National Curriculum Development Paper

This paper is intended as background reading for participants in the ***Into the Future – National Curriculum Board Forum*** to be held in Melbourne on Friday 27 June 2008.

The paper raises questions for discussion on which the National Curriculum Board will need to form a clear view in order to develop writing guidelines for drafting curriculum documents. The 27 June forum is being convened to provide advice.

The following attachments are provided:

Attachment 1: *Indicative comparison of age groups covered and stages/junctures/bands used in some curriculum documents across Australia K–12*

Attachment 2: *Content and standards in international curricula*

Attachment 3: *Remit for the National Curriculum Board*

Attachment 4: *Membership of the Interim National Curriculum Board*

Additional suggested pre-reading is Federalist Paper 2: *The Future of Schooling in Australia* http://planipolis.iiep.unesco.org/upload/Australia/Australia%20Future%20of%20Schooling.pdf.

1 The role of national curriculum in building Australia's future

1.1 School education lays important foundations for futures that are distant and seen only dimly. The first young Australians who commence primary school in 2011 may leave their initial formal education in 2021 though the national goal is that almost all of them should stay at least for a full 12 years and not leave until 2023. Many will go on to post-secondary education and not complete their initial education until the mid-2020s and later.

1.2 Their schooling should help develop a sense of themselves and Australian society, a capacity and predisposition to contribute effectively to society, and the knowledge, understanding and skills with which to work productively and creatively. The schooling of Australia's young people should help develop a cohesive society, with individual members aware of the rich diversity of histories and cultures that have shaped it, and committed to its continuing development. It should build strong foundations for future national prosperity, helping to make Australia productive and internationally competitive in the global economy.

1.3 It is expected that a new declaration on the goals of schooling for Australia will be adopted later in 2008. Just how the goals of schooling might be expressed is presently being considered by a *National Goals for Schooling Working Group* established by the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA), charged to review and recommend changes to the expression of goals in the *Adelaide Declaration on National Goals for Schooling in the Twenty-First Century* adopted by ministers in 1999.

1.4 Achievement of these goals will depend on how ambitious the goals are and on the quality of schooling. Curriculum will be only part of the story. The quality of schooling depends on community commitment, the quality of teaching, the quality of school and system leadership, the level of resources available as well as the quality of the curriculum.

1.5 The remit of the National Curriculum Board, in the first instance, is to develop a national, K–12 curriculum in English, mathematics, the sciences and history. In a second phase, the remit will be extended to involve geography and languages other than English. The Board's work must be shaped by the national goals and must connect with other areas for which curriculum will continue to be developed within the states and territories. It must also connect with the national assessment program to ensure that the curriculum drives the assessment and not the other way round.

1.6 Australian school education is of high quality. International comparisons show Australian students' performances to be among the best in world, though there is no reason not to aspire to be the best. A world-class curriculum is not a sufficient condition for developing the best school education system in the world but it is a necessary one.

2 Principles for developing national curriculum

There are some principles that should underpin the development of national curriculum. The National Curriculum Board is currently working with the following seven:

2.1. National curriculum needs to provide students with an understanding of the past that has shaped the society and culture in which they are growing and developing, and with knowledge, understandings and skills that will help them in their future lives.

2.2 The curriculum should be based on the assumptions that all students can learn and that every child matters. It should also take account of the markedly different rates at which students develop (the top 10% of any age group typically being five or more year levels ahead of the

bottom 10%) while not allowing those differences to become a reason to abandon some students to low expectations that will arbitrarily limit their development.

2.3 The curriculum should make clear to teachers what has to be taught, and to students what they should learn and what achievement standards are expected of them in each stage of schooling. Just how that might best be reflected in curriculum that takes account of individual differences in students' development is important to resolve. The ways in which current Australian curricula deal with stages of schooling are summarised in Attachment 1: *Indicative comparison of age groups covered and stages/junctures/bands used in some curriculum documents across Australia K–12*.

2.4 The curriculum needs to be feasible. It must be based on reasonable expectations of time and resources available to teachers. Length of documentation, extent of specification and accessibility of language need to be considered. The use of plain language is important but must preserve the complexity in ideas appropriate for professional practitioners.

2.5 The development of national curriculum is intended to establish essential content and achievement standards for all students to invigorate a national effort to improve student learning in the selected subjects.

2.6 The curriculum needs to be flexible. It must allow jurisdictions, systems and schools the ability to deliver national curriculum in a way that values teachers' professional knowledge and reflects local school and regional differences and priorities.

2.7 National curriculum needs to be developed collaboratively with jurisdictions, systems and schools across Australia. To ensure its success, its development will be based on a strong research base of learning and pedagogy and on what works in professional practice. It will reflect 'best practices' across Australia and overseas.

APPROACHES TO DEVELOPING NATIONAL CURRICULUM: QUESTIONS FOR DISCUSSION

What would it mean for curriculum to be 'futures-oriented' and how could that best be balanced against the need for it also to provide students with an understanding of the past that has shaped their society and culture?

How could curriculum take account of the great variation in rates of students' development and still be useful to teachers who work with students grouped in classes by age?

How could national curriculum at primary level best be linked with the various system curricula for other subject areas to help primary teachers work in an integrated way across subjects if they wish?

What would be an appropriate length and degree of specification for a curriculum document to be useful for teachers? Would such a document also be of use to parents and others wanting to know what schools are doing and what is being expected of students?

3 Content

3.1 Experts solve problems more quickly and efficiently than novices not only because they can call on automated responses honed through considerable experience in solving such problems but because they represent problems in ways that facilitate solutions. Expertise thus depends on deep understandings of domain knowledge. Curriculum needs to help students begin to develop the knowledge and understandings of domains on the basis of which at least some of them will go on to develop high levels of expertise.

3.2 National curriculum will specify core content. What 'content' means needs to be articulated clearly. The National Curriculum Board currently envisages that the content specifications will provide:

- a rationale explaining why the content is important for students to study
- aims and objectives for teachers and students in relation to the content
- a description of how the content is organised
- the content, setting out the knowledge, understandings and skills that students are to acquire or develop.

3.3 There is an expectation that national curriculum will set down 'core' content in a way that leaves opportunity for systems, schools and teachers to exercise discretion over some of the content to reflect local and regional circumstances and to take advantage of teachers' special knowledge and teachers' and students' interests.

3.4 The limitation in the initial scope of national curriculum to English, mathematics, the sciences and history is relatively unproblematic for secondary schooling where studies, for the most part, are organised into subjects, though not always including history as a separate subject. At the primary level, teachers have responsibility across the curriculum, and curriculum design needs to take account of this. The National Curriculum Board recognises the need to ensure that what it proposes in English, mathematics, the sciences and history is well connected with what is proposed for other subject areas, particularly for primary schools.

3.5 Development of national curriculum will require choices about nomenclature, in some cases for concepts that are named quite differently in current state and territory curriculum documents across Australia.

3.6 Some international examples of how content is described are provided in Attachment 2: *Content and standards in international curricula* in summary form and with some examples drawn from curriculum documents.

NATIONAL CURRICULUM CONTENT: QUESTIONS FOR DISCUSSION

In what way might content most usefully be described in curriculum documents?

How might core curriculum be specified, in what way should it be referenced to stages of schooling, and in what way and to what extent should provision be made for regional and local variation?

