Evidence for Excellence in Education

Key Findings Summary

Curriculum Structures and Stages in Primary Education: Audit of Policy Across Jurisdictions

National Foundation for Educational Research (NFER)

Curriculum Structures and Stages in Primary Education: Audit of Policy Across Jurisdictions

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Contents

1 Introduction

The National Foundation for Educational Research (NFER) has produced this 'audit' of policy on curriculum structures and stages in primary education to inform the ongoing development of the primary curriculum in Ireland.

Compiled for the National Council for the Curriculum and Assessment (NCCA), the report focuses on 10 jurisdictions:

selected from 14 included in a parallel audit of early childhood education.[1] They include some with a similar education landscape to the one in Ireland; jurisdictions which have recently undertaken significant development at primary level; those with well-developed early childhood education systems; and jurisdictions considered 'high-performing' in the 2011 Trends in International Mathematics and Science Study (TIMSS) and the 2011 Progress in International Reading Literacy Study (PIRLS).

The report includes this **key findings summary** and an accompanying **technical appendix of consolidated country tables**, including full bibliographic references, for each of the ten jurisdictions.

The project focused on children from age four to 12 years and on two lines of enquiry: enrolment and landmark stages in primary education, and the contents and structures of the curriculum for children in primary school. Information was collected by desk research, and the frameworks used for data collection, and on which this report and the detailed country tables are based, are included as Appendix 1.

The primary audience for this key findings summary and the technical appendix includes NCCA staff and members of Council and its enabling structures (committees). It also includes school principals and teachers, others with a particular interest (if not profession) in education, and prospective or current researchers from within or outside the classroom.

[1] The 14 jurisdictions included in the pre-primary audit, commissioned separately by NCCA, were Australia – Queensland, Canada – Ontario, England, Finland, France, Ireland, New Zealand, Netherlands, Northern Ireland, Scotland, Singapore, Sweden, US – Massachusetts, and Wales.

2 Length of primary education and ages

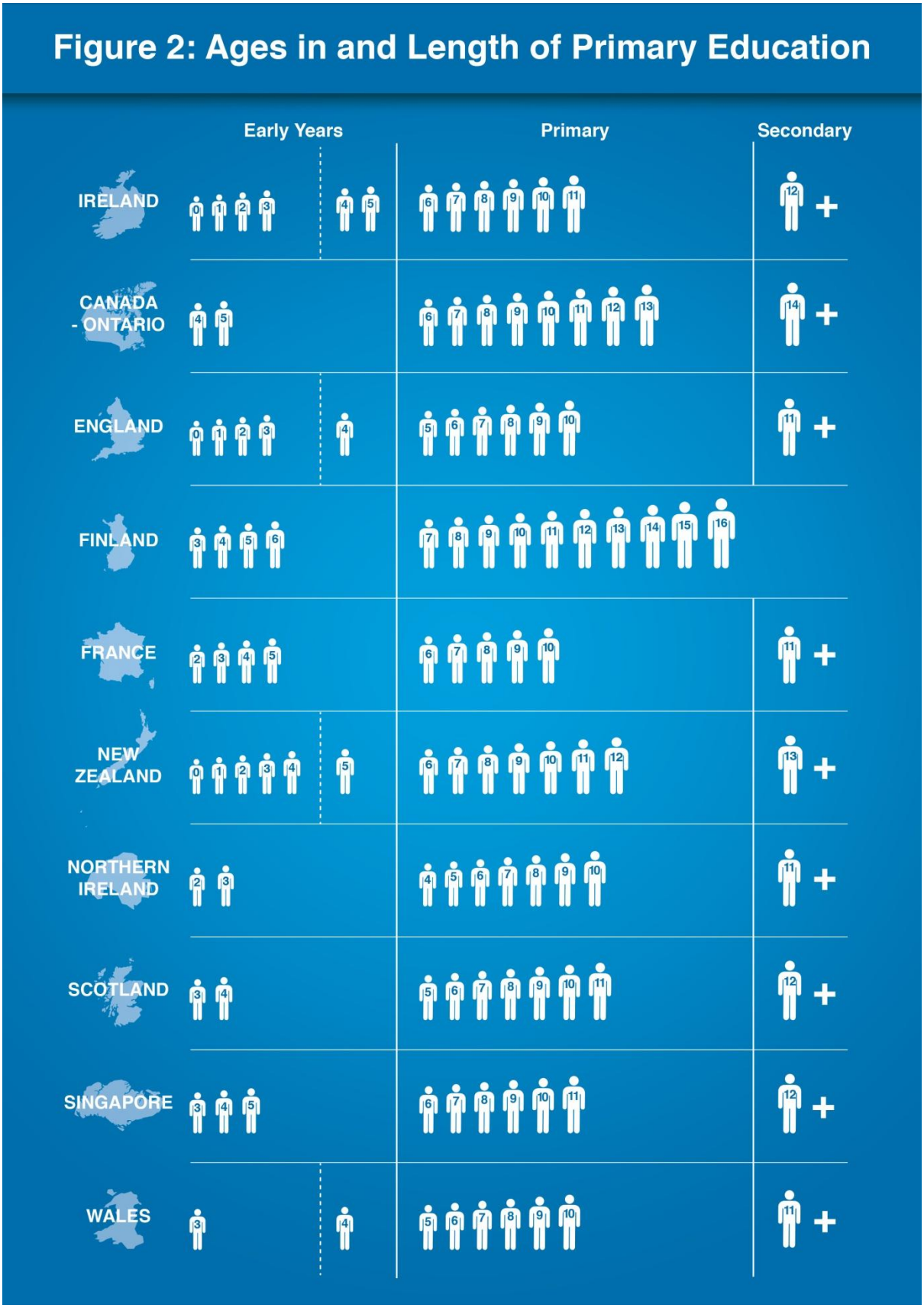
Primary education across the ten jurisdictions lasts from five years in France, where children begin at age six and enter secondary education at age 11, to eight years in Canada – Ontario, Ireland and New Zealand, and nine years in Finland (although in Finland this refers to the 'all-through basic school' for compulsory level education).

Table 1: Usual length of primary education

Country	Usual length of primary education
Finland	9 years
Canada-Ontario	8 years
Ireland	8 years
New Zealand	8 years
Northern Ireland	7 years
Scotland	7 years
England	6 years
Singapore	6 years
Wales	6 years
France	5 years

Although there is some variation in the length of primary education, and some considerable variation in the ages at which children enter and leave the primary phase (indicated in Figure 2 below), in some jurisdictions the compulsory age of entry to primary education is not the age at which children most commonly start primary school. This is true in Ireland, of course, where just under half of all four-year-olds and almost all five-year-olds are in primary school before the compulsory starting age of six; in England and Wales where four-year-olds are commonly in the reception class in primary school before the compulsory starting age of five; and in New Zealand where almost all five-year-olds are in primary education although the formal compulsory starting age is six. In Finland, which has the latest school starting age of the ten jurisdictions included in this study (seven), children can begin their nine-year basic education at age six (and consequently leave at age 15 rather than 16) or can delay their entry to age eight (should they be judged not yet ready to begin basic school education).

Key Findings Summary



2.1 Rationale behind the ages and stages of primary education

The ten jurisdictions examined in this study rarely provide an explicit rationale for the ways in which the ages and stages of primary education are organised. In six (Ireland, England, France, Northern Ireland, Singapore and Wales), there is a distinct primary phase of education which is broken down into a number of stages in addition to year groups. In most cases, these stages link closely to the curriculum (see Figure 5). In England, Wales and Northern Ireland, for example, the 1988 Education Reform Act and the Education Reform (Northern Ireland) Order 1989 respectively first established a national curriculum framework and linked this to specific educational stages, by setting out targets to be achieved in various subject areas at the end of each of four 'key stages' of education, the first two of which applied to primary education. In addition, the precise definition of the key stages was age-related and reflected the most prevalent structures in the educational system. Although Wales and Northern Ireland have now moved away from the four key stage structure, the stages in place in primary education remain linked to age and the curriculum framework. In Wales, for example, early years education (ages three to five) and Key Stage 1 (ages five to seven) have been replaced by the Foundation Phase, which offers a curriculum for three- to seven-year-olds based on an informal system of learning incorporating well-structured play, practical activity and investigation. The consultation leading to this change noted poor standards of achievement and teaching as a catalyst for its introduction.

In Singapore, the current organisation of primary education – with a foundation stage for the first four years and an orientation stage for the final two - was introduced in January 1979. The aim was, through the introduction of streaming (tracking) based on academic ability, starting in Grade 5 (age ten) (the orientation stage), to enable a move away from Singapore's earlier 'one size fits all' approach to education and allow 'all students to reach their potential while recognising that all students do not grow academically at the same pace'.

As reflected in Figure 5, France also breaks primary education into two stages (the basic and consolidation learning cycles). However these two stages overlap with either the previous or subsequent phase of education. The basic learning cycle (for children aged five to eight years) includes the last year of pre-compulsory, early years/nursery education, whilst the consolidation cycle (for children aged eight to 12) includes the first year of lower secondary phase education. These 'multi-phase' cycles are intended to enable educational teams to better adapt their teaching to the learning needs of individual pupils, and to ease transition.

In a second group of jurisdictions (Canada: Ontario, New Zealand and Scotland), there are no distinct stages within primary education. Ontario organises primary education by year/grade with the content of the curriculum laid out to reflect the individual year/grade. In New Zealand, and also Scotland, levels of attainment are used to express learning stages in a given subject (see Sections 3.2 and 6.1). This organisation is designed to allow children to progress at their own rate, moving to the next level in a particular subject when he/she has mastered most of the skills, knowledge and understanding required at the current learning

stage. For example, in New Zealand, most children in primary education (aged five to 13 years) are expected to be learning between levels 1 and 5.

Finland is the only country in this audit which does not have a primary phase of education. Instead, it has a single structure system for learners aged seven to 16 years in the 'all-through basic school'. The rationale for this school system originated in the 1950s when most young Finns left school after six years of basic education and only those living in towns or larger municipalities had access to a 'middle grade' education. There was consequently a desire to improve educational opportunity for all children and the all-through system grew from this. Despite the principle of all-through basic education, Finland breaks the primary curriculum into 'segments' (see Section 3.2) to aid teaching.

3 Key phases in primary education

3.1 Years and phases

Across the eight years that children in Ireland are in the primary education phase – from junior infants to sixth class, children in the other nine jurisdictions included in this study are most commonly in some form of early years or pre-compulsory phase followed by primary education. In England, France, Northern Ireland and Wales, they will also enter secondary level education whilst children in Ireland, Canada-Ontario, New Zealand, Scotland and Singapore are still in the primary phase.

