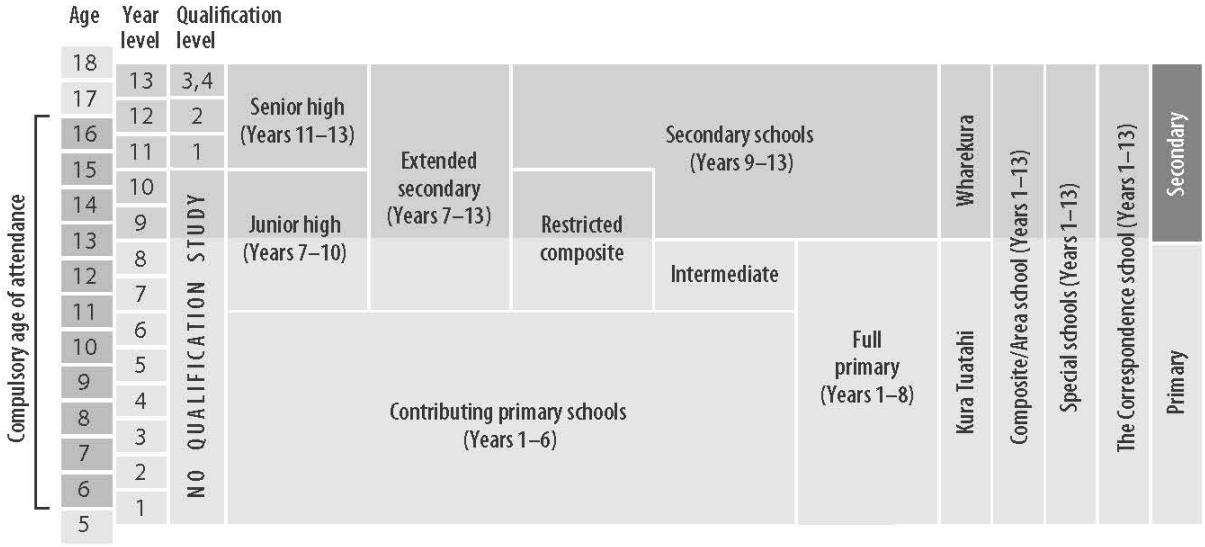
New Zealand has a decentralized education system with three distinct levels: Early Childhood Education, the Schooling Sector, and Tertiary Education. Schooling is compulsory for all students ages 6 to 16, although the majority of children start school following their fifth birthday and remain through 13 years of schooling. Education in state schools is free, although many schools ask for donations.[a,1] Within the state schooling system, there are a variety of options, including faith-based schools, schools based on the Steiner and Montessori philosophies, and schools that operate based on a Māori family-based philosophy. In *Kura Kaupapa Māori*, which are state-funded schools, students are instructed in the Māori language, and the teaching is based on Māori culture and values. New Zealand also has private schools that charge attendance fees and are attended by around 4 percent of students.

Schooling is loosely divided into two parts: primary education for students in Years 1 to 8 (typically ages 5 to 12), and secondary education for students in Years 9 to 13 (typically ages 13 to 18). Some schools cater to both primary and secondary students. Exhibit 1 presents the structure of the education system.

There is no tracking of students into academic or vocational streams or specialized schools in New Zealand. The National Certificate of Educational Achievement, New Zealand's official school qualification system for secondary schools, offers subjects across the full breadth of the curriculum, including both academic-focused courses and more applied subjects.

[a] Low and mid-socioeconomic state and state-integrated schools (Deciles 1 to 7 in New Zealand) can now opt in to a donations scheme, whereby the government will pay a grant of $150 per student, instead of the school charging fees. In 2020, 1,563 schools had opted in to this scheme.