In thinking about what terminology you prefer, can you identify nomenclature that you would want to see avoided in national curriculum documents? Can you identify the terminology that you would want to see in national curriculum to describe content?

4 Achievement standards

4.1 Descriptions of content make clear what should be covered and the knowledge, understandings and skills that students are to acquire or develop. Achievement standards indicate the level of knowledge, understanding and skills that students are expected to achieve, usually at some particular point in time. It makes no sense to describe only some minimum or other benchmark achievement that might be expected of all students at a particular year level since there is typically a wide variation in students' levels of achievement.

4.2 Focusing on a minimum benchmark is unhelpful for students who might have reached and surpassed it in earlier years of schooling and is not necessarily all that helpful for students who might not have reached the benchmark but whose achievement levels are improving year on year.

4.3 Focusing on the proportion of students achieving above a minimum benchmark can also distract from or even obscure information on shifts at other points in the distribution of achievements. In the OECD PISA 2006 assessments, for example, the achievement levels of Australian 15-year-olds at the 5th, 10th and 25th percentiles remained at the levels at which they had been in 2000 and 2003. The proportion achieving above any benchmark in the range of those achievements would not have altered. That obscures declines in achievements at the 95th, 90th and 70th percentiles that were sufficiently large to have caused a significant decline in Australia's mean performance.

4.4 Acceptance of wide variation should not become an excuse for accepting poor achievement or, worse, setting low expectations for some students based on their prior achievements or their membership of some groups that might, on average, be characterised by relatively poor achievements. Clear definitions of achievement standards should provide the means to set appropriately challenging expectations for all students.

4.5 In whatever way expectations of achievement are to be described, a choice of vocabulary needs to be made for national curriculum. Achievement standards are named and described differently across Australia and internationally. Whatever else they do, achievement standards provide a language in which achievement can be discussed, particularly between teachers and students and the students' parents.

NATIONAL CURRICULUM ACHIEVEMENT STANDARDS: QUESTIONS FOR DISCUSSION

How could expected achievement standards that take sensible account of the wide variation in student achievement levels be defined at particular stages in schooling?

How could acceptance of wide variation be managed so that it does not lead to acceptance of poor achievement and the establishment of low expectations for some students?

What terminology is useful in discussing and reporting achievement standards?

5 Cross-curricular learnings

5.1 The same language is used to describe competencies in different domains of knowledge and that can lead too readily to an assumption that they are generic competencies. Problem solving is a good example. Problem solving in history is not the same as problem solving in physics. Furthermore, there is good research evidence that problem-solving competence in one area, particularly high-level problem-solving competence of the type developed by experts, does not transfer readily from one domain to another. Experts moving outside their domain of expertise become novices in a new domain. They have to acquire the knowledge, understandings and skills relevant to that domain in order to become skilled problem solvers with any marked level of expertise.

5.2 There are, however, some competencies that are not domain-specific and that can be developed in a genuinely cross-curricular fashion. Managing and monitoring one's own learning is one. It involves strategies that can be taught and learned by students in any domain and it would serve them well as adult learners when they are more directly responsible for their own learning. A capacity and a predisposition to work together with others in teams characterised by mutual respect among members is another example.

5.3 There are some competencies that are used in many, or even all, domains of knowledge that should be developed in the curriculum for each, to gain the benefits of mutual reinforcement and to develop nuanced competencies relevant to each domain. Literacy and numeracy are good examples. Information and communication technologies may well be another.

5.4 The capacity to break out of the constraints of well-learned ways of doing things is another competency that can be treated as cross-curricular. It can be thought of as creativity or flexibility of thinking.

5.5 There are other cross-curricular learnings that could be thought of as perspectives rather than competencies to which teaching and learning in a range of subjects could contribute. Cultural sensitivity and respect, engaged citizenship and a commitment to sustainable patterns of living are examples though each depends on particular knowledge and understandings as well.

5.6 National curriculum in English, mathematics, the sciences and history will need to address cross-curricular competencies and perspectives explicitly. They could provide a basis for valuable links to the curricula for other subjects.

NATIONAL CURRICULUM AND CROSS-CURRICULAR LEARNINGS: QUESTIONS FOR DISCUSSION

What cross-curricular competencies and perspectives should be addressed in national curriculum in English, mathematics, the sciences and history?

How might they be addressed to minimise the risk of their falling through the cracks as attention is focused on subject-specific knowledge, understanding and skills?

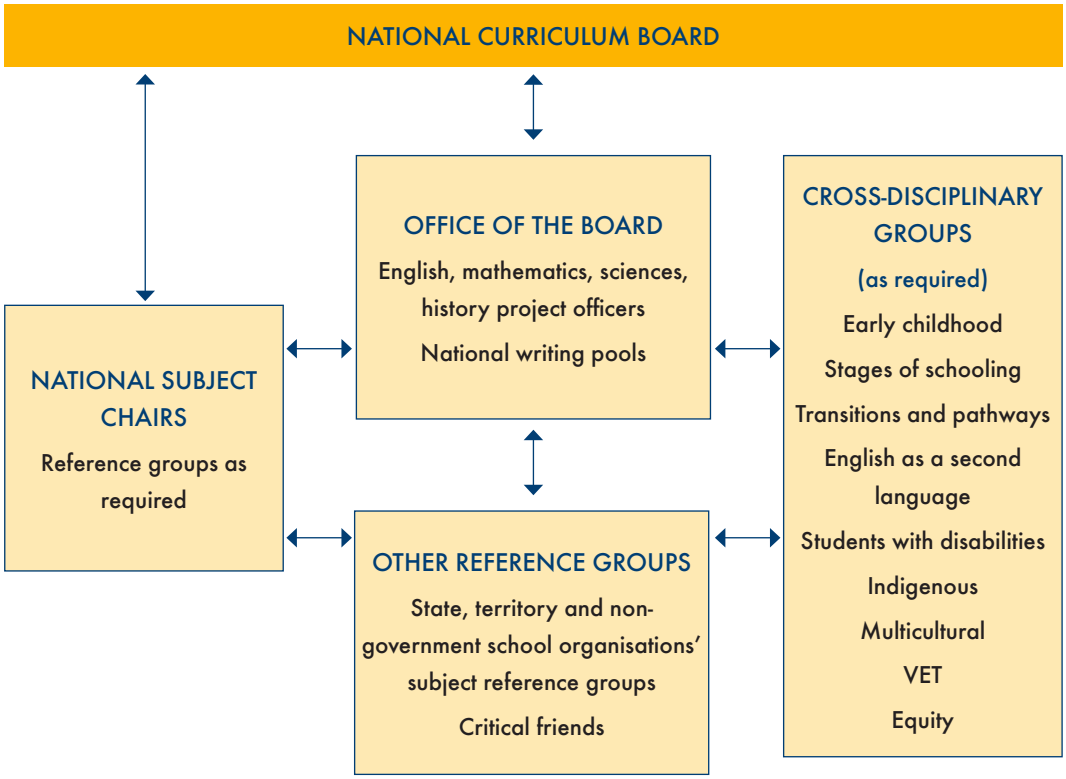
6 Development process

6.1 National curriculum will be developed collaboratively. It will be the product of Australians working together to develop a world-best curriculum.