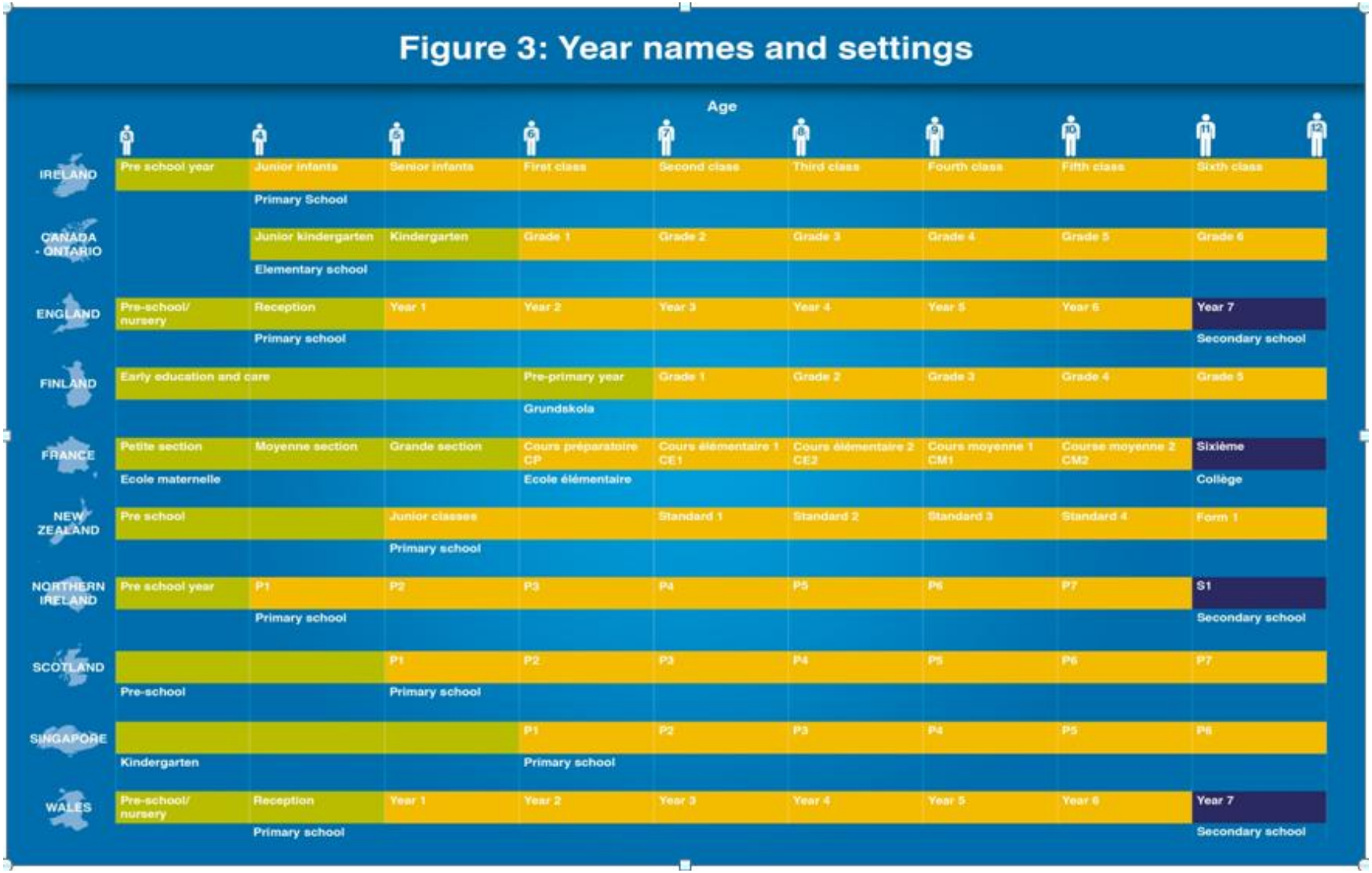
Figure 3 maps these eight years across the ten jurisdictions indicating the year name and phase (green is early years/pre-school, gold primary and blue secondary). (Where there is no specific name for a pre-school year or years, we have not marked this on the visual but some form of early years/pre-school provision will be in place.)

Although none of the ten jurisdictions explicitly plan multi-age or multi-year settings for particular stages of primary education, typically, in small primary schools or remote areas, classes commonly contain children from more than one year group. Most commonly, schools try to ensure that, when age groups are combined, these mixed-age classes consist of consecutive year groups (e.g. in England, Year 1 and Year 2 pupils, aged between five and seven).

In New Zealand, when composite classes are formed, schools may also look to ensure that these mixed-aged classes meet social or academic needs; allow children to learn within the most effective group to meet their needs; match children to teachers; maximise teacher strengths; or minimise/make equitable classroom sizes.

Although there are no multi-age/multi-year settings in primary education in Singapore, most schools currently run double sessions, with different groups of children attending school either from 7:30 a.m. to 1:00 p.m. or from 1:00 p.m. to 6:30 p.m. from Monday to Friday. Changes are planned from 2016 when all primary schools will move to a single-session structure. The intention is to allow more time and space in the afternoon for enrichment programmes and co-curricular activities (CCAs)/non-academic aspects of learning.

Figure 3: Year names and settings

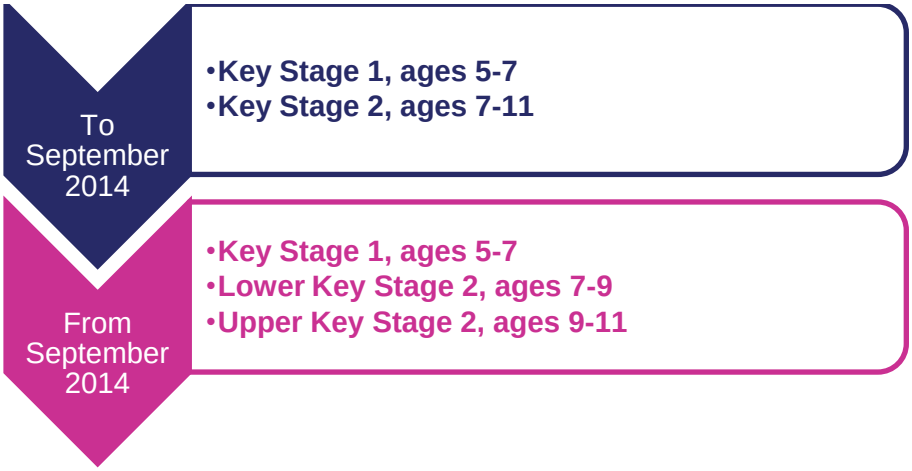


3.2 Curriculum phases within primary education

Whilst children in Ireland between the ages of four and 12 will be in one of four curriculum phases of primary level education, the situation is extremely variable across the other jurisdictions. In England, for example, four-year-olds are in the Early Years Foundation Stage, five-to seven-year-olds are in primary Key Stage 1, and seven- to 11-year-olds in primary Key Stage 2, whilst those at 12 have entered secondary level Key Stage 3. In Canada-Ontario four- to six-year-olds will be in the Kindergarten curriculum phase and, from age six, children will be in one curriculum phase – elementary education – lasting until age 14.

In England, which currently has the two curriculum phases within primary level education, when the new primary level curriculum begins to be introduced in September 2014, a new sub-division will be created. The curriculum documentation for Key Stage 2 will be presented as that for 'lower' Key Stage 2 (Years 3 and 4, ages seven to nine) and 'upper' Key Stage 2 (Years 5 and 6, ages nine to 11). This distinction is made as guidance for teachers and is not reflected in legislation.

Figure 4: Phases of the primary curriculum in England



With the exception of Scotland, there is a separate curriculum phase for pre-school education and one for the primary level across the jurisdictions; although there is some overlap at the intersection of the two. Scotland is unique in having a single document, *Curriculum for Excellence,* which spans the age range three to 18. Even here, however, the curriculum is broken down into 'segments' – early, first and second for the primary years – setting out the content, aims and objectives for a smaller range of school years. Similarly, in Finland, the curriculum for the all-through basic school for compulsory level education from ages seven to 16, is divided into phases or curriculum segments (for Grades 1 and 2, and Grades 3 to 5, ages seven to nine and nine to 12 respectively).

In some jurisdictions, the age ranges and phases of the curriculum overlap a structural phase of education, similar to how *Aistear* overlaps with the primary phase for four-to six-year-olds in Ireland. In France, for example, the final year of pre-school education (five- to six-year-olds) is covered by the first year of the first phase of the

primary curriculum (the basic learning cycle), and the final year of the final phase of the primary curriculum (the consolidation cycle) is the first year of lower secondary education. In Wales, the Foundation Phase curriculum - from age three to age seven - covers the pre-school stage and the first two years of compulsory, primary education.

The ages and phases of the curriculum from ages three to 12 across the ten jurisdictions of the study are depicted in Figure 5.

As well as mapping the curriculum phases across the age range, Figure 5 also highlights (through the white circles) the points at which there are specific expectations for children's learning linked to the curriculum phases.

In Ireland, for example, it indicates that the curriculum documents specify expectations for children's learning and development for (the end of) each of four stages – infant classes (ages four to six), first and second classes (ages six to eight), third and fourth classes (ages eight to ten), and fifth and sixth classes (ages 10-12).

In England, in addition to the expectations for children's learning established for the end of the Early Years Foundation Stage, Key Stage 1 and Key Stage 2, Figure 5 also highlights the phonics screening check of young children's reading which takes place at age six. In Singapore, individual subject syllabuses generally include learning outcomes for each year of primary education. In addition, there are examinations at ages ten and 12. The first determines decisions about subject-based banding, that is the stream a child will be placed in for the final two years of primary education, aged 10 to 12. The second is the Primary School Leaving Examination (PSLE) the results of which determine a child's placement on differentiated courses of lower secondary education. In France, there are expectations for children's learning at the end of the pre-compulsory phase, age six; at the end of the basic learning cycle, age eight, which relate to the acquisition of reading and writing skills, as well as to initial mathematical elements; and at the end of primary education, age 11, when they relate to the seven major skills areas of the *socle commun* (the common foundation of knowledge and skills) (mastering the French language, speaking a modern foreign language, acquiring basic knowledge in mathematics and science, developing a humanist culture, mastering information and communication technology, acquiring social and civic skills, and developing autonomy and initiative).

In Ontario-Canada progress is checked regularly against the expectations for each Grade (in addition to assessments in Grades 3 and 6, ages nine and 12 respectively, based on the reading, writing and mathematics expectations of the Ontario Curriculum). In New Zealand, also, progress is checked regularly against the eight designated levels of the curriculum but there is no set point for children to be at a specific level.