Exhibit 1: Structure of New Zealand's Schooling Sector



Four organizations play pivotal roles in developing, implementing, and monitoring education policies across New Zealand's schooling sector:

- The **Ministry of Education** is the government's lead agency for the education system and is responsible for developing a national curriculum, providing policy advice to the government, monitoring the education system's effectiveness, allocating funds and resources to education institutions, and managing a large property portfolio.
- The **Education Review Office** (ERO) evaluates and reports on the education and care of students in schools and early childhood services.[2]
- The **New Zealand Qualifications Authority** (NZQA) ensures that New Zealand qualifications are accepted as credible and robust, nationally and internationally. The authority administers the National Certificate of Educational Achievement (NCEA).[3]
- The **Teaching Council of Aotearoa New Zealand** is the professional and regulatory organization for registered teachers in the early childhood education and schooling sectors.[4]

Authority for day-to-day operations and financial management is devolved from central government, with legal responsibility for governance of schools assigned to boards of trustees. Each board consist of elected parent and community volunteers, the school principal, and a staff representative, and a student representative also may be elected in secondary schools. Boards of trustees must establish charters for their school that include targets for student learning and improvement.

Use and Impact of TIMSS

New Zealand has participated in all cycles of TIMSS, and the achievement and contextual data collected is used to inform science and mathematics education and enables the examination of equity in New Zealand's education provision.

TIMSS has also become an important part of monitoring and research within the New Zealand education system. New Zealand's science and mathematics communities, academic and research groups, as well as policy think tanks have used TIMSS data and reports to inform their thinking about teaching and learning. The influences of these reports on policy is wide-ranging. The reports also inform different facets of mathematics and science education within the education sector and wider public sphere.

The first release of TIMSS highlighted areas of concern in mathematics and science education for middle primary students. Along with the difficulties teachers had with new curriculum statements at the time, TIMSS results contributed to the creation of the Mathematics and Science Taskforce in 1997.[5] The task force recommendations led to a number of initiatives, such as developing mathematics and science resources for students and teachers, research seminars to identify key issues in science and mathematics education, assessment tools for mathematics, and professional development programs focused on numeracy.

The Best Evidence Synthesis Programme (BES) provides evidence of what works best for a diverse range of learners in mathematics. The first BES report was released in 2003.[6] BES evaluates and synthesizes a wide range of New Zealand and international research, including TIMSS results, to inform education policy and teacher practice, and to suggest educational development approaches to optimize outcomes for learners.[7]

TIMSS 2007 results brought attention to science education, prompting ERO to undertake research about what exemplifies good practices in primary science teaching.[8] As a result, the quality of science teaching in upper primary schools was a focus area for ERO reviews during 2011.[9] ERO again made primary science teaching a focus in 2019, and the report is due out some time in 2020.

In 2009, the New Zealand government established the chief science advisor role, reporting to the prime minister. One of the responsibilities of this position is to "promote public understanding of, and engagement with, science, particularly with young people."[10] TIMSS data have been used to "evaluate the state and future direction of school science education at both primary and secondary levels as a means of looking ahead towards science education in the 21st century."[11]

The Science in Society initiative aims to encourage and enable better engagement with science and technology by 2024. "A Nation of Curious Minds," the blueprint from the Science in Society initiative,[b] drew heavily on TIMSS data when developing the framework, and TIMSS is being used as a key indicator when monitoring and evaluating the initiatives' success.[12]

[b] For more on "A Nation of Curious Minds," see this chapter's section "Special Initiatives in Mathematics and Science Education."

TIMSS data was used as an impetus for the creation of the Bullying-Free New Zealand Schools Framework in 2016. The framework sets out the core elements of successful school approaches to bullying prevention, based on evidence of positive impacts when they are implemented consistently.[13]

Despite the breadth of use, TIMSS still is underused in New Zealand. The challenge for education circles is to move past the "bad news" narrative created by league tables over the past few cycles to one that better recognizes and uses the wealth of trend data collected in TIMSS. Possibilities for the use of TIMSS data include the development of new resources and further professional support for teachers.