6.2 The process will not start with a blank slate since there is much excellent practice in the Australian education systems' curricula and valuable lessons from international experience on which to build. National curriculum will, nevertheless, need to be developed as a whole to ensure that it is balanced and integrated. It cannot be built just by stitching together good elements from different existing curricula. It will also need to be carefully bounded to preserve space and status for subjects or learning areas that are not part of national curriculum, but which are essential to the whole curriculum and for which systems will be responsible.

6.3 The development process cannot seek to replicate at a national level what is possible at a state and territory level, with networks of advisory and working groups that can meet regularly face to face. Scaling those processes up to national level would be too expensive and complex.

6.4 The development process will require strong and dynamic communication channels and transparency to ensure that all interested parties can know what is going on and how to connect and provide input or commentary. The figure below represents the National Curriculum Board's current thinking on the process.



6.5 The Board will provide writing guidelines for the development of curriculum documents, based on the principles outlined in this paper and feedback from the forum about questions presented for discussion.

6.6 The Board will appoint national subject chairs to lead curriculum development for each subject. For the senior secondary level, the Board may appoint chairs to lead curriculum development for separate disciplines in science. Each chair will be supported by national reference groups convened, as required, to address specific issues or to work on a longer-term basis on the overall framework. Membership of the reference groups will be informed by national forums convened for each subject in September–October 2008. The chairs will be responsible to the National Curriculum Board to which they will report regularly.

6.7 The detailed development work will be managed by project officers recruited to the Office of the Board. The drafting of curriculum documents will be undertaken by specialists recruited to 'national writing pools'. They will be able to work at a distance from the project officers with opportunities also to work for concentrated periods face to face. Potential writers will be able to register their interest through the National Curriculum Board's website. The curriculum authority in each state or territory (or the department of education where the curriculum authority does not cover all school years) could provide some allocation of staff time to national curriculum in their staffing. Memoranda of understanding would be drawn up to reflect specific arrangements.

6.8 State and territory authorities and non-government school organisations could convene subject or other reference groups to provide formal feedback on directions for national curriculum and on draft documents.

6.9 The National Curriculum Board could have a pool of critical friends from whom independent advice could also be obtained on national curriculum directions and on draft documents.

6.10 Other expert pools could be convened as required to provide various cross-disciplinary perspectives on the work. They could review it from the perspective of various stages of schooling, such as primary or middle school, or in terms of the needs of specific groups of students, such as Indigenous students, students working in English as a second language, or students with disabilities. Specialist input on vocational education and training, and multicultural perspectives could also be obtained in this way. These groups could communicate electronically or, from time to time, face to face. The Board expects that these would not be 'standing committees' but rather expert groups convened for a specific purpose for a limited time. This multilayered approach offers the prospect of engaging more individuals in the process.

7 Communication, consultation and engagement

7.1 Professional and community engagement will be essential for success in developing and implementing national curriculum. The experiences and insights of teaching communities, professional associations and academics, and industry, parent and community groups must help shape national curriculum, and the Board will use a number of strategies to learn from them. This national forum on 27 June 2008 is the first step. It will be followed in September–October 2008 by national forums focused on English, mathematics, the sciences and history.

7.2 The Board will need a well-managed process for ongoing consultation with a wide variety of stakeholders. Regular reporting to its authorising agencies, the Council of the Australian Governments' Working Party on the Productivity Agenda, and the Ministerial Council on Education, Employment, Training and Youth Affairs, will be relatively straightforward. For the wider range of interested groups, the Board will develop a culture of consultation.

7.3 The Board will establish an interactive website* through which groups and individuals can register interest at various levels. There will be obvious groups to be engaged such as the specialist subject organisations in which many teachers are involved. There could also be many others not so evident at this stage who could establish contact as the processes will be open and accessible. The Board will seek to be explicit about what issues are non-negotiable (e.g. because they are set in the Board's remit or because, beyond a particular point, decisions have been made after earlier consultations) and what issues remain open for comment and advice.

7.4 Consultation and constructive engagement will be supported by e-engagement technologies such as videoconferencing, podcasts, vodcasts from events, chats, online forums, email, surveys and regular electronic newsletters. The Board will use its website to present draft position papers and to receive comment and advice. Stakeholders will be encouraged to use their own networks to continue discussions and then to re-engage with the Board's work. Opportunities for face-to-face engagement will also be provided through national and regional forums and through Board participation in conferences and events organised by others.

7.5 Board meetings will be held at six-weekly intervals and will be convened in different capital cities. Meetings with interested groups will be convened in association with those meetings. Regional events will also be held to provide opportunities for others to engage. Information on these and other events in which the Board is involved will be provided on the Board's website.

NATIONAL CURRICULUM DEVELOPMENT AND CONSULTATION: QUESTIONS FOR DISCUSSION

What strengths and weaknesses are evident in the Board's initial thinking on its curriculum development processes?

What communication and engagement strategies work well in establishing productive connections with a wide range of audiences?

* The National Curriculum Board website will be live on Friday 27 June 2008 at www.ncb.org.au

National Curriculum Development Paper

Attachments

ATTACHMENT 1
Indicative comparison of age groups covered and stages/junctures/bands used in some curriculum documents across Australia K–12

Different curricula across Australia cover different levels of preschool[1] and school, and are divided differently. For some examples, see below.

Australian Capital Territory

Preschool to Year 10 *Every chance to learn: Curriculum framework for ACT schools*

Early childhood	Later childhood	Early adolescence	Later adolescence
Preschool to Year 2	Years 3–5	Years 6–8	Years 9–10

Years 11 & 12

Years 11 & 12	ACT Year 12 Certificate

New South Wales

Kindergarten to Year 6

Early Stage 1	Stage 1	Stage 2	Stage 3
Kindergarten	Years 1 & 2	Years 3 & 4	Years 5 & 6

Years 7–10

Stage 4	Stage 5	
Years 7 & 8	Yrs 9 & 10	School Certificate

Years 11&12

Stage 6	
Years 11 & 12	Higher School Certificate

Northern Territory

Transition to Year 10 *Northern Territory Curriculum Framework (NTCF)*

Key Growth Point 1	Key Growth Point 2	Key Growth Point 3	Band 1	Band 2	Band 3	Band 4	Band 5
Early Learning			approximately end of Year 2	approximately end of Year 4	approximately end of Year 6	approximately end of Year 8	approximately end of Year 10

Years 11 & 12

Years 11 & 12	Northern Territory Certificate of Education

[1] In this paper, the term 'preschool' incorporates any or all years prior to schooling.