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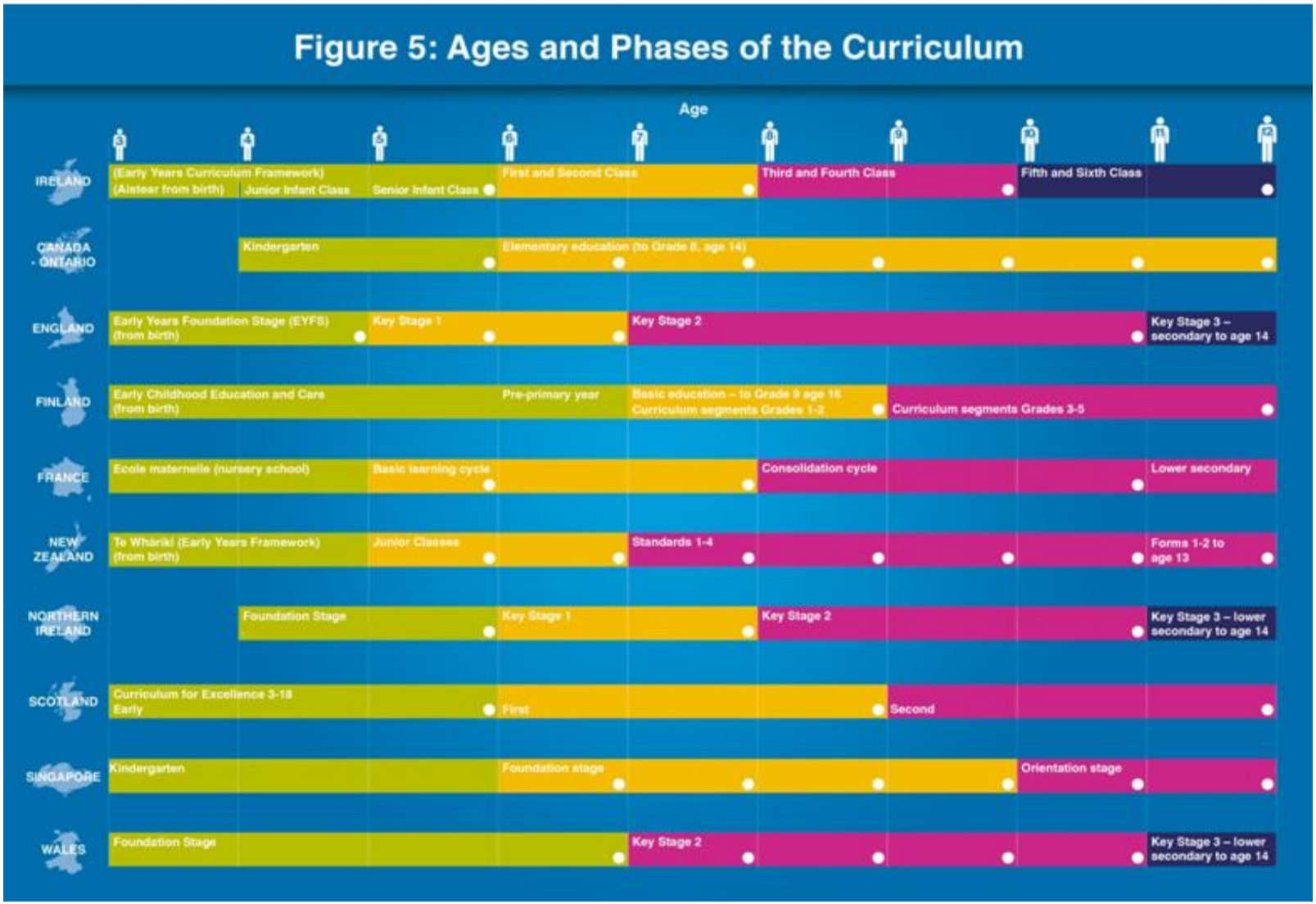
Figure 5: Ages and Phases of the Curriculum



4 Aims and principles of primary education

4.1 Aims of primary education

A study originally published in 1997 as part of the International Review of Curriculum and Assessment Frameworks (INCA) project (Le Metais, 1997),[2] and which examined values and aims in curriculum and assessment frameworks, identified that educational aims may be intrinsic (e.g. contribute to lifelong education and to developing knowledge, skills and understanding for the individual and society), or instrumental (preparing young people for work and contributing to the national economy). The study also highlighted that aims may focus on developing individual qualities or capacities, or on promoting citizenship and a sense of community or safeguarding a cultural heritage.

In general, in the jurisdictions covered in this report, the aims of primary education are both intrinsic and instrumental. In Finland, for example, the Basic Education Act sets out the three objectives for basic education as to:

1. Support pupils' growth into humanity and into ethically responsible members of society, and to provide them with the knowledge and skills needed in life. Furthermore, the aim of pre-primary education, as part of early childhood education, is to improve children's capacity for learning.
2. Promote civilisation and equality in society and pupils' prerequisites for participating in education and otherwise developing themselves during their lives.
3. Secure adequate equity in education throughout the country.

The main objective of primary education in France is to give children the keys to knowledge and teach them how to integrate into the society in which they are growing up. In Northern Ireland, the primary curriculum aims to empower young people to develop their potential to make informed and responsible choices and decisions throughout their lives. It is also intended that the learning opportunities provided by the Northern Ireland Curriculum will help young people to develop as individuals, contributors to society and contributors to the economy and the environment.

The only exception to this blend of intrinsic and instrumental aims for primary education is in Ontario (Canada), where the identified aims focus on the promotion of a strong, vibrant publicly-funded education system with three core principles:

[2] Le Metais, J. (1997). *Values and Aims in Curriculum and Assessment Frameworks*. NFER: Slough [online]. Available: http://www.nfer.ac.uk/research/centre-for-information-and-reviews/inca/TP%20Values%20and%20Aims%20in%20Curriculum%20and%20Assessment%201997.pdf [28 January, 2014]

- high levels of student achievement
- reduced gaps in achievement
- increased public confidence in publicly-funded education.

In Finland, France, New Zealand, Scotland and Wales, the aims for primary education contain particular references to equality. The Scottish Government states, for example, that 'our aspiration is to enable *all* children to develop their capacities as successful learners, confident individuals, responsible citizens and effective contributors'. In Wales, the Government's commitment is that *all* children, wherever they live, should have access to high quality education, delivered in surroundings fit for the provision of the National Curriculum which enables them to deliver to their full potential.

4.2 Principles of primary education

Six of the jurisdictions (Ireland, Canada: Ontario, England, New Zealand, Northern Ireland and Wales) specifically identify principles which underpin the curriculum. In Finland, France, Scotland and Singapore general principles for educational provision are identified. The Finnish Basic Education Act, for example, confirms the foundations of basic education as:

1. Education shall be governed by a unified national core curriculum in accordance with this Act.
2. Education shall be provided according to the pupil's age and capabilities and so as to promote healthy growth and development in the pupil (Amendment 477/2003).
3. Those providing education shall cooperate with pupils' parents/carers.

The Act also sets out that basic education should be free.

The French school system was founded on general principles that were inspired by the 1789 revolution, built on and perfected by a set of legislative texts from the 19th century to the present day. These principles are:

- freedom of choice
- free provision
- neutrality - state schooling is neutral; teachers and pupils are required to show philosophical and political neutrality
- secularism.

The education system in Singapore is based on the principles expressed in the Desired Outcomes of Education (DOE). These are attributes that educators aspire for every Singaporean to have by the completion of his/her formal education. They establish a common purpose for educators, drive education policies and programmes, and aim to facilitate an examination and evaluation of how well the education system is performing.

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In Scotland, the Standards in Scotland's Schools etc Act 2000 sets out the principles that education must fit individual needs, be tailored to 'age, ability and aptitude' and aim to develop the 'personality, talents and mental and physical abilities of children and young persons to their fullest potential'.

A further principle is that there should be opportunities to continue voluntarily at school or proceed to further or higher education, with financial assistance if necessary. Since the early 1950s, this opportunity has been considerably extended by increasing the number of places available in further education (vocational) and higher education and the expansion of informal education provision.

In England, Wales and Northern Ireland, the principles for the primary curriculum specify a curriculum which is:

> *balanced and broadly based and which promotes the spiritual, moral, cultural, mental and physical development of pupils at the school and of society, and prepares pupils at the school for the opportunities, responsibilities and experiences of later life.*

These reflect some similarity with those in Ireland, where the principles of the (1999) primary curriculum (based on those from the previous (1971) curriculum) include that the curriculum should ensure:

- the full and harmonious development of the child
- the importance of making due allowance for individual difference
- the importance of activity and discovery methods
- the integrated nature of the curriculum
- the importance of environment-based learning.

The Ontario Curriculum is designed to help every student reach his or her full potential through a programme of learning that is coherent, relevant and age appropriate. It recognises that, today and in the future, students need to be critically literate in order to synthesise information, make informed decisions, communicate effectively, and thrive in an ever-changing global community. It states also that it is important that students are connected to the curriculum, that they see themselves in what is taught, how it is taught, and how it applies to the world at large. In its principles, the curriculum consequently recognises that the needs of learners are diverse and aims to help all learners develop the knowledge, skills, and perspectives they need to become informed, productive, caring, responsible, and active citizens in their own communities and in the world.

5 Curriculum frameworks for primary education

The Primary School Curriculum for Ireland was published in 1999. Table 2 highlights the dates when the current primary curriculum was introduced in the other countries of this study. Canada-Ontario is not included in the table as, since 2003, there has been a schedule for ongoing curriculum review in Ontario. Each year, a number of subject areas enter the review process, to ensure they are kept current, relevant and age-appropriate. In Singapore also, the primary curriculum as a whole has not been recently reviewed. Individual subject syllabuses are, however, regularly reviewed and updated.

Table 2: Current primary curriculum frameworks

Ireland	**Published in 1999**
England	**Introduced in 2000***
Finland	**Introduced in 2006**
France	**2008**
New Zealand	**2007**
Northern Ireland	**2007**
Scotland	**2004 (publication of first *Curriculum for Excellence* documents)**
Wales	**2008 (with the introduction of the Foundation Phase)**