The Mathematics Curriculum in Primary and Lower Secondary Grades

The national curriculum guides teaching and learning in New Zealand. It comprises two documents: *Te Marautanga o Aotearoa* for Māori-medium education and the New Zealand Curriculum for English-medium education. The two documents were developed independently of each other and are not translations of each other. However, they share the same goal: an emphasis on foundation learning and academic success for all students and the competencies needed for study, work, and lifelong learning.[14, 15]

Both documents have two sections. The first section identifies key learning outcomes and outlines the vision, principles, values, key competencies, and learning areas. It also guides effective pedagogy, assessment, and curriculum design and review. The second section of the Māori-medium document covers nine learning areas, two of which are Mathematics (which includes statistics) and Science. The second section of the English-medium document sets out the "achievement objectives" by level for each of eight learning areas, two of which are Mathematics and Statistics, and Science.

Within each learning area, for both documents, there are eight curriculum levels that span 13 years of schooling. The alignment of curriculum levels with year levels is flexible, with each curriculum level in primary schooling equating to approximately two years of schooling. For example, students are not expected to complete Level 3 until the end of Year 6 (ages 10 to 11). Across secondary schooling, curriculum levels are approximately equivalent to one year of schooling.

Each school has autonomy over how the curriculum is implemented. The curriculum documents do not prescribe detailed plans for teaching and learning but offer a framework for schools to develop their own curriculum plans and teaching practices. It is the role of each school's board of trustees, principal, and teachers to develop and implement locally appropriate programs that are consistent with the principles, values, key competencies, and various learning statements set out in the curriculum. Teachers are expected to tailor lessons to meet students' individual needs.

Thus, students in the same year level may be working at different curriculum levels and in different learning contexts as appropriate to their interests, abilities, and pace of progression.[c]

The mathematics learning area for both English- and Māori-medium has three strands: Number and Algebra, Measurement and Geometry, and Statistics. In TIMSS 2019, New Zealand assessed students in only English-medium settings; therefore, the following summary details Level 3 of the English-medium curriculum.[d]

The majority of students should have been introduced to or taught each of the following topics or skills by the end of Year 5:

- Number and Algebra—Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals (simple), and percentages; know basic multiplication and division facts; know counting sequences for whole numbers; know how many tenths, tens, hundreds, and thousands are in whole numbers; know fractions and percentages in everyday use; record and interpret additive and simple multiplicative strategies using words, diagrams, and symbols, with an understanding of equality; generalize the properties of addition and subtraction with whole numbers; and connect members of sequential patterns with their ordinal position and use tables, graphs, and diagrams to find relationships between successive elements of number and spatial patterns
- Geometry and Measurement—Use linear scales and whole numbers of metric units for length, area, volume and capacity, weight (mass), angle, temperature, and time; find areas of rectangles and volumes of cuboids by applying multiplication; classify plane shapes and prisms by their spatial features; represent objects with drawings and models; use a coordinate system or the language of direction and distance to specify locations and describe paths; and describe transformations (reflection, rotation, or translation) that have mapped one object onto another
- Statistics—Gather, sort, and display multivariate categorical and whole-number data and simple time-series data to answer questions; identify patterns and trends in context, and within and between data sets; communicate findings using data displays; evaluate the effectiveness of different data displays; and investigate simple situations involving elements of chance by comparing experimental results with expectations from models of all outcomes, acknowledging that samples vary

[c] For example, TIMSS 2011 showed that across Year 5, some students were working mostly at Level 2 of the curriculum, some were working mostly at Level 3, some were working across levels, and a small proportion were working at Levels 1 or 4. Note that teachers provided this data based on the majority of students in their class for mathematics and science strands separately.

[d] Experiences with TIMSS 2003, when Māori-medium schools were included, demonstrated that these Year 5 students were unfamiliar with the mathematical and scientific vocabulary. Given that many of these students were learning Māori as their second language, this difficulty with technical words is not surprising.