ATTACHMENT 1
Indicative comparison of age groups covered and stages/junctures/bands used in some curriculum documents across Australia K–12

Queensland

Preparatory year *Early Years Curriculum Guidelines*

Years 1–9 *Queensland Curriculum, Assessment and Reporting (QCAR) Framework*

Phases	Year levels	
Early: Equity of access	Preparatory year	Early Years Curriculum Guidelines
		Essential Learnings & Standards described at junctures
	Years 1–3	by the end of Year 3
Middle: Equity of engagement	Years 4–9	by the end of Year 5
		by the end of Year 7
		by the end of Year 9

Years 10–12

Senior: Equity of pathways	Years 10–12	Queensland Certificate of Education

South Australia

Birth to Year 12 *South Australian Curriculum, Standards and Accountability (SACSA) Framework*

Early Years Band (3 phases from birth to end of Year 2)			Primary Years Band	Middle Years Band		Senior Years Band	
Birth to age 3	Age 3 to 5	Reception, Years 1and 2	Years 3–5	Years 6–9		Years 10–12	
Developmental Learning Outcomes		Standard 1	Standard 2	Standard 3	Standard 4	Standard 5	South Australian Certificate of Education (SACE)
		End of Year 2	End of Year 4	End of Year 6	End of Year 8	End of Year 10	End of Year 12

Tasmania

Kindergarten to Year 10 *The Tasmanian Curriculum*

Standard	Standard 1			Standard 2			Standard 3			Standard 4			Standard 5		
Stage	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Stages for opportunities to learn						
Year level	Kindergarten – Prep	Years 1 & 2	Years 3 & 4	Years 5 & 6	Years 7 & 8	Years 9 & 10
Opportunities to learn	Stages 1–4	Stages 3–6	Stages 5–9	Stages 7–11	Stages 9–13	Stages 11–15

Stages for assessment ratings						
Year level	Kindergarten – Prep	Years 1 & 2	Years 3 & 4	Years 5 & 6	Years 7 & 8	Years 9 & 10
Assessment ratings	Stages 1–3	Stages 2–5	Stages 4–8	Stages 6–10	Stages 8–12	Stages 10–15

Years 11 & 12

Years 11 & 12	Tasmanian Certificate of Education (TCE)

ATTACHMENT 1
Indicative comparison of age groups covered and stages/junctures/bands used in some curriculum documents across Australia K–12

Victoria

Preparatory to Year 10 Victorian Essential Learnings Standards (VELS)

Standards	Stages of learning
Level 1: end of Preparatory year Level 2: end of Year 2 Level 3: end of Year 4	Preparatory to Year 4 – Laying the foundations
Level 4: end of Year 6 Level 5: end of Year 8	Years 5–8 – Building breadth & depth
Level 6: end of Year 10	Years 9–10 – Developing pathways

Years 11 & 12

Years 11 & 12	Victorian Certificate of Education & Victorian Certificate of Applied Learning

Western Australia

Kindergarten to Year 12 Curriculum Framework for Kindergarten to Year 12 in Western Australia

Early childhood	Middle childhood	Early adolescence	Late adolescence/ Senior secondary
Kindergarten to Year 3	Years 3–7	Years 7–10	Years 10–12
			Western Australian Certificate of Education

ATTACHMENT 2
Content and standards in international curricula

An initial review of international curricula has illustrated differences in the way that learning is presented. For examples, please see below.

1. Content: *differentiation* of compulsory schooling and *curriculum content*

	Finland	Ontario, Canada	Hong Kong	Singapore
Phases of schooling	Grades 1-2 Grades 3-5 Grades 6-9	Grades 1-3 Grades 4-6 Grades 7-8	P1-3 P4-6 S1-3 S4-5	P1-4 P5-6 S1-4
Provision of content	For the phase	Year by year	For the phase	Objectives for phase Topics year by year
Nomenclature	Objectives Core contents	Overall expectations Specific expectations	Learning targets Learning units	Objectives Topics/sub-topics

2. Standards: *differentiation* of compulsory schooling and *assessment/quality assurance/ standards*

	Finland	Ontario, Canada	Hong Kong	Singapore
Phases of schooling	Grades 1-2 Grades 3-5 Grades 6-9	Grades 1-3 Grades 4-6 Grades 7-8	P1-3 P4-6 S1-3 S4-5	P1-4 P5-6 S1-4
Standards or assessment processes	At end of each phase	No standards Generic 'achievement chart' that can be used at any time	'Territory-wide system assessment' conducted at end of each of first 3 phases based on competencies identified for end of each phase (3 KLAs only)	No standards National exam at end of P6

ATTACHMENT 2
Content and standards in international curricula

3. Specification

Finland does not provide a great deal of specification. It should be noted that teachers in Finland must complete a master's degree in education or in their subject of speciality.

Hong Kong and Singapore are both initiating reforms to enhance the strategies that teachers employ, decreasing their reliance on drilling of basic skills and encouraging group work, inquiry skills, projects, higher-order thinking skills and educating the whole child. In Singapore this is reflected in the removal of content from their previous curriculum and in Hong Kong by re-developed curriculum that incorporates 'generic skills' and 'values and attitudes'. This is also the situation in Korea where required national curriculum content has been reduced by 30% to enable more district and school-based flexibility.

Ontario by comparison provides a greater level of detail.

Different models of curriculum structure in mathematics: content and standards

1. Finland: National Core Curriculum for Basic Education 2004

Finland identifies phases in the compulsory years as Grades 1–2, Grades 3–5 and Grades 6–9. Each subject consists of 'objectives' and 'core contents' for the phase, not year by year, and 'descriptions of good performance' at the end of each phase.

Accessed from website: **http://www.oph.fi/english/SubPage.asp?path=447;27598;37840** (23 May 2008)

GRADES 3–5

The core tasks of mathematics instruction in the third through fifth grades are to develop mathematical thinking, introduce the learning of mathematical models of thinking, strengthen basic calculations and the concept of the number, and provide experiences as a basis for assimilating the concepts and structures of mathematics.

OBJECTIVES

The pupils will

- gain experience in succeeding with mathematics
- learn, through investigation and observation, to formulate mathematical concepts and concept systems
- learn to use mathematical concepts
- learn basic calculation skills and learn to solve mathematical problems
- find similarities, differences, regularities, and cause-and-result relationships between phenomena
- justify their actions and conclusions and present their solutions to others
- learn to present questions and conclusions on the basis of observations
- learn to use rules and follow directions
- learn to do sustained, focused work, and to work in a group.

ATTACHMENT 2
Content and standards in international curricula

1. Finland: National Core Curriculum for Basic Education 2004

CORE CONTENTS

Numbers and calculations

- strengthening the concept of the decimal system, introduction to the 60-based system with the help of the times on a clock
- classification and organization of numbers
- multiplication
- division in a ratio, division into parts, divisibility
- algorithms and mental calculation
- concept of the fraction, conversion of fractions
- concept of the decimal fraction
- relationship between the fraction, decimal fraction, and percentage
- addition and subtraction of fractions and decimal fractions, and their multiplication and division by natural numbers
- evaluating, checking, and rounding the results of calculations
- use of parentheses
- concept of the negative whole number
- investigating the number of different alternatives

Algebra

- concept of the algebraic expression
- interpretation and writing of number sequences
- regularities, ratios, and correlations
- seeking solutions to equations and inequalities by deduction

Geometry

- dilations and reductions; similarity and scale
- reflections across a line and around a point, symmetry, congruence, using concrete means
- the circle and its parts
- parallel and perpendicular lines
- angle measurement and classification of angles
- study and classification of different types of polygons
- circumference and area
- study of the geometric properties of two- and three-dimensional figures
- reinforcing comprehension of the principle of measurement
- use, comparison, and conversion of units of measurement
- evaluation of measurement results; revision of measurement

Data processing, statistics and probability

- searching for, gathering, storing, and presenting data
- the coordinate system
- reading simple tables and diagrams
- concept and computation of the arithmetic mean
- classification and organization of data; introduction to the concepts of mode and median
- experiences with classical and statistical probability

ATTACHMENT 2
Content and standards in international curricula

1. Finland: National Core Curriculum for Basic Education 2004

DESCRIPTION OF GOOD PERFORMANCE AT THE END OF THE FIFTH GRADE

Thinking and working skills

The pupils will

- demonstrate an understanding of concepts associated with mathematics by using them in problem-solving, and by presenting them in diverse ways - with instruments, pictures, symbols, words, numbers, or diagrams
- try consciously to focus their attention when making observations; they will be able to communicate their observations and thoughts in diverse ways - by acting, speaking, writing, and using symbols
- know how to depict real-world situations and phenomena mathematically by comparing, classifying, organizing, constructing, and modelling
- know how to group or classify on the basis of a given or chosen criterion, to look for a shared attribute, to distinguish between a qualitative and quantitative property, and to describe groups of things and objects, positing true and untrue propositions about them
- know how to present mathematical problems in a new form; they will be able to interpret a simple text, illustration, or event and to make a plan for solving the problem
- know how to follow rules.