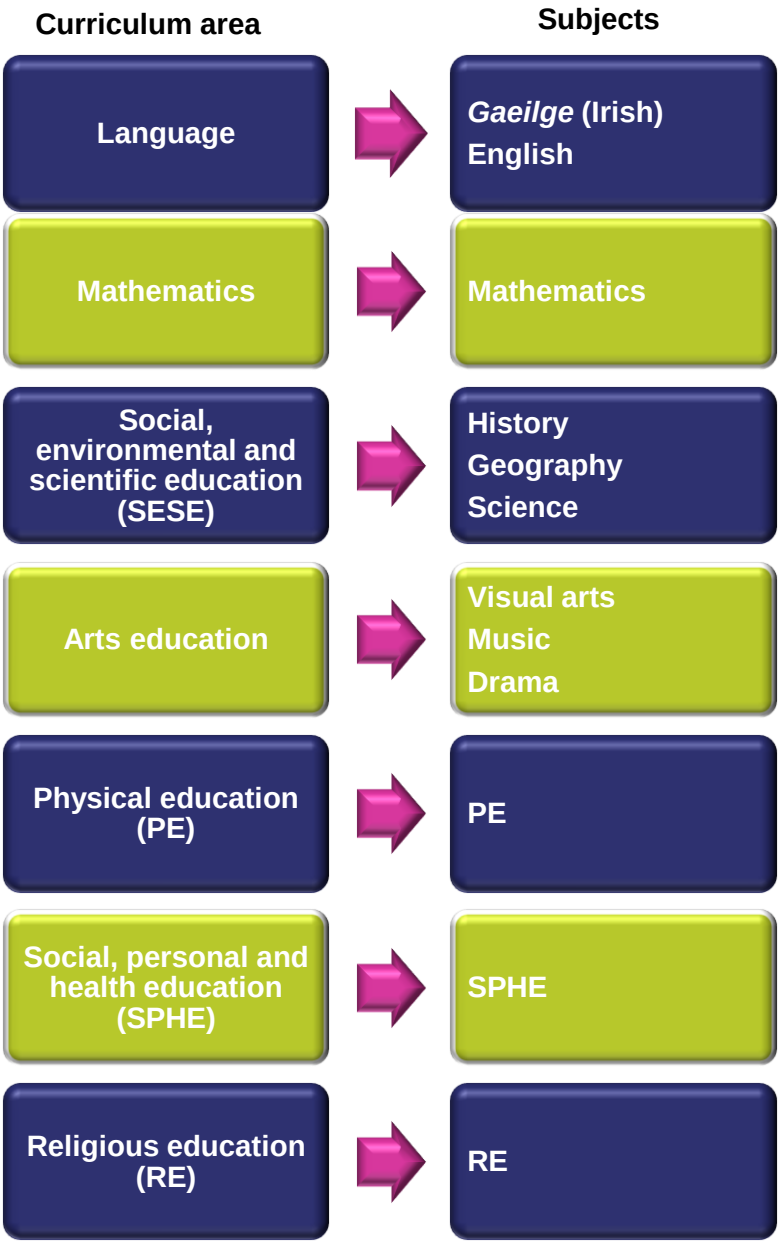
*The last major review and reform of the complete primary curriculum in England was completed in 2000. A revised primary curriculum was published in September 2013 for implementation from September 2014.

In Wales, a review of the curriculum is beginning in 2013 and, in Finland, the Finnish National Board of Education has begun to prepare the new National Core Curriculum for basic and pre-primary education. The new curriculum will be completed by the end of 2014 and new, local curricula based on this core curriculum are then expected to be prepared by the beginning of the 2016-17 school year.

5.1 Curriculum subjects

In Ireland, the Primary School Curriculum is presented in seven curriculum areas comprising 12 subjects.

Figure 6: Ireland – Curriculum areas and subjects



We have mapped the curriculum areas and subjects in primary education in the other nine jurisdictions against these to produce the 'blackboard visual' on Curriculum Areas in primary education which follows.

We have also mapped the pre-school curriculum areas for the ten jurisdictions so that readers can understand how the curriculum is organised and delivered before children enter primary level education and/or follow the primary level curriculum. See the blackboard visual on Curriculum Areas – Pre-School.

The main focus of the narrative following the curriculum tables is the primary phase curriculum.

Figure 7. Curriculum Areas – Primary

	Language	Mathematics	Social, environmental and scientific education	Arts education	Physical education	Social, personal and health education	Religious education
IRELAND	Gaeilge (Irish) English	Mathematics	History Geography Science	Visual arts Music Drama	Physical education	Social, personal and health education	Religious education
CANADA - ONTARIO	Language French as a second language Native languages	Mathematics	Social studies (heritage and identity, people and environments) Science and technology	The arts (dance, drama, music, visual arts)	Health and physical education	-	-
ENGLAND	English Foreign languages (from age 7, from 2014)	Mathematics	Science Design and technology Geography History ICT (computing from 2014)	Art and design Music	Physical education	Personal, social and health education Citizenship (personal, social, health and economic education from 2014)	Religious education
FINLAND	Mother tongue and literature, Other national language (i.e. Finnish and Swedish) Foreign languages	Mathematics	Environmental studies History Social studies Physics Chemistry Biology Geography Home economics	Music Visual arts Craft	Physical education	Health education	Religion or ethics
FRANCE	French Modern languages	Mathematics	Discovering the world (age 5-8) Experimental sciences and technology (from age 8) ICT History and geography (from age 8)	Art and art history (Visual arts, Music) (age 5-8) Arts (visual arts, history of art, music from age 8)	Physical education and sport	Civic and moral instruction	-
NEW ZEALAND	English Learning languages	Mathematics and statistics	Science Social sciences Technology	The arts	Health and physical education	Health and physical education	-
NORTHERN IRELAND	Language and literacy	Mathematics and numeracy	The world around us (geography, history, science and technology	The arts: (art and design music, drama)	Physical development and movement	Personal development and mutual understanding (including Health)	Religious education
SCOTLAND	Languages (Literacy, English/Gaelic, a foreign language)	Mathematics (including numeracy)	Sciences Social studies Technology	Expressive arts	Health and well-being	Health and wellbeing	Religious and moral education (Catholic schools: Religious education)
SINGAPORE	Languages (English, Mother tongue)	Mathematics	Social studies Science (from age 8)	Arts and crafts Music	Physical education	Civics and moral education	-
WALES	English Welsh	Mathematics	Science Design and technology ICT History Geography (knowledge and understanding the world, to age 7)	Art Music (creative development to age 7)	Physical education (physical development to age 7)	Personal and social education (personal and social development, well-being and cultural diversity to age 7)	Religious education

Figure 8. Curriculum Areas – Pre-School/Early Years Education

	Personal, emotional and social development	Language and communication	Physical development and health	Mathematics/Early numeracy	Understanding the world	Arts and creativity
IRELAND	Well-being Identity and belonging	Communicating Exploring and thinking	Well-being	Exploring and thinking	Exploring and thinking Identity and belonging Communicating	Communicating Exploring and thinking Well-being
CANADA – ONTARIO	Personal and social development	Language	Health and physical activity	Mathematics	Science and technology	The arts
ENGLAND	Personal, social and emotional development	Communication and language Literacy	Physical development	Mathematics	Understanding the world	Expressive arts and design
FINLAND	Ethics and philosophy	Language and interaction	Health Physical and motor development	Mathematics	Nature and the environment Ethics and philosophy	Art and culture
FRANCE	Becoming ready for school	Learning language and discovering writing	Acting and expressing themselves with their body	Discovering the world	Discovering the world	Perceiving, feeling, imagining, creating
NEW ZEALAND	Well-being – *Mana Atua* Contribution – *Mana Tangata* Belonging – *Mana Whenua*	Communication – *Mana Reo*	Well-being – *Mana Atua* Exploration – *Mana Aoturoa*	Communication – *Mana Reo* Exploration – *Mana Aoturoa*	Exploration – *Mana Aoturoa* Belonging – *Mana Whenua*	Exploration – *Mana Aoturoa* Communication – *Mana Reo*
NORTHERN IRELAND	Personal development and mutual understanding	Language and literacy	Physical development and movement	Mathematics and numeracy	The world around us	The arts (including music and drama)
SCOTLAND	Health and well-being Religious and moral education	Languages (including literacy, English/Gaelic and a foreign language)	Health and well-being	Mathematics (including numeracy)	Sciences, Social studies, Technologies	Expressive arts
SINGAPORE	Social and emotional development	Language and literacy	Motor skills development	Numeracy	Discovery of the world	Aesthetic and creative expression
WALES	Personal and social development, well-being and cultural diversity	Language, literacy and communication skills Welsh language development	Physical development	Mathematical development	Knowledge and understanding of the world	Creative development

Curriculum area: language

In primary level education, all countries teach language, focusing on the national language or languages. In Canada-Ontario, England, Northern Ireland and Scotland, English is taught as the mother tongue. Ireland specifies *Gaeilge* (Irish), and Wales Welsh, in tandem with English. Singapore specifies English alongside a range of languages which are taught dependent on pupils' mother tongue (Chinese, Malay or Tamil).

In New Zealand, *te reo Māori* and New Zealand Sign Language (NZSL) are official languages, while English, the medium for teaching and learning in most schools, is a de facto official language by virtue of its widespread use. All three may be studied as first or additional languages. Ontario specifies the learning of French as a second language and its curriculum also covers native languages. In Finland both Finnish and Swedish are recognised as national languages; the curriculum requires pupils to study either Finnish (and its literature) as their mother tongue, with Swedish as the 'other national language', or mother-tongue Swedish and 'other language' Finnish.

England, Finland, France and Scotland additionally include a requirement for foreign language learning, which in England will become statutory at Key Stage 2 (ages seven to 11) from September 2014.

At pre-primary level, Scotland is the only country to make reference to a foreign language, since its curriculum applies to three-year-olds upwards. Ireland and Wales refer to Irish and Welsh language alongside English. The remaining countries specify their curricula using combinations of 'language', 'literacy' and 'communication', with some variations including 'language and interaction' in Finland and 'learning language and discovering writing' in France.

Curriculum area: mathematics

At primary level, all countries teach mathematics and call it such; the slight variations are New Zealand ('mathematics and statistics'), Northern Ireland ('mathematics and numeracy') and Scotland ('mathematics (including numeracy)').

At pre-primary level the same is true, the differences being Singapore ('numeracy') and Wales ('mathematical development').

Curriculum area: Social, environmental and scientific education

The methods of grouping and naming the subjects that map to this heading vary considerably across the ten jurisdictions. Under this curriculum area Ireland specifies history, geography and science across the primary age range. This approach is most closely mirrored by England, which additionally teaches 'design and technology' and 'information and communications technology' (ICT) ('computing' from 2014).

Most other countries group the teaching of primary history and geography together, for at least part of the phase, under one of a range of headings: 'social studies' (Ontario, Finland, Scotland and Singapore), 'social sciences' (New Zealand) or a variation on the theme of 'the world': 'discovering the world' (France, up to age eight), 'knowledge and understanding of the world' (Wales, to age seven), and 'the world

around us' (Northern Ireland, which classifies science under this heading in addition to geography and history).

Finland is the only country to specify the individual sciences – biology, chemistry and physics – along with home economics; and it adds 'environmental studies' to its 'social studies' field. The remaining countries teach 'science' (England, New Zealand, Singapore from age eight, and Wales), 'sciences' (Scotland), 'science and technology' (Ontario, Northern Ireland) or 'experimental sciences and technology' (France). Where technology is not mentioned in a composite area with science, it appears in the forms of 'design and technology' (England and Wales), 'ICT' (England, France and Wales), 'technology' (New Zealand) and 'technologies' (Scotland).

The 'social, environmental and scientific' field is also the curriculum area where there is the most change in the formulation of the curriculum as children grow older. For example, Singapore introduces the study of science only from age eight; in France children move on from 'discovering the world' pre-eight to learning history, geography, science and ICT individually post-eight (likewise Wales introduces discrete history and geography at age seven).

'Discovering the world' or similar is a common curriculum area or organiser at the pre-school level. England teaches 'understanding the world' within the Early Years Foundation Stage; Finland's pre-school curriculum covers 'nature and the environment' and Singapore's, 'discovery of the world'.