The following summary details Level 5 of the English-medium document.[e] The majority of students should have been introduced to or taught each of the following topics or skills by the end of Year 9:

- Number and Algebra—Reason with linear proportions; use prime numbers, common factors and multiples, and powers (including square roots); understand operations on fractions, decimals, percentages, and integers; use rates and ratios; know commonly used fraction, decimal, and percentage conversions; know and apply standard form, significant figures, rounding, and decimal place value; form and solve linear and simple quadratic equations; generalize the properties of operations with fractional numbers and integers; and relate tables, graphs, and equations to linear relationships found in number and spatial patterns
- Geometry and Measurement—Select and use appropriate metric units for length, area, volume and capacity, weight (mass), temperature, angle, and time, with awareness that measurements are approximate; convert between metric units using decimals; deduce and use formulas to find perimeters and areas of polygons and volumes of prisms; find perimeters and areas of circles and composite shapes; deduce angle properties of intersecting and parallel lines and angle properties of polygons and apply these properties; create accurate nets for simple polyhedra and connect three-dimensional solids with different two-dimensional representations; construct and describe simple loci; interpret points and lines in coordinate planes, including scales and bearings on maps; define and use transformations and describe the invariant properties of figures and objects under these transformations; and apply trigonometric ratios and the Pythagorean theorem in two dimensions
- Statistics—Determine appropriate variables and measures; consider sources of variation; gather and clean data; use multiple displays and recategorize data to find patterns, variations, relationships, and trends in multivariate data sets; compare sample distributions visually, using measures of center, spread, and proportion; present a report of findings; evaluate statistical investigations or probability activities undertaken by others, including data collection methods, choice of measures, and validity of findings; compare and describe the variation between theoretical and experimental distributions in situations involving elements of chance; and calculate probabilities, using fractions, percentages, and ratios

[e] At the Year 9 level, there are too few students in Māori immersion mathematics and science courses to include in TIMSS.

The Science Curriculum in Primary and Lower Secondary Grades

The science learning area in the English-medium document has five strands: the overarching Nature of Science strand, and four contextual strands—the Physical World, the Material World, the Living World, and Planet Earth and Beyond.

The following summary details Level 3 of the English-medium curriculum.[f] The majority of students should have been introduced to or taught each of the following topics or skills by the end of Year 5:

- Nature of Science—Appreciate science as a way of explaining the world and that science knowledge changes over time; identify ways scientists collaborate and provide evidence supporting their ideas; build on prior experiences, working together to share and examine their own and others' knowledge; ask questions, find evidence, explore simple models, and carry out appropriate investigations to develop simple explanations; begin to use a range of scientific symbols, conventions, and vocabulary; engage with a range of science texts and begin to question the purposes for which these texts are constructed; use their growing science knowledge when considering issues of personal concern; and explore various aspects of an issue and make decisions about possible actions
- Living World—Recognize that there are life processes common to all living things, and that they occur in different ways; explain how living things are suited to their particular habitats and how they respond to environmental changes, both natural and human-induced; begin to group plants, animals, and other living things into science-based classifications; and explore how groups of living things in the world have changed over long periods of time and appreciate that some living things in New Zealand are quite different from those in other areas of the world
- Planet Earth and Beyond—Appreciate that water, air, rocks and soil, and life forms make up our planet, and recognize these as Earth's resources; investigate the water cycle and its effect on climate, land forms, and life; and investigate the components of the solar system, developing an appreciation of the distances between them
- Physical World—Explore, describe, and represent patterns and trends for everyday examples of physical phenomena, such as movement, forces, electricity and magnetism, light, sound, waves, and heat. For example, identify and describe the effect of forces (contact and noncontact) on the motion of objects; and identify and describe everyday examples of sources of energy, forms of energy, and energy transformations

[f] There are no National Standards for science. Also, experiences with TIMSS 2003, when Māori-medium schools were included, demonstrated that the mathematical and scientific vocabulary was too problematic at the Year 5 level. Given that many of these students were learning Māori as their second language, this difficulty with technical words is perhaps not surprising.