Numbers, calculations, and algebra

The pupils will

- understand the decimal system in terms of decimal fractions, too, and know how to use it confidently; they will understand the concepts of the negative number and fraction and be able to present them by different methods
- know how to present calculations in writing and orally, and know the relationships between different calculations; they will know how to estimate in advance the magnitude of the result and, after the problem is solved, to check the stages of the calculation and evaluate the sensibleness of the solution
- know how to formulate and continue number sequences and to present correlations.

Geometry

The pupils will

- know how to form figures, following the instructions given; they will be able to notice the properties of simple geometric figures and will be familiar with the structure formed by the concepts of plane figures
- recognize similarity; they will know how to reflect a figure across a line, and to dilate and reduce figures by a given ratio; they will recognize figures that are symmetrical in relation to a line
- understand the principle of measurement; they will know how to evaluate the size of the object being measured and the sensibleness of the measurement's result, and how to state that result in appropriate units of measurement
- know how to calculate the area and perimeter of parallelograms and triangles.

Data processing, statistics, and probability

The pupils will

- know how to gather data and organize, classify, and present them as statistics; they will know how to read simple tables and diagrams
- know how to clarify the number of different events and alternatives, and to judge which is an impossible or certain event.

ATTACHMENT 2
Content and standards in international curricula

2. Ontario: The Ontario Curriculum Grades 1–8

Ontario divides the compulsory years into Grades 1–3, Grades 4–6 and Grades 7–8. For each subject 'overall expectations' and 'specific expectations' are described at each year level. Evaluation about standards of performance is a professional judgement made by the teacher using criteria that are generic across the grades. These criteria are described on an 'achievement chart'. The achievement chart is used to guide the development of assessment tasks and tools and to assist teachers to provide meaningful feedback to their students.

Accessed from website: http://www.edu.gov.on.ca/eng/curriculum/elementary/math18curr.pdf (23 May 2008)

Grade 4: Number Sense and Numeration

Overall Expectations

By the end of Grade 4, students will:

- read, represent, compare, and order whole numbers to 10 000, decimal numbers to tenths, and simple fractions, and represent money amounts to $100;
- demonstrate an understanding of magnitude by counting forward and backwards by 0.1 and by fractional amounts;
- solve problems involving the addition, subtraction, multiplication, and division of single- and multi-digit whole numbers, and involving the addition and subtraction of decimal numbers to tenths and money amounts, using a variety of strategies;
- demonstrate an understanding of proportional reasoning by investigating whole-number unit rates.

Specific Expectations

Quantity Relationships

By the end of Grade 4, students will:

– represent, compare, and order whole numbers to 10 000, using a variety of tools (e.g., drawings of base ten materials, number lines with increments of 100 or other appropriate amounts);

– demonstrate an understanding of place value in whole numbers and decimal numbers from 0.1 to 10 000, using a variety of tools and strategies (e.g., use base ten materials to represent 9307 as 9000 + 300 + 0 + 7) (*Sample problem:* Use the digits 1, 9, 5, 4 to create the greatest number and the least number possible, and explain your thinking.);

– read and print in words whole numbers to one thousand, using meaningful contexts (e.g., books, highway distance signs);

– round four-digit whole numbers to the nearest ten, hundred, and thousand, in problems arising from real-life situations;

– represent, compare, and order decimal numbers to tenths, using a variety of tools (e.g., concrete materials such as paper strips divided into tenths and base ten materials, number lines, drawings) and using standard decimal notation (*Sample problem:* Draw a partial number line that extends from 4.2 to 6.7, and mark the location of 5.6.);

– represent fractions using concrete materials, words, and standard fractional notation, and explain the meaning of the denominator as the number of the fractional parts of a whole or a set, and the numerator as the number of fractional parts being considered;

– compare and order fractions (i.e., halves, thirds, fourths, fifths, tenths) by considering the size and the number of fractional parts (e.g., $\frac{4}{5}$ is greater than $\frac{3}{5}$ because there are more parts in $\frac{4}{5}$; $\frac{1}{4}$ is greater than $\frac{1}{5}$ because the size of the part is larger in $\frac{1}{4}$);

– compare fractions to the benchmarks of 0, $\frac{1}{2}$, and 1 (e.g., $\frac{1}{8}$ is closer to 0 than to $\frac{1}{2}$; $\frac{3}{5}$ is more than $\frac{1}{2}$);

ATTACHMENT 2
Content and standards in international curricula

2. Ontario: The Ontario Curriculum Grades 1–8

– demonstrate and explain the relationship between equivalent fractions, using concrete materials (e.g., fraction circles, fraction strips, pattern blocks) and drawings (e.g., "I can say that $\frac{3}{6}$ of my cubes are white, or half of the cubes are white. This means that $\frac{3}{6}$ and $\frac{1}{2}$ are equal.");
– read and represent money amounts to $100 (e.g., five dollars, two quarters, one nickel, and four cents is $5.59);
– solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 10 000 (*Sample problem:* How high would a stack of 10 000 pennies be? Justify your answer.).

Counting

By the end of Grade 4, students will:

– count forward by halves, thirds, fourths, and tenths to beyond one whole, using concrete materials and number lines (e.g., use fraction circles to count fourths: "One fourth, two fourths, three fourths, four fourths, five fourths, six fourths, …");
– count forward by tenths from any decimal number expressed to one decimal place, using concrete materials and number lines (e.g., use base ten materials to represent 3.7 and count forward: 3.8, 3.9, 4.0, 4.1, …; "Three and seven tenths, three and eight tenths, three and nine tenths, four, four and one tenth, …") (*Sample problem:* What connections can you make between counting by tenths and measuring lengths in millimetres and in centimetres?).