Curriculum area: Arts education

The three subjects taught within primary arts education in Ireland – visual arts, music and drama – are included in the primary curricula of the other nine jurisdictions. Several countries refer to 'the arts' as a curriculum area; Scotland names its 'expressive arts'. Music and art (or 'visual art') occur most often. Finland and Singapore specify craft (the latter as part of 'arts and crafts'), and France teaches the history of art from age eight. In Wales, until the age of seven, art and music fall into the 'creative development' Area of Learning in the Foundation Phase. Where drama is included, in Canada-Ontario and Northern Ireland, it is included as part of 'the arts', incorporating dance, drama, music and visual arts in Ontario and art and design, music and drama in Northern Ireland.

Curriculum area: Physical education

As in Ireland, 'physical education' is the most common subject taught here. Variations are 'health and physical education' (Canada-Ontario and New Zealand), 'physical development and movement' (Northern Ireland) and 'physical education and sport' (France). In Wales, until the age of seven, physical education falls into the 'physical development' Area of Learning in the Foundation Phase.

The exception is Scotland, where physical skills and physical well-being are addressed under the cross-curricular area 'health and well-being across learning'.

Curriculum area: Social, personal and health education

Canada-Ontario, New Zealand and Scotland address health education in the same curriculum area as physical education, as described above. England has the closest arrangement to Ireland, with its subject of 'personal, social and health education' (which will expand to 'personal, social, health and economic education' from 2014). In addition, England currently teaches the discipline 'citizenship', though that will be discontinued in the revised curriculum from September 2014. Wales teaches 'personal and social education' from age seven, and 'personal and social development, well-being and cultural diversity' under the Foundation Phase up to that age.

Finland teaches 'health education', Scotland 'health and wellbeing'. In Northern Ireland the curriculum for 'personal development and mutual understanding' (PDMU) includes health. Moral education is the approach in France ('civic and moral instruction') and Singapore ('civics and moral education'). Notably, the latter two countries are among those not teaching religious education.

Curriculum area: Religious education

There is a varied picture regarding religious education (RE). Outside the British Isles and Ireland, Finland is the only study jurisdiction making provision in this area, as 'religion or ethics'. Scotland provides 'religious and moral education', a curriculum area which includes 'religious education' taught in Roman Catholic schools. Of those countries teaching RE, three – England, Wales and Northern Ireland – provide parents with the right to withdraw their children from RE and collective worship activities.

The approaches taken in Northern Ireland and France illustrate the opposite ends of the spectrum. The former uses a common core syllabus developed with the involvement of all the main churches, which is mostly Christian in nature but also includes morality education and other world religions. The latter displays a charter in all schools which underlines the secular nature of the French state and education system, suggests ways in which staff and pupils can respect the rules for living together in the school environment and bans the wearing or carrying of religious symbols.

5.2 Curriculum differences between ages four and 12

Two main differences have emerged in comparing the curricula for four- and 12-year-olds across the study jurisdictions.

Several countries' curricula make use of a more informal, play-based or integrated approach to curriculum in the earlier years, in contrast with teaching more formal subjects in the later years. Examples of this include the Foundation Phase in Wales, which extends the teaching methods used in early childhood education throughout what was formerly Key Stage 1 (ages five to seven), before pupils proceed to the subject-based Key Stage 2 at age seven. Similarly, *Te Whāriki*, the early childhood education framework in New Zealand – to age five - provides a holistic, child-centred

approach, integrating education and care elements and emphasising the learning partnership between teachers, parents and *whānau* (the extended family). France integrates some subjects until around age eight when individual subject areas (e.g. history and geography) are introduced. In all-through systems, such as *Curriculum for Excellence* in Scotland or the basic education system in Finland, which present a broad continuum for children and young people, the curriculum is age-adapted for all stages of schooling. In addition in Finland, in Grades 1-6 (ages seven to 13), pupils are taught by their class teacher, receiving subject-specific teaching from Grade 7.

Corresponding to the ways children develop, curricula also place more demanding expectations on pupils at age 12, than on those aged four.

As in Ireland, where infant children (aged four to six) spend fewer hours in class (23 hours, 20 minutes compared with 28 hours 20 minutes for children in first to sixth classes), in other jurisdictions also the other main differences in education between the ages of four and 12 relate to the structure and organisation of provision. Four-year-olds in Scotland, for example, are in pre-school rather than primary provision and consequently spend less time in class (12.5 hours per week over 38 weeks) compared with 25 hours per week over 38 weeks (190 days) for primary pupils. Additionally, four-year-olds are in smaller teaching groups, with required ratios of one adult to ten or one adult to eight children. The maximum class size in Primary 1 (P1) (ages five to six) is 25. In P2 and 3 it is 30, rising to 33 in P7 (11- to 12-year-olds).

5.3 Other curriculum 'organisers'

All ten of the study jurisdictions use other 'organisers' in addition to their subject-based curricula, whether a formally named framework or a broader statement of principles relating to the skills and dispositions pupils should develop.

Table 3: Other curriculum 'organisers'

	Framework or statements in primary education	Framework or statements in pre-primary education
Ireland	Statements of skills, aspects of knowledge and facets of development	*Aistear*
Canada – Ontario	Areas of knowledge and skills	Kindergarten Programme Full-Day Early Learning – Kindergarten Programme
England	Cross-curricular literacy and numeracy skills Knowledge, skills and understanding (matters, skills and processes from 2014)	Early Years Foundation Stage

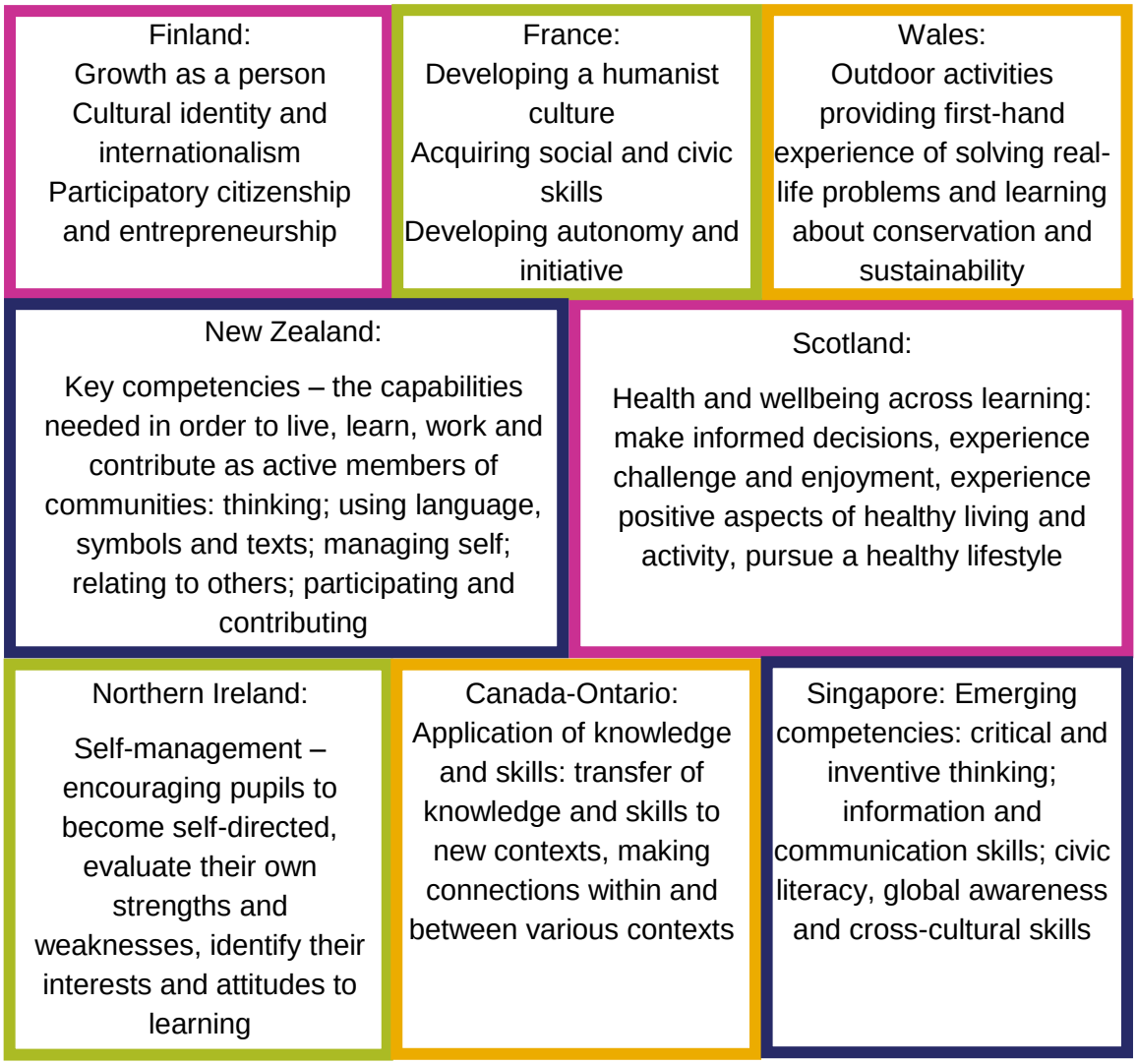
	Framework or statements in primary education	Framework or statements in pre-primary education
Finland	Cross-curricular skills	Orientations
France	*Socle commun* (common foundation of knowledge and skills) Cross-cutting skills and dispositions (eight- to 12-year-olds only)	Domains
New Zealand	Values, principles and key competencies Cross-curricular skills	*Te Whāriki* (curriculum strands, principles, strands and goals)
Northern Ireland	Thinking Skills and Personal Capabilities Framework Cross-curricular skills	
Scotland	The four capacities of Curriculum for Excellence (successful learners, confident individuals, responsible citizens, effective contributors) Health and well-being, literacy across learning, numeracy across learning	
Singapore	Knowledge skills Life skills (alongside subject disciplines) Desired Outcomes of Education	Desired Outcomes of Education
Wales		Foundation Phase framework (to age 7) National Literacy and Numeracy Framework Skills Framework 3-19 *Cwricwlwm Cymreig* (Wales-specific aspects of the curriculum)

While some of the pre-primary examples are also curriculum frameworks, indicating *what* children should learn, their approach is primarily holistic, exploring the development of the whole child; *how* they should learn and the people they should grow into.

In the Irish primary curriculum, while there is no explicitly defined list of skills and dispositions which cut across the primary curriculum, most curriculum subjects have their own skills and concepts and the primary school curriculum document defines the particular skills, aspects of knowledge and facets of development that are relevant to and important for a child's educational needs. While these relate in part to the more academic skills required to navigate the curriculum successfully – literacy, numeracy, facility with ICT– they also explore personal qualities and attitudes, creative thinking, health and wellbeing and cultural awareness.

Such facets also appear as organisers in other jurisdictions' curricula. All countries have expectations relating to communication, literacy and language, mathematics and numeracy and ICT. The graphic below illustrates the range of other aspects they address.