- Material World—Group a range of materials in different ways, based on observations and measurements of characteristic chemical and physical properties; compare chemical and physical changes; and relate observed, characteristic chemical and physical properties of a range of different materials to technological uses and natural processes

The following summary details Level 5 of the English-medium document. The majority of students should have been introduced to or taught each of the following topics or skills by the end of Year 9:

- Nature of Science—Understand that scientists' investigations are informed by current scientific theories and aim to collect evidence to be interpreted through processes of logical argument; develop and carry out more complex investigations, including using models; show an increasing awareness of the complexity of working scientifically, including recognition of multiple variables; begin to evaluate the suitability of the investigative methods chosen; use a wider range of science vocabulary, symbols, and conventions; apply their understandings of science to evaluate both popular and scientific texts (including visual and numerical literacy); and develop an understanding of socio-scientific issues by gathering relevant scientific information to draw evidence-based conclusions and to take action where appropriate
- Living World—Identify the key structural features and functions involved in the life processes of plants and animals; describe the organization of life at the cellular level; investigate the interdependence of living things (including humans) in an ecosystem; and describe the basic processes by which genetic information is passed from one generation to the next
- Planet Earth and Beyond—Investigate the composition, structure, and features of the geosphere, hydrosphere, and atmosphere; investigate how heat from the Sun, the Earth, and human activities is distributed around Earth by the geosphere, hydrosphere, and atmosphere; and investigate conditions on the planets and their moons, and the factors affecting them
- Physical World—Identify and describe the patterns associated with physical phenomena found in simple everyday situations involving movement, forces, electricity and magnetism, light, sound, waves, and heat (e.g., identify and describe energy changes and conservation of energy, simple electrical circuits, and the effect of contact and noncontact on the motion of objects); and explore a technological or biological application of physics
- Material World—Investigate the chemical and physical properties of different groups of substances, (e.g., acids and bases, fuels, and metals); distinguish between pure substances and mixtures and between elements and compounds; describe the structure of atoms of different elements; distinguish at the particle level between an element and a compound, and a pure substance and a mixture; and link the properties of different groups of substances to the way they are used in society or occur in nature

The current curriculum was well entrenched at the time of TIMSS 2019 testing. A ministerial advisory group has advised that there needs to be greater clarity about the learning that cannot be

left to chance. In response, the Ministry of Education is collaborating with the education community and sector to develop a process for national curriculum review, to develop curriculum progress maps, and to define the role and purpose of local curricula and their relationship with national curricula.[16]

Professional Development Requirements and Programs

Specialist secondary mathematics or science teachers are expected to have completed some tertiary level mathematics or science papers during their initial teacher education. New Zealand is currently experiencing a shortage of teachers, particularly secondary teachers in science, technology, engineering, and math (STEM) subjects.[17]

The Teaching Council of Aotearoa New Zealand keeps a register of all qualified teachers. Teacher registration is mandatory for all teachers employed in New Zealand schools. Upon registration, a teacher receives a practicing certificate, to be renewed every three years. To have their practicing certificate renewed, teachers are expected to comply with the Code of Professional Responsibility and Standards for the Teaching Profession.[18] One standard requires that teachers engage in professional learning and adaptively apply this learning in practice. A professional leader must testify that a teacher has undertaken satisfactory professional development at each three-year certificate renewal.

Schools are responsible for ensuring that teachers participate regularly in some form of professional development, the majority of which occurs in school contexts. The Ministry of Education funds locally focused professional learning and development (PLD), nationally focused PLD, and PLD through networks of expertise. Most of the funding is allocated locally and gives schools, and communities of schools, access to PLD tailored to their needs.[19]

During 2018 and 2019, the national priorities for locally focused PLD were math, science, reading and writing, and digital fluency. For 2020, the national priorities for PLD have been refocused to support teachers and leaders and align with the focus on curriculum progress and achievement.[20]

The reset of the PLD priorities supports the government's vision of a New Zealand education system that meets the needs of all learners, no matter who they are or where they come from. The new priorities that English-medium settings will focus on are cultural capability, local curriculum design, and assessment for learning. Māori-medium settings will focus on *mātauranga* and *te reo* Māori (Māori values and language), *marau ā-kura* (localized curricula), and *aromatawai* (assessment). Digital fluency remains a priority for teachers and leaders in all schools and *kura*.