Operational Sense

By the end of Grade 4, students will:

– add and subtract two-digit numbers, using a variety of mental strategies (e.g., one way to calculate 73 – 39 is to subtract 40 from 73 to get 33, and then add 1 back to get 34);
– solve problems involving the addition and subtraction of four-digit numbers, using student-generated algorithms and standard algorithms (e.g., "I added 4217 + 1914 using 5000 + 1100 + 20 + 11.");
– add and subtract decimal numbers to tenths, using concrete materials (e.g., paper strips divided into tenths, base ten materials) and student-generated algorithms (e.g., "When I added 6.5 and 5.6, I took five tenths in fraction circles and added six tenths in fraction circles to give me one whole and one tenth. Then I added 6 + 5 + 1.1, which equals 12.1.");
– add and subtract money amounts by making simulated purchases and providing change for amounts up to $100, using a variety of tools (e.g., currency manipulatives, drawings);
– multiply to 9 × 9 and divide to 81 ÷ 9, using a variety of mental strategies (e.g., doubles, doubles plus another set, skip counting);
– solve problems involving the multiplication of one-digit whole numbers, using a variety of mental strategies (e.g., 6 × 8 can be thought of as 5 × 8 + 1 × 8);
– multiply whole numbers by 10, 100, and 1000, and divide whole numbers by 10 and 100, using mental strategies (e.g., use a calculator to look for patterns and generalize to develop a rule);
– multiply two-digit whole numbers by one-digit whole numbers, using a variety of tools (e.g., base ten materials or drawings of them, arrays), student-generated algorithms, and standard algorithms;
– divide two-digit whole numbers by one-digit whole numbers, using a variety of tools (e.g., concrete materials, drawings) and student-generated algorithms;

– use estimation when solving problems involving the addition, subtraction, and multiplication of whole numbers, to help judge the reasonableness of a solution (*Sample problem:* A school is ordering pencils that come in boxes of 100. If there are 9 classes and each class needs about 110 pencils, estimate how many boxes the school should buy.).

Proportional Relationships

By the end of Grade 4, students will:

– describe relationships that involve simple whole-number multiplication (e.g., "If you have 2 marbles and I have 6 marbles, I can say that I have three times the number of marbles you have.");

– determine and explain, through investigation, the relationship between fractions (i.e., halves, fifths, tenths) and decimals to tenths, using a variety of tools (e.g., concrete materials, drawings, calculators) and strategies (e.g., decompose $\frac{2}{5}$ into $\frac{4}{10}$ by dividing each fifth into two equal parts to show that $\frac{2}{5}$ can be represented as 0.4);

– demonstrate an understanding of simple multiplicative relationships involving unit rates, through investigation using concrete materials and drawings (e.g., scale drawings in which 1 cm represents 2 m) (*Sample problem:* If 1 book costs $4, how do you determine the cost of 2 books? … 3 books? … 4 books?).

ATTACHMENT 2
Content and standards in international curricula

2. Ontario: The Ontario Curriculum Grades 1–8

Achievement Chart – Mathematics, Grades 1–8

Categories	Level 1	Level 2	Level 3	Level 4
Knowledge and Understanding *Subject-specific content acquired in each grade (knowledge), and the comprehension of its meaning and significance (understanding)*				
	The student:			
Knowledge of content (e.g., facts, terms, procedural skills, use of tools)	– demonstrates limited knowledge of content	– demonstrates some knowledge of content	– demonstrates considerable knowledge of content	– demonstrates thorough knowledge of content
Understanding of mathematical concepts	– demonstrates limited understanding of concepts	– demonstrates some understanding of concepts	– demonstrates considerable understanding of concepts	– demonstrates thorough understanding of concepts
Thinking *The use of critical and creative thinking skills and/or processes**				
	The student:			
Use of planning skills – understanding the problem (e.g., formulating and interpreting the problem, making conjectures) – making a plan for solving the problem	– uses planning skills with limited effectiveness	– uses planning skills with some effectiveness	– uses planning skills with considerable effectiveness	– uses planning skills with a high degree of effectiveness
Use of processing skills* – carrying out a plan (e.g., collecting data, questioning, testing, revising, modelling, solving, inferring, forming conclusions) – looking back at the solution (e.g., evaluating reasonableness, making convincing arguments, reasoning, justifying, proving, reflecting)	– uses processing skills with limited effectiveness	– uses processing skills with some effectiveness	– uses processing skills with considerable effectiveness	– uses processing skills with a high degree of effectiveness
Use of critical/creative thinking processes* (e.g., problem solving, inquiry)	– uses critical/creative thinking processes with limited effectiveness	– uses critical/creative thinking processes with some effectiveness	– uses critical/creative thinking processes with considerable effectiveness	– uses critical/creative thinking processes with a high degree of effectiveness

* The processing skills and critical/creative thinking processes in the Thinking category include some but not all aspects of the *mathematical processes* described on pages 11–17 of this document. Some aspects of the mathematical processes relate to the other categories of the achievement chart.

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Content and standards in international curricula

Categories	Level 1	Level 2	Level 3	Level 4
Communication *The conveying of meaning through various forms*				
	The student:			
Expression and organization of ideas and mathematical thinking (e.g., clarity of expression, logical organization), using oral, visual, and written forms (e.g., pictorial, graphic, dynamic, numeric, algebraic forms; concrete materials)	– expresses and organizes mathematical thinking with limited effectiveness	– expresses and organizes mathematical thinking with some effectiveness	– expresses and organizes mathematical thinking with considerable effectiveness	– expresses and organizes mathematical thinking with a high degree of effectiveness
Communication for different audiences (e.g., peers, teachers) and purposes (e.g., to present data, justify a solution, express a mathematical argument) in oral, visual, and written forms	– communicates for different audiences and purposes with limited effectiveness	– communicates for different audiences and purposes with some effectiveness	– communicates for different audiences and purposes with considerable effectiveness	– communicates for different audiences and purposes with a high degree of effectiveness
Use of conventions, vocabulary, and terminology of the discipline (e.g., terms, symbols) in oral, visual, and written forms	– uses conventions, vocabulary, and terminology of the discipline with limited effectiveness	– uses conventions, vocabulary, and terminology of the discipline with some effectiveness	– uses conventions, vocabulary, and terminology of the discipline with considerable effectiveness	– uses conventions, vocabulary, and terminology of the discipline with a high degree of effectiveness
Application *The use of knowledge and skills to make connections within and between various contexts*				
	The student:			
Application of knowledge and skills in familiar contexts	– applies knowledge and skills in familiar contexts with limited effectiveness	– applies knowledge and skills in familiar contexts with some effectiveness	– applies knowledge and skills in familiar contexts with considerable effectiveness	– applies knowledge and skills in familiar contexts with a high degree of effectiveness
Transfer of knowledge and skills to new contexts	– transfers knowledge and skills to new contexts with limited effectiveness	– transfers knowledge and skills to new contexts with some effectiveness	– transfers knowledge and skills to new contexts with considerable effectiveness	– transfers knowledge and skills to new contexts with a high degree of effectiveness
Making connections within and between various contexts (e.g., connections between concepts, representations, and forms within mathematics; connections involving use of prior knowledge and experience; connections between mathematics, other disciplines, and the real world)	– makes connections within and between various contexts with limited effectiveness	– makes connections within and between various contexts with some effectiveness	– makes connections within and between various contexts with considerable effectiveness	– makes connections within and between various contexts with a high degree of effectiveness

ATTACHMENT 2
Content and standards in international curricula

3. Hong Kong Curriculum Guide Primary 1 – Secondary 3 2002

Hong Kong has initiated a 10-year curriculum reform process (2001–2011) during which cross-curricular 'generic skills' and 'values and attitudes' are being included in all subjects.

Each subject is divided into 4 key stages (P1–3, P4–6, S1–3, S4–5). 'Learning targets' and 'learning units' are described for the end of each stage. A 'Territory-wide system assessment' is conducted at the end of key stages 1–3 in Chinese Language, English Language and Maths (see competencies on page 25 of this document).