Figure 9: Some curriculum organiser 'building blocks'



Note: England's organisers relate chiefly to the cross-cutting development of pupils' competence in numeracy and mathematics, and language and literacy; other areas fall within the scope of personal, social and health education (PSHE), which is a curriculum subject.

In the early years phase, *Te Whāriki* – the early years framework for New Zealand – uses interconnected themes, similar to those in Ireland's *Aistear* framework (well-being; identity and belonging; communicating; exploring and thinking) to organise the curriculum.

Figure 10: Te Whāriki themes

New Zealand – Te Whāriki
Exploration – *Mana Aoturoa*
Communication – *Mana Reo*
Wellbeing – *Mana Atua*
Contribution – *Mana Tangata*
Belonging – *Mana Whenua*

The goals set out in *Te Whāriki* describe learning outcomes for developing children's knowledge, skills and attitudes, questions to help children think about how a programme is working, and examples of the kind of experiences that can help children learn. Principles, strands and goals are intended to make up the early childhood curriculum as if woven together like the strands of a woven mat, or *whāriki*

6 Learning outcomes in primary education

6.1 How are learning outcomes expressed?

Across the ten jurisdictions of the study, learning outcomes for primary level education are sometimes expressed in terms of content objectives, that is teacher input, or pupil entitlement to specific teaching and learning, rather than as pupil-focused outcomes statements. Programmes of study in England, for example, identify the 'knowledge, skills and understanding' (to 2014) or 'matters, skills and processes (from 2014) that pupils in primary education should be taught. Outcomes are expressed similarly in the Northern Ireland Curriculum document which identifies the knowledge, understanding and skills that teachers should enable children to develop. In Wales, National Curriculum programmes of study for each subject for children aged seven onwards identify the learning content (what pupils should be taught), whilst attainment targets set out standards of pupil performance.

In Finland, France and Ontario, outcomes are expressed both in terms of teacher input and learner outcomes. In Finland, the National Core Curriculum defines the objectives and core contents of instruction by subject or subject group, and a learning outcome, in the form of a description of good performance, is provided for the ends of Grade 2 (age nine) and Grade 5 (age 12). Similarly, in France, learning outcomes are expressed for the ends of the two key phases of primary level education and identify what, at the end of that phase, a child will be able to do in a specific subject or subject area. In elementary education (from age six) in Ontario, learning outcomes are expressed as content standards and performance standards, and in Kindergarten they are expressed as learning expectations; in both cases outcomes statements are child/pupil focused. In the Foundation Phase in Wales – to age seven – an 'educational programme' for each Area of Learning sets out what children should be taught (entitlement), whilst a set of learning outcomes has been developed to support the end-of-phase statutory teacher assessment.

Achievement objectives at eight levels express the learning outcomes in New Zealand and, in Scotland, learning outcomes are expressed across the *Curriculum for Excellence* subject areas at five levels, three of which apply to primary level education ('Early', ages three to six; 'First', ages six to nine, and 'Second', to age 12).

In Singapore, individual subject syllabus documents for primary education specify the learning outcomes for that subject area. Each syllabus frames the learning outcomes differently but most often includes statements defining what should be taught (teacher input), along with learning outcomes statements for pupils. In addition, the 'Desired Outcomes of Education' set the expectations of the kind person who will emerge from the Singapore education system. They are translated into a set of developmental outcomes for each key stage of education from early childhood onwards.

In the earlier years, learning outcomes are often expressed as learning goals such as for the Early Years Foundation Stage in England, and *Aistear* in Ireland. That said, in New Zealand, *Te Whariki* – the early years framework - defines the learning outcomes as 'input' entitlements - 'children experience an environment where…….', and the Singapore pre-school curriculum, which includes distinct learning goals setting out what children should be able to do at the end of their kindergarten education, also translates these goals into knowledge, skills and dispositions to guide teachers.

We have looked in some detail at the stems and preambles used in the curriculum documentation to express learning outcomes. These are summarised in Section 5.2 which also includes some examples extracted from the curriculum documents.

6.2 Stems and preambles

A variety of stems and preambles are used to introduce learning outcomes across the ten jurisdictions and, in general, the same stem/preamble is used for all subjects or learning areas and for all age ranges in a phase. Only in Singapore, where there is a different syllabus for each subject in primary education, are there differences in the stems/preambles used across a phase.

Most commonly, stems/preambles used to describe the learning outcomes in primary level and early years education either express the idea that the child is enabled to do something, or are 'active' statements.

Table 4: Stems and preambles

The concept of enablement is, for example, used in:

Ireland	Primary curriculum	'the child should be enabled to'
France	Primary and pre-primary curriculum	*'l'élève est capable* de' – the pupil is able to
Northern Ireland	Primary curriculum	'pupils should be enabled to' or 'teachers should enable children to'
Singapore	Kindergarten curriculum	'children should be able to'
Wales	Foundation Phase framework	Areas of Learning: 'Children should be given opportunities to'
Wales	National Curriculum	Programmes of study: 'Pupils should be given opportunities to…'

In the primary curriculum in England, the concept is similar, but is expressed as 'children should be taught...'. Similarly in *Te Whāriki*, the early years framework in

New Zealand, the concept is expressed as 'Children (and their families) experience an environment where', followed by a range of active statements – 'children will…..'.

In Wales, the subject content for both the Foundation Phase framework and the National Curriculum subjects (Areas of Learning and programmes of study) is set out using the stem 'Children (Foundation Phase)' or 'Pupils' (National Curriculum) 'should be given opportunities to…'. Learning outcomes in both phases, on the other hand, are set out as active statements, such as, for language, literacy and communications skills at level 2 in the Foundation Phase, 'children converse simply, sometimes leaving out link words…..', or, for level 4 National Curriculum mathematics, 'Pupils develop their own strategies for solving problems'. All outcome statements for the Foundation Phase framework begin with the word 'Children' and those for the National Curriculum with 'Pupil'.

Active statements are used in *Aistear* – 'in partnership with the adult, children will…..'; in the early learning goals of England's Early Years Foundation Stage (to age five), e.g. 'children read and understand simple sentences', 'children use everyday language to talk about size, weight…..'; in the *Kindergarten Program* in Canada-Ontario ('children will'); in the elementary curriculum in Canada-Ontario 'the student demonstrates….' 'the student uses'…..; in the National Core Curriculum in Finland (for children aged from seven); in the New Zealand Curriculum (primary level) - 'students will'; and in *Curriculum for Excellence* in Scotland.

Curriculum for Excellence is unique in that all stems/preambles are expressed in the first person, across the age ranges.

In the elementary school curriculum in Canada-Ontario, levels of attainment are reflected in the outcome statements. The active verb used is qualified through use of the terms *limited* (to signify the achievement of level 1 outcomes); *some* (for level 2 outcomes), *considerable* (for level 3), and *a high degree* or *thorough* (for level 4), e.g. in level 1 arts 'the student demonstrates limited knowledge of content; in level 4 arts, 'the student demonstrates thorough knowledge of content'.

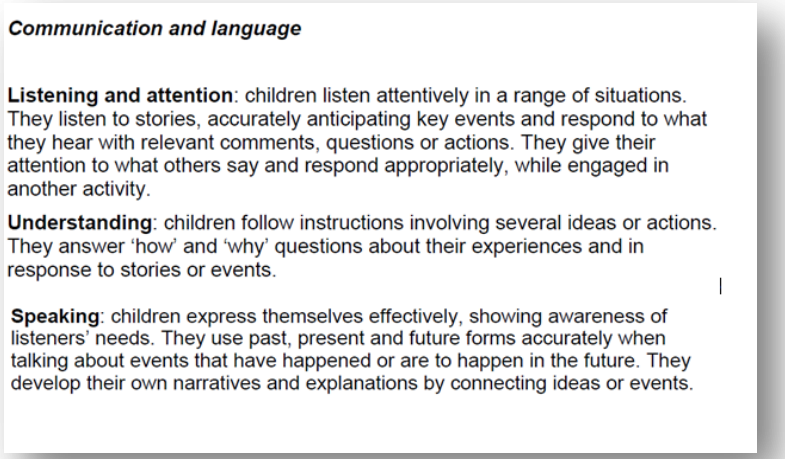
In Northern Ireland, the levels of progression for the cross-curricular skills of 'communication' (reading, writing, and talking and listening in English and Irish) and 'using mathematics' are set out as active 'can do' statements across the levels, e.g. 'pupils read aloud confidently and clearly'; 'pupils' writing is confident, competent and interesting'.

The 'screenshot' extracts below demonstrate the range of stems/preambles used in the early years framework documents for communication and language/literacy for some of the jurisdictions studied, and in primary curriculum framework documents for mathematics/numeracy.

Figure 11: Early years language/literacy/communication outcomes

***Aistear*, Ireland**

Aim 3 Children will broaden their understanding of the world by making sense of experiences through language.	In partnership with the adult, children will 1. use language to interpret experiences, to solve problems, and to clarify thinking, ideas and feelings 2. use books and ICT for fun, to gain information and broaden their understanding of the world 3. build awareness of the variety of symbols (pictures, print, numbers) used to communicate, and understand that these can be read by others 4. become familiar with and use a variety of print in an enjoyable and meaningful way 5. have opportunities to use a variety of mark-making materials and implements in an enjoyable and meaningful way 6. develop counting skills, and a growing understanding of the meaning and use of numbers and mathematical language in an enjoyable and meaningful way.



Communication and language

Listening and attention: children listen attentively in a range of situations. They listen to stories, accurately anticipating key events and respond to what they hear with relevant comments, questions or actions. They give their attention to what others say and respond appropriately, while engaged in another activity.

Understanding: children follow instructions involving several ideas or actions. They answer 'how' and 'why' questions about their experiences and in response to stories or events.

Speaking: children express themselves effectively, showing awareness of listeners' needs. They use past, present and future forms accurately when talking about events that have happened or are to happen in the future. They develop their own narratives and explanations by connecting ideas or events.