The Science Learning Hub was created as part of the Curious Minds initiative.[g] The Hub offers a range of opportunities for teachers to increase their science knowledge and understanding, and supports their science teaching with webinars and other resources.[21]

[g] For more on "A Nation of Curious Minds" see the section "Special Initiatives in Mathematics and Science Education" in this chapter.

A range of professional development opportunities, including short courses and webinars, can be found in the Ministry's Education Gazette, published fortnightly, and on the Gazette website. [22]

Monitoring Student Progress in Mathematics and Science

The Ministry of Education publishes the National Administration Guidelines (NAGs),[h] which set expectations for boards of trustees, principals, and school staff.[23] One of these guidelines states that schools should gather information that is sufficiently comprehensive to enable the progress and achievement of students to be evaluated. Priority is placed on student achievement and progress in literacy and numeracy from Years 1 to 8, but other aspects of the curriculum, including science, are expected to be covered.

Schools are required to report to students and their parents about student progress and achievement across the curriculum twice a year. Schools are also required to report to the school community on student progress and achievement, and provide the Secretary for Education with an annual update of the school's charter and an analysis of the school's performance in relation to the charter.

There is no national testing in New Zealand. Prior to Year 11, emphasis is placed on the professional judgment of teachers. Beginning in Year 11, students may choose to undertake assessment in selected NCEA courses that are nationally examined and moderated. Students also have the option to sit for international exams, such as Cambridge International Examinations or the International Baccalaureate.

The Ministry provides Learning Progression Frameworks and the Progress and Consistency Tool to support teachers in making judgments about student progress against the New Zealand Curriculum in reading, writing, and mathematics.[24] Teachers are encouraged to use evidence from a range of assessment practices to monitor student progress and to diagnose students' learning needs. New Zealand teachers usually develop their own assessments to meet the needs of their students. Although teachers have the freedom to write their own test items, there are many sources of items and tests they can use to compile their assessments. Three main nationally standardized test sources, including intact tests or single items, are available to schools: Assessment Resource Banks, Assessment Resources for Classroom Teachers and Students, and Progressive Achievement Tests. Additionally, exemplars are provided for the curriculum to illustrate expected outcomes relative to particular curricular levels. These preprepared tasks and tests use a variety of formats, including multiple-choice, constructed-response, and practical open-ended tasks.

The Assessment Resource Banks, developed by the New Zealand Council for Educational Research (NZCER), provide items in mathematics and science from which teachers can choose what to assess, for what purpose, and when.[25] Also produced by NZCER are standardized *Progressive Achievement Tests for Mathematics*[26] and *Science: Thinking with Evidence*.[27] The

[h] The NAGs are due to be repealed on commencement of the new strategic planning and reporting framework on January 1, 2023.

science tests are designed to assess specific aspects of thinking in science for students in Years 7 to 10.

The Electronic Assessment Tools for Teaching and Learning is an educational resource for assessing reading and mathematics from Years 5 to 10 and writing for Years 1 to 10.[28] Teachers can use this resource to create tests designed for their students' learning needs. Once tests are scored, this tool generates interactive graphic reports, enabling teachers to analyze student achievement against curriculum levels, curriculum objectives, and population norms.

A major underlying premise of New Zealand's education system is that teachers and schools should meet the education needs of individual students.[29] Students are promoted socially through the year levels.[i] At the primary level, the use of classes with students from multiple year levels (composite classes) is widespread. As a result of both social promotion and composite classes, there often is a wide range of abilities in each class. The New Zealand Curriculum recognizes that students are likely to progress at different rates through each learning area, and teachers are expected to adapt their teaching to student needs.[30]

Students usually first experience entry restrictions to secondary school courses when they begin taking papers for qualifications. The NCEA is the main national qualification for secondary students. NCEA is awarded at Levels 1, 2, and 3. Students usually begin studying for their Level 1 NCEA in Year 11 and continue through the levels in Years 12 and 13. The flexible design of these qualifications enables students to take any combination of courses across levels, depending on their abilities and interests, within-school logistics (for example, timetabling and the availability of teacher expertise) and school requirements (for example, previous attainment in a subject). For example, a Year 13 student could be taking Level 3 arts courses, while also taking Level 1 or 2 language courses.