Accessed from website http://www.edb.gov.hk/FileManager/EN/Content_3120/Main.pdf (23 May 2008)

The Learning Targets for Key Stage 2 (P4-P6)				
Number and Algebra Dimensions		Measures, Shape and Space Dimensions		Data Handling Dimension
Number	Algebra	Shape & Space	Measures	Data Handling
• To understand whole numbers, fractions, decimals, percentages and the relations among them • To manipulate numbers and examine the reasonableness of results • To formulate and solve problems involving numbers	• To use symbols to represent unknown numbers • To communicate simple mathematical facts and relations using symbols • To formulate and solve simple problems and examine the results	• To understand the properties of 2-dimensional and 3-dimensional shapes • To group and make 2-dimensional and 3-dimensional shapes • To identify the eight compass points	• To choose and use a variety of non-standard and standard units to record results in various measuring activities • To select and justify appropriate measuring tools and standard units of measurement • To recognize the degree of accuracy and the approximate nature of measurement • To inquire and use simple measurement formulae • To integrate knowledge of Number, Measures, Shape & Space to formulate and solve simple problems in measurement	• To understand the criteria for organizing and grouping discrete statistical data • To apply simple arithmetic and appropriate scales in constructing and interpreting more complex statistical graphs • To show relationships among data using a variety of statistical and graphical representations • To recognize relations and patterns from graphs • To formulate and solve problems arising from collected data and constructed graphs

ATTACHMENT 2
Content and standards in international curricula

3. Hong Kong Curriculum Guide Primary 1 – Secondary 3 2002

The Learning Units for Key Stage 2 (P4 – P6)

Unit				
Number	**Shape and Space**	**Measures**	**Data Handling**	**Algebra**
• Large numbers (approximation) • Multiplication (II) (multiplier 2 digits and multiplicand 2 or 3 digits) • Division (II) (divisor 2 digits and dividend 2 or 3 digits, divisibility) • Acquaintance with modern calculating devices (calculators) • Multiples and factors • Common multiples and common factors • Mixed operations (II) (the four operations) • Fractions (II) (types, equivalent fractions, addition and subtraction of fractions with the same denominator) • Fractions (III) (addition and subtraction of fractions with different denominators) • Fractions (IV) (multiplication) • Fractions (V) (division) • Decimals (I) (basic concept) • Decimals (II) (addition and subtraction) • Decimals (III) (multiplication) • Decimals (IV) (division) • Decimals (V) (conversion between decimals and fractions, comparison of fractions) • Percentages (I) (basic concept, convert percentages into decimals or fractions and vice versa) • Percentages (II) (uses of percentages)	• Quadrilaterals (III) (characteristics of quadrilaterals) • Fitting and dissecting shapes • Symmetry • The eight compass points • 3-D shapes (III) (characteristics of prisms, pyramids and spheres) • 3-D shapes (IV) (vertices, edges, faces and sections) • Circles	• Perimeter (I) (irregular shapes, squares and rectangles) • Perimeter (II) (circumference) • Area (I) (square centimetre, square metre, squares, rectangles) • Area (II) (parallelograms, triangles, trapeziums and polygons) • Volume (I) (cubic centimetre, cubic metre, cuboids, cubes) • Volume (II) (capacity and volume) • Speed (metre per second, kilometre per hour)	• Pictograms (II) (1 picture represents 10 or 100 units) • Bar charts (I) (1 square represents 1, 2, 5 or 10 units, average value) • Bar charts (II) (compound bar charts, 1 square represents 50 or 100 units) • Bar charts (III) (frequency counts of 1000 or above) • Averages • Broken line graphs	• Elementary algebra (algebraic symbols) • Simple equations (I) (involving one step in finding solution) • Simple equations (II) (involving two steps in finding solution)

Units in the overview are not arranged in the order of teaching sequence.

ATTACHMENT 2
Content and standards in international curricula

3. Hong Kong Curriculum Guide Primary 1 – Secondary 3 2002

Mathematics Curriculum

The Basic Competency at the end of KS1 (Trial Version)

Dimension: Number

5-digit Numbers	
Code	Objectives
	Students can:
KS1-N1-1	Recognize the place values: units, tens, hundreds, thousands and ten thousands.
KS1-N1-2	Read, write and order numbers up to 5 digits.
Mixed Operations	
	Students can:
KS1-N2-1	Perform addition (with numbers up to 3 digits, not involving carrying in three steps but involving the commutative and associative properties of addition).
KS1-N2-2	Perform subtraction (with numbers up to 3 digits).
KS1-N2-3	Perform multiplication (with numbers up to 1 digit by 3 digits, involving the commutative property of multiplication).
KS1-N2-4	Perform division (with divisor 1 digit and dividend 3 digits).
KS1-N2-5	Perform mixed operations[1] of: (a) Addition and subtraction (with numbers up to 3 digits, involving small brackets); (b) Multiplication and addition; (c) Multiplication and subtraction. } (Multiplication with numbers not greater than 10; no brackets involved)
KS1-N2-6	Solve problems involving mixed operations[1].
KS1-N2-7	Solve problems involving addition, subtraction, multiplication and division in the calculation of money (not involving mixed operations).
Remark: Each sum should involve at most two operations.	
Fractions	
	Students can:
KS1-N3-1	Understand the concept of fractions as a part of one whole.
KS1-N3-2	Recognize the relationship between fractions and the whole.
KS1-N3-3	Compare fractions with same denominators or same numerators.

[1] *The aim of this unit is to assess the manipulation skills of mixed operations (including one / two steps, two step mixed operations). Large numbers were not involved to avoid complex manipulation.*

ATTACHMENT 2
Content and standards in international curricula

4. Singapore

Singapore is also undergoing reform, incorporating more flexibility and diversity into the curriculum by reducing the amount of content. 'Learning objectives' are listed for the end of primary school (P6) at which time there is a national exam. 'Topics' and 'sub-topics' are listed for each year level. Some topics have been identified as now being excluded. There are no standards.

Accessed from website http://www.moe.gov.sg/education/syllabuses/sciences/files/maths-primary-2007.pdf (23 May 2008)

PART B PRIMARY MATHEMATICS CURRICULUM

4 OBJECTIVES OF THE PRIMARY MATHEMATICS CURRICULUM PRIMARY 1 TO PRIMARY 4, PRIMARY 5 AND PRIMARY 6 (including Foundation Mathematics)

The objectives of the primary mathematics programme are to enable pupils to:

- Develop understanding of mathematical concepts:
  - Numerical
  - Geometrical
  - Statistical
  - Algebraic
- Recognise spatial relationships in two and three dimensions
- Recognise patterns and relationships in mathematics
- Use common systems of units
- Use mathematical language, symbols and diagrams to represent and communicate mathematical ideas
- Perform operations with
  - Whole numbers
  - Fractions
  - Decimals
- Use geometrical instruments
- Perform simple algebraic manipulation
- Use calculators
- Develop ability to perform mental calculation
- Develop ability to perform estimation
- Develop ability to check reasonableness of results
- Present and interpret information in written, graphical, diagrammatic and tabular forms
- Use mathematical concepts learnt to solve problems
- Use appropriate heuristics to solve problems
- Apply mathematics to everyday life problems
- Think logically and derive conclusions deductively
- Develop an inquiring mind through investigative activities
- Enjoy learning mathematics through a variety of activities