England Early Years Foundation Stage Framework (EYFS)

Canada – Ontario

OVERALL EXPECTATIONS

By the end of Kindergarten, children will:

A. communicate by talking and by listening and speaking to others for a variety of purposes and in a variety of contexts;

B. demonstrate understanding and critical awareness of a variety of written materials that are read by and with the teacher;

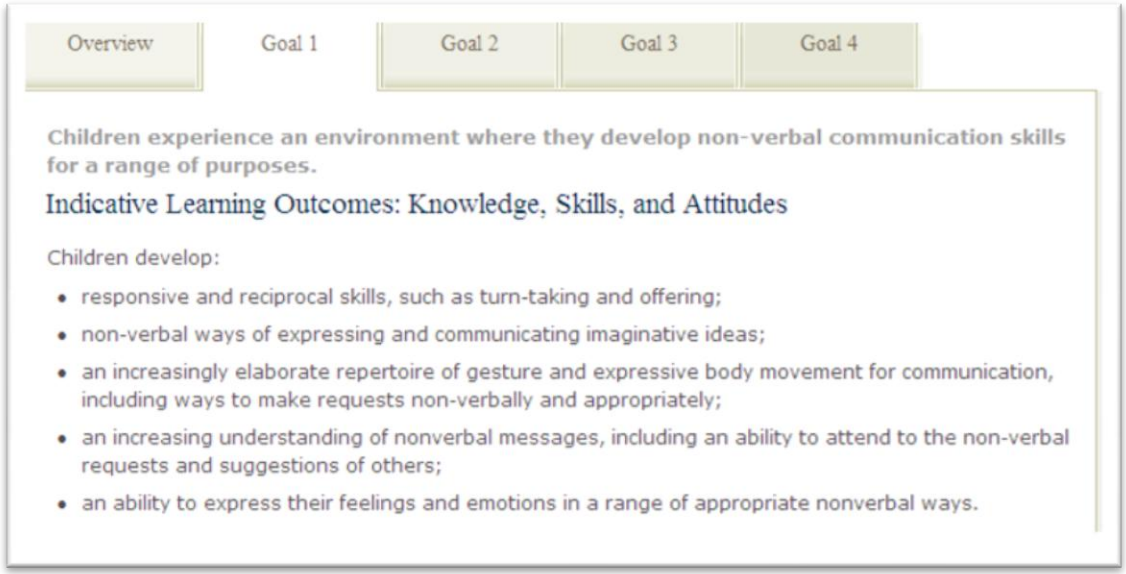
C. use reading strategies that are appropriate for beginning readers in order to make sense of a variety of written materials;

D. communicate in writing, using strategies that are appropriate for beginners;

E. demonstrate a beginning understanding and critical awareness of media texts.

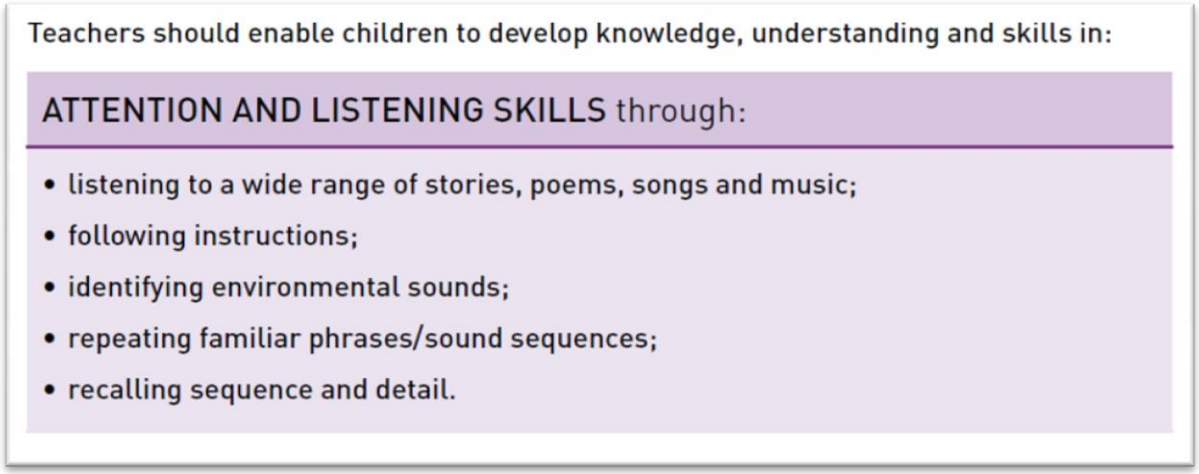
France

À la fin de l'école maternelle l'enfant est capable de :
- comprendre un message et agir ou répondre de façon pertinente ;
- nommer avec exactitude un objet, une personne ou une action ressortissant à la vie quotidienne ;
- formuler, en se faisant comprendre, une description ou une question ;
- raconter, en se faisant comprendre, un épisode vécu inconnu de son interlocuteur, ou une histoire inventée ;
- prendre l'initiative de poser des questions ou d'exprimer son point de vue.


Overview
Goal 1
Goal 2
Goal 3
Goal 4
Children experience an environment where they develop non-verbal communication skills for a range of purposes.
Indicative Learning Outcomes: Knowledge, Skills, and Attitudes
Children develop:
• responsive and reciprocal skills, such as turn-taking and offering;
• non-verbal ways of expressing and communicating imaginative ideas;
• an increasingly elaborate repertoire of gesture and expressive body movement for communication, including ways to make requests non-verbally and appropriately;
• an increasing understanding of nonverbal messages, including an ability to attend to the non-verbal requests and suggestions of others;
• an ability to express their feelings and emotions in a range of appropriate nonverbal ways.

New Zealand

Northern Ireland



Teachers should enable children to develop knowledge, understanding and skills in:

ATTENTION AND LISTENING SKILLS through:

- listening to a wide range of stories, poems, songs and music;
- following instructions;
- identifying environmental sounds;
- repeating familiar phrases/sound sequences;
- recalling sequence and detail.

Scotland

The 'early' column corresponds to expectations for around age six.

Listening and talking

	Early	First	Second
Enjoyment and choice – within a motivating and challenging environment, developing an awareness of the relevance of texts in my life	*I enjoy exploring and playing with the patterns and sounds of language, and can use what I learn.*[3] **LIT 0-01a / LIT 0-11a / LIT 0-20a** *I enjoy exploring and choosing stories and other texts to watch, read or listen to, and can share my likes and dislikes.* **LIT 0-01b / LIT 0-11b** *I enjoy exploring events and characters in stories and other texts, sharing my thoughts in different ways.* **LIT 0-01c**	*I regularly select and listen to or watch texts which I enjoy and find interesting, and I can explain why I prefer certain sources.* *I regularly select subject, purpose, format and resources to create texts of my choice.* **LIT 1-01a / LIT 2-01a**	

Wales

Language, Literacy and Communication Skills Outcomes

Foundation Phase Outcome 1

Children 'talk' to themselves and can understand many more words than they can speak. They repeat the names of familiar objects. They follow simple instructions and begin to express themselves through role play. They increasingly want to join in songs and nursery rhymes, especially action songs and finger rhymes. Children begin to follow stories read to them and they start to respond appropriately. They begin to 'draw' using their preferred hand and experiment with mark-making.

Foundation Phase Outcome 2

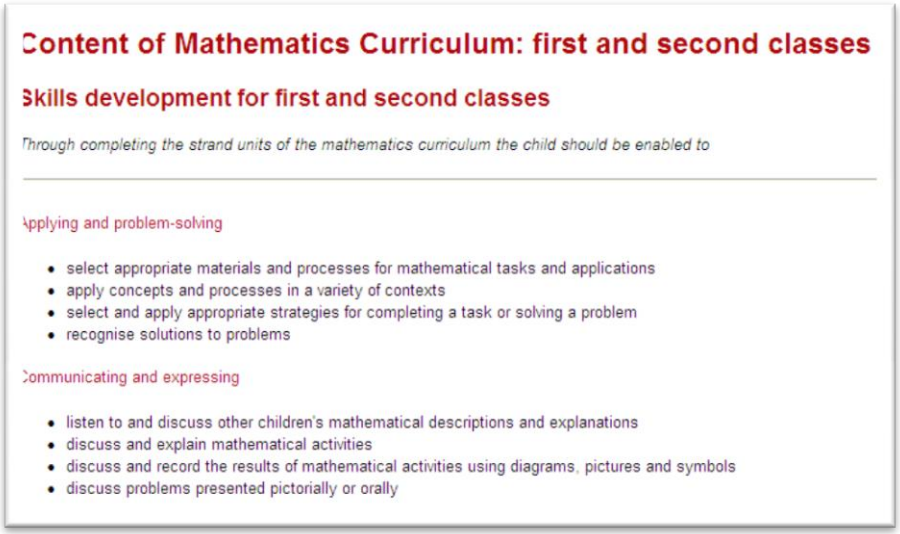
Children converse simply, sometimes leaving out link words and often asking questions, *e.g. 'why?' and 'how?'* They respond to instructions, questions and other stimuli. Children listen to stories, songs and rhymes and express some enjoyment and interest. Children look at books with or without an adult and show an interest in their content. They begin to follow stories from pictures and differentiate between print and pictures. They try out a variety of instruments to make marks and shapes on paper or other appropriate material.

Foundation Phase Outcome 3

Children draw on an increasing vocabulary in their talk. They begin to use complete sentences. Children listen to others and usually respond appropriately. With support they repeat/memorise songs and rhymes. They retell familiar stories in a simple way. Children handle a book as a 'reader' and talk about its content. They begin to recognise the alphabetic nature of reading and writing and understand that written symbols have sounds and meaning. They hold writing instruments appropriately, discriminate between letters and begin to write in a conventional way.

Figure 12: Primary mathematics/numeracy at around age eight

Ireland



Content of Mathematics Curriculum: first and second classes

Skills development for first and second classes

Through completing the strand units of the mathematics curriculum the child should be enabled to

Applying and problem-solving

- select appropriate materials and processes for mathematical tasks and applications
- apply concepts and processes in a variety of contexts
- select and apply appropriate strategies for completing a task or solving a problem
- recognise solutions to problems

Communicating and expressing

- listen to and discuss other children's mathematical descriptions and explanations
- discuss and explain mathematical activities
- discuss and record the results of mathematical activities using diagrams, pictures and symbols
- discuss problems presented pictorially or orally

Grade 2: Number Sense and Numeration

Overall Expectations

By the end of Grade 2, students will:

- read, represent, compare, and order whole numbers to 100, and use concrete materials to represent fractions and money amounts to 100¢;
- demonstrate an understanding of magnitude by counting forward to 200 and backwards from 50, using multiples of various numbers as starting points;
- solve problems involving the addition and subtraction of one- and two-digit whole numbers, using a variety of strategies, and investigate multiplication and division.