In each area of learning, different aspects of skills, knowledge, and understanding can be assessed separately, with assessments designed to suit the skill or knowledge being assessed.[31] A variety of assessment tools, including presentations, assignments, practical tests, and examinations, are used. Schools also can offer a wide range of specialized National Certificates that provide a starting point for further study or simply evidence of a broad general education. They include, for example, the National Certificate of Tourism, National Certificate in Computing, and National Certificate in Mechanical Engineering.

The NCEA qualification is currently under review, and changes will be introduced to make NCEA more robust, consistent, inclusive, and accessible for students of all abilities and backgrounds.[32]

In addition to participating in TIMSS, New Zealand monitors student progress in science and mathematics at a system level by running the National Monitoring Study of Student Achievement (NMSSA). NMSSA looks at the achievement of primary school students in Year 4 and Year 8 across

[i] There are exceptions to social promotion only in very special circumstances. Students will be held back or promoted beyond their expected year level only on recommendation of the school and agreement with the parents.

all subjects in the New Zealand Curriculum, including Mathematics and Statistics, and Science.[33] New Zealand also participates in the Programme for International Student Assessment (PISA).

Special Initiatives in Mathematics and Science Education

The self-governing nature of New Zealand schools has meant that many initiatives in mathematics and science education are not mandatory. Schools choose whether and when they participate in any initiative available. The Numeracy Development Projects (also known as the Numeracy Project) was a widely used initiative in mathematics education in primary schools. It began in 2001 with the aim of introducing teachers to a new approach to the teaching of mathematics.[34] The success of the Numeracy Project, however, has been questioned recently, with criticism leveled at the lack of attention given to mathematic basics compared with an "emphasis placed on teaching children multiple mental strategies for solving problems."[35] Another notable program is the Accelerated Learning in Mathematics initiative, which targets students who look unlikely to meet expected standards. Evaluation of this initiative shows it has had positive effects on learning outcomes for those students involved.[36,37]

Developing Mathematical Inquiry Communities is a growing initiative that was originally developed in collaboration with teachers in a school in a high poverty area. It is a model of ambitious mathematics teaching, founded in equity, that incorporates an advanced form of complex instruction. The project has focused on developing teacher expertise, pedagogical leadership, what it takes to develop in-class mentoring expertise, and conditions for sustainability and ongoing improvement. This approach views student engagement in collaborative mathematical discourse as an essential component for their learning of mathematics with understanding. [38]

Many initiatives in science education are built around engagement with the local community, including local bodies and research organizations. Schools can access either specific year- or school-level programs, such as Enviroschools,[39] House of Science, Learning Experiences Outside the Classroom, and other opportunities that use communities' resources to promote science. They are designed to be fully participatory, locally relevant, and responsive to change, enabling flexibility to meet the changing needs of the students, schools, and communities.

A significant initiative for science education was a major joint initiative between the Ministry for Business, Innovation, and Employment, the Chief Science Advisor to the Prime Minister, and the Ministry of Education, "A Nation of Curious Minds—*He Hirihi i te Mahara.*"[40] This strategic plan recognizes the fundamental current and future importance of science when answering increasingly complex problems. The long-term objective is to "encourage and enable better engagement with science and technology across all sectors of New Zealand society." One of the three Strategic Action Areas to achieve this objective is to "enhance the role of education." The report identifies the following actions:

- Improve initial teacher education through increased science and technology teaching competencies, leading to increased confidence
- Better in-service professional learning and development for science and technology teachers
- Build stronger links between science and technology educators, learners, technologists, and scientists, in the classroom and in the community

Recent developments in science education have had a focus on the environment and sustainability. The Department of Conservation has developed the Environmental Education for Sustainability,[41] which aims to grow understanding and empower individuals to act as advocates for the environment. The Ministry of Education has developed *Pūtātara*, a resource to support schools and teachers in their learning about sustainability and assisting them to incorporate sustainability and global citizenship across the curriculum.[42]

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