ATTACHMENT 2
Content and standards in international curricula

4. Singapore

PRIMARY 4

Topics/Sub-topics	Content
Primary 4	
1 Whole Numbers	
Numbers up to 100 000	Include: • number notation and place values (ten thousands, thousands, hundreds, tens, ones), • reading and writing numbers in numerals and in words, • comparing and ordering numbers, • number patterns, • rounding off numbers to the nearest 10 or 100, • use of the approximation symbol (≈).
Multiplication and division	Include: • multiplication of a 4-digit number by a 1-digit number, • multiplication of a 3-digit number by a 2-digit number, • division of a 4-digit number by a 1-digit number, • solving up to 3-step word problems involving the 4 operations, • estimation of answers in calculations involving the 4 operations, • checking reasonableness of answers.
Factors and multiples	Include: • determining if a 1-digit number is a factor of a given number, • listing all factors of a given number up to 100, • finding the common factors of two given numbers, • recognising the relationship between factor and multiple, • determining if a number is a multiple of a given 1-digit number, • listing the first 12 multiples of a given 1-digit number, • finding the common multiples of two given 1-digit numbers. Exclude 'highest common factor' (H.C.F.) and 'lowest common multiple' (L.C.M.).
2 FRACTIONS	
Mixed numbers and improper fractions	Include: • concepts of mixed numbers and improper fractions, • expressing an improper fraction as a mixed number, and vice versa, • expressing an improper fraction/mixed number in its simplest form. (Denominators of given fractions should not exceed 12.)
Addition and subtraction	Include addition and subtraction of • like fractions, • related fractions. (Denominators of given fractions should not exceed 12.) Exclude calculations involving more than 2 different denominators.

ATTACHMENT 2
Content and standards in international curricula

4. Singapore

PRIMARY 4 (con't)

Topics/Sub-topics	Content
Primary 4	
2 FRACTIONS (con't)	
Fraction of a set of objects	Include interpretation of fraction as part of a set of objects.
Multiplication	Include: • multiplication of a proper/improper fraction and a whole number, • solving up to 2-step word problems involving addition, subtraction and multiplication, • using unitary method to find the whole given a fractional part. (Denominators of given fractions should not exceed 12.)
3 DECIMALS	

Decimals up to 3 decimal places	Include:
	• notation and place values (tenths, hundredths, thousandths),
	• identifying the values of the digits in a decimal,
	• use of the number line to display decimals,
	• comparing and ordering decimals,
	• conversion of a decimal to a fraction,
	• conversion of a fraction whose denominator is a factor of 10 or 100 to a decimal,
	• rounding off decimals to
	  • the nearest whole number,
	  • 1 decimal place,
	  • 2 decimal places.

Addition and subtraction	Include: • addition and subtraction of decimals (up to 2 decimal places), • estimation of answers in calculations, • checking reasonableness of answers.
Multiplication and division	Include: • division of a whole number by a whole number with answer in decimal form, • multiplication and division of decimals (up to 2 decimal places) by a 1-digit whole number, • solving up to 2-step word problems involving the 4 operations, • rounding off answers to a specified degree of accuracy, • estimation of answers in calculations, • checking reasonableness of answers.

ATTACHMENT 3
Remit statement of the National Curriculum Board

The National Curriculum Board has been charged with developing a single, world-class national curriculum for all Australian students from kindergarten to Year 12, starting with the key learning areas of English, mathematics, the sciences and history. The development of a continuum of learning in literacy and numeracy skills, ranging from basic competence in the early years through to the advancement and extension of these skills in the middle and later years of schooling, will be a foundation of the national curriculum.

The national curriculum will be futures-oriented and will outline the essential skills, knowledge and capabilities that all young Australians are entitled to access, regardless of their social or economic background or the school they attend. In this context, national curriculum will be a significant component of the new National Declaration of the Goals of Schooling.

The development and implementation of a national curriculum will be conducted under the auspice of the Council of Australian Governments (COAG) and its Productivity Agenda Working Group.

National curriculum has a significant focus as part of COAG's broader productivity agenda and its drive to sustain Australia's prosperity and productivity. In this context, national curriculum has a key role to play in increasing Australia's international competitiveness, both in terms of its economic competition and its educational performance.

The Board's primary role is to develop a national curriculum that:

- sets core content and achievement standards that are expected of students at each year of schooling;
- provides flexibility for jurisdictions, systems and schools to deliver the national curriculum in a way that allows all students to achieve its standards;
- establishes the standards as the basis for the national testing and measurement program to be agreed by governments, to measure student progress;
- broadens options for students considering different futures, preparing students for further study in all areas of future employment across the trades and technical and professional fields and in new and emerging areas of knowledge; and
- ensures that student achievement is reported on the same scale and in a similar way nationally.

National curriculum in these four key learning areas will be developed by 2010 and implemented from 2011.

As a second phase of work, national curriculum will be developed in languages and geography.

The National Curriculum Board also has a role in the National Asian Languages and Studies in School Program that aims to increase the number of high school students who will become familiar with the languages and culture of Australia's main Asian trading partners – Japan, Indonesia, China and Korea.

COAG has set a target that, by 2020, at least 12 per cent of Year 12 students will exit school with a fluency in one of the four target Asian languages – Japanese, Indonesian, Mandarin and Korean.

ATTACHMENT 3
Remit statement of the National Curriculum Board

To contribute to meeting this target, the Board will:

- oversee the teaching of Asian languages in schools;
- work with the states and territories to increase the number of qualified Asian language teachers across Australia;
- monitor Asian language courses in schools to ensure consistency across Australia; and
- provide incentives for students to become proficient in a language other than English.

The development of a national curriculum will impact on, and be impacted by, other significant areas of reform such as assessment, pedagogy and technology. National curriculum will need to be futures-oriented and exploit the potential of the new technologies of the current century.

Developing national curriculum will be a collaborative process. The Board will work with the states and territories, the non-government sector and the broader education sector in Australia to develop and implement national curriculum. The new curriculum will be based on identifying a core of national curriculum that all states and territories will be required to implement. Beyond these core requirements there will continue to be flexibility for innovation and creativity at the local level. Ongoing collaboration between the National Curriculum Board and education authorities will ensure that teachers are supported in their delivery of the national curriculum.

The National Curriculum Board will receive ongoing annual funding of $5.0 million, beginning in 2008-09, to support its activities, and its final governance model will be established by no later than 1 January 2009.

April 2008

ATTACHMENT 4
Membership of the Interim National Curriculum Board

Name	Title	Organisation
CHAIR Barry McGaw	Director	Melbourne Education Research Institute, University of Melbourne
DEPUTY CHAIR Tony Mackay	Executive Director	Centre for Strategic Education
Tom Alegounarias	Chief Executive	New South Wales Institute of Teachers
Kim Bannikoff	Director	Queensland Studies Authority
Brian Croke	Executive Director	Catholic Education Commission, New South Wales
Janet Davy	Deputy Chief Executive	Australian Capital Territory Department of Education and Training
Marie Emmitt	Dean of Faculty of Education	Australian Catholic University
John Firth	Chief Executive Officer	Victorian Curriculum and Assessment Authority
David Hanlon	Former Deputy Secretary	Tasmanian Department of Education
Rita Henry	Executive Director, Central Australia	Northern Territory Department of Employment, Education and Training
Garry Le Duff	Executive Director	Association of Independent Schools of South Australia
Bill Louden	Dean of Education	University of Western Australia
Helen Wildash	Executive Director, Curriculum	South Australian Department of Education and Children's Services