Canada – Ontario

Description of good performance at the end of Grade 2

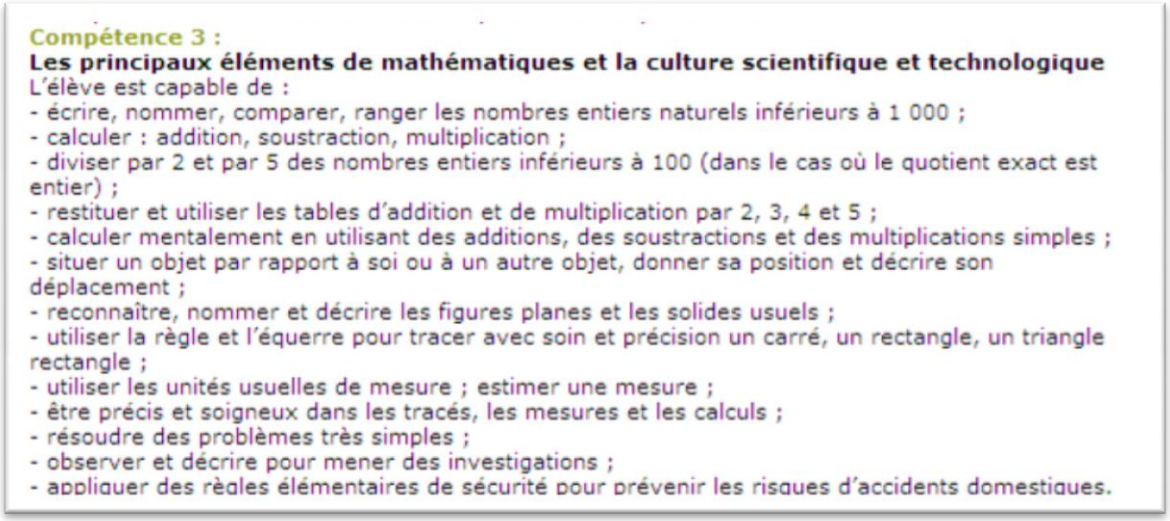
Numbers, calculations, and algebra

The pupils will

- know the importance of numbers in stating amount and order; they will know how to write numbers and present a continuum
- master the breaking down and assembly of numbers, comparison, and the formation of sums and number sequences; they will know about odd and even numbers
- know about and understand the decimal system as a place system, and know how to use it
- understand addition, subtraction, multiplication, and division and know how to apply them to everyday situations
- know how to look for the number of alternative solutions in simple events
- know simple fractions, such as one half, one third and one quarter, and know how to present them by concrete means.

Finland (aged 8-9)

France



Compétence 3 :

Les principaux éléments de mathématiques et la culture scientifique et technologique

L'élève est capable de :

- écrire, nommer, comparer, ranger les nombres entiers naturels inférieurs à 1 000 ;
- calculer : addition, soustraction, multiplication ;
- diviser par 2 et par 5 des nombres entiers inférieurs à 100 (dans le cas où le quotient exact est entier) ;
- restituer et utiliser les tables d'addition et de multiplication par 2, 3, 4 et 5 ;
- calculer mentalement en utilisant des additions, des soustractions et des multiplications simples ;
- situer un objet par rapport à soi ou à un autre objet, donner sa position et décrire son déplacement ;
- reconnaître, nommer et décrire les figures planes et les solides usuels ;
- utiliser la règle et l'équerre pour tracer avec soin et précision un carré, un rectangle, un triangle rectangle ;
- utiliser les unités usuelles de mesure ; estimer une mesure ;
- être précis et soigneux dans les tracés, les mesures et les calculs ;
- résoudre des problèmes très simples ;
- observer et décrire pour mener des investigations ;
- appliquer des règles élémentaires de sécurité pour prévenir les risques d'accidents domestiques.

Northern Ireland

PROCESSES IN MATHEMATICS

Making and Monitoring Decisions

Pupils should be enabled to:
- select the materials and mathematics appropriate for a task;
- develop different approaches to problem-solving;
- begin to organise their own work and work systematically.

Communicating Mathematically

Pupils should be enabled to:
- understand mathematical language and be able to use it to talk about their work;
- represent work in a clear and organised way, using symbols where appropriate.

Scotland

The 'first' column contains the expected outcome for children aged 6 to 9.

Number, money and measure

	Early	First
Number and number processes including addition, subtraction, multiplication, division and negative numbers	*I have explored numbers, understanding that they represent quantities, and I can use them to count, create sequences and describe order.* ***MNU 0-02a*** *I use practical materials and can 'count on and back' to help me to understand addition and subtraction, recording my ideas and solutions in different ways.* ***MNU 0-03a***	*I have investigated how whole numbers are constructed, can understand the importance of zero within the system and can use my knowledge to explain the link between a digit, its place and its value.* ***MNU 1-02a*** *I can use addition, subtraction, multiplication and division when solving problems, making best use of the mental strategies and written skills I have developed.* ***MNU 1-03a***

Wales

1. Solve mathematical problems

Key Stage 2	Key Stage 3
Pupils should be given opportunities to:	
select and use the appropriate mathematics, materials, units of measure and resources to solve problems in a variety of contexts	select, organise and use the mathematics, resources, measuring instruments, units of measure, sequences of operation and methods of computation needed to solve problems
identify, obtain and process information needed to carry out the work	identify what further information or data may be required in order to pursue a particular line of enquiry; formulate questions and identify sources of information

And the level description statements for 'Solve mathematical problems, Wales'

Level 1	Pupils use mathematics as an integral part of classroom activities
Level 2	Pupils choose the appropriate operation (when solving addition or subtraction problems)
Level 3	Pupils organise their work, check results and try different approaches
Level 4	Pupils develop their own strategies for solving problems Pupils choose and use suitable units and instruments
Level 5	Pupils identify and obtain information to solve problems Pupils make sensible estimates (or a range of everyday measures)
Level 6	Pupils solve complex problems by breaking them down into smaller tasks
Level 7	Pupils consider alternative approaches
Level 8	Pupils develop and follow alternative approaches, reflecting on their own lines of enquiry and using a range of mathematical techniques
Exceptional performance	Pupils solve problems (using intersections and gradients of graphs, Pythagoras' theorem and trigonometric ratios)

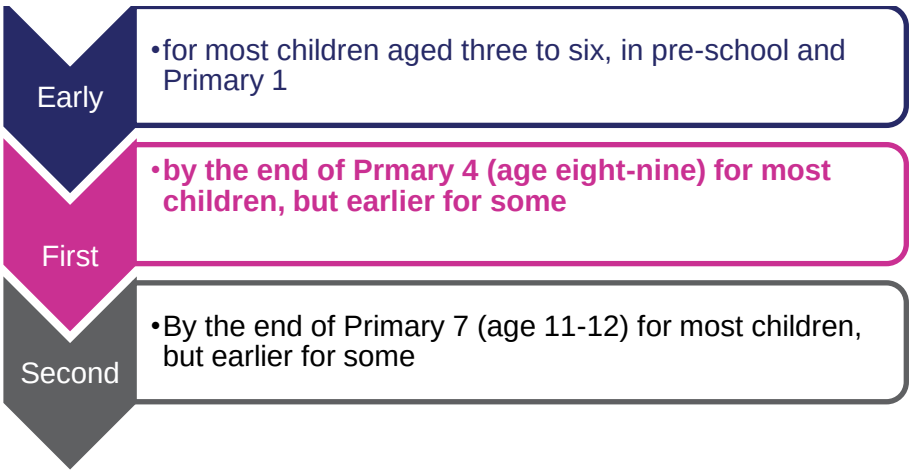
7 Progression

In general, in addition to providing clear expectations of student learning at specific points during early years and primary level education (as indicated by the circles in the visual on page 8), the curriculum frameworks in the jurisdictions studied also describe progression as children go through primary level education. Most often, progression is indicated in curriculum documents by means of increasingly complex examples of student attainment or by changes to expectations.

Where jurisdictions use level descriptors of increasing difficulty to describe progression (England, New Zealand, Northern Ireland, Scotland and Wales, for example), these levels often cross academic years. In England, the current level descriptors – which will no longer apply when the new primary curriculum is introduced in September 2014 – are used to evaluate and describe student progress and attainment throughout the primary years. By the end of Key Stage 2 (age 11), most primary pupils are expected to be performing, in each curriculum subject, at a level between levels 3 and 5. The levels are not only used to monitor and evaluate pupil progress but also to set targets for student achievement at the end of a key stage and to hold schools accountable. Pupil attainment in England at the end of Key Stage 2, for example, is used to hold schools to account as performance is judged against defined 'floor standards', which include that schools should have more than 60 per cent of pupils at the end of Key Stage 2 achieving level 4 or above in English and mathematics.

The level descriptions used in New Zealand and Scotland aim to allow children to progress at their own rate, so are not linked to specific targets, nor to ceilings of performance. In the New Zealand Curriculum, children progress via eight designated levels across the eight learning areas. There is no set point for a child to be on a specific level for a specific subject; children progress at their own speed. In Scotland, statements of experiences and outcomes describe national expectations of learning and progression from age three to age 15 and do not have ceilings, with a view to enabling teaching staff – who can see all the levels in one document - to extend the development of skills, attributes, knowledge and understanding into more challenging areas and higher levels of performance in recognition of a child's ability. The experiences and outcomes are set out in lines of development for all curriculum areas which describe progress in learning, and progression is indicated through the curriculum levels:

Figure 13: Levels in Curriculum for Excellence - Scotland



The Northern Ireland Primary Curriculum document (CCEA, 2007a) also incorporates progression or progress in learning statements for each Area of Learning. For example, in reading: while progressing through the Foundation Phase pupils should be enabled to 'recognise different types of text and identify specific features of some genres' whereas during Key Stages 1 and 2 'most pupils should progress *from* recognising different types of text *to* expressing interests in and preferences for certain texts'.

In Finland, other than setting out what learners should be able to do at the end of Grade 2 (age nine) and Grade 5 (age 12), the curriculum does not describe progression between these points. In France also, the curriculum provides clear expectations for children's learning and development at particular points in their primary education – at age eight at the end of the basic learning cycle (when they relate to the acquisition of reading and writing skills and initial mathematical elements); and at the end of primary education (age 11) when they relate to the seven major skills areas of the *socle commun* ('the fundamental base of knowledge and skills') (mastering the French language, speaking a modern foreign language, acquiring basic knowledge in mathematics and science, developing a humanist culture, mastering information and communication technology, acquiring social and civic skills, and developing autonomy and initiative).

Even in those jurisdictions which do not have statements of progression for all curriculum subjects, there is a focus on benchmarks for knowledge in language/literacy and mathematics. New Zealand has introduced National Standards to monitor children's literacy and numeracy skills in Years 1-8 (ages five to 13); in Wales there are new literacy and numeracy tests in Years 2-6 of primary education (ages six/seven to 11); and Northern Ireland assesses children's progress in the cross-curricular skills of 'communication', 'using mathematics' and 'using ICT'. Here, levels of progression set out, in the form of 'can do' statements, a continuum of skills that pupils should be able to demonstrate if they are to build the literacy, numeracy and ICT skills needed to function effectively in life and in the world of work. There are seven levels of progression for each requirement of the skills (generally up to level five in primary school, with the possibility to report at level six for exceptional performance).

8 Primary education policy

In Table 5 we provide a brief summary of key changes in primary curriculum and assessment policy across the ten jurisdictions since 2007. We then discuss these in further detail, highlighting the impetus for change and the policy themes underlying the reforms and revisions.

Table 5: Key changes in policy since 2007

Ireland	• Standardised national assessments of reading and mathematics introduced in 2007. • National strategy to improve literacy and numeracy introduced in 2011. • School self-evaluation guidelines for primary schools published in 2012.
Canada-Ontario	• Publication in 2010 of a revised policy on assessment, evaluation and reporting in Ontario schools, aligning assessment across the province and across phases of education.
England	• Introduction of a phonics-based progress check (reading) in Year 1 (age five to six) from 2011. • Revised and slimmed down statutory framework for the Foundation Stage (birth to age five) from 2012, included a 'progress check' at age two. • Publication in 2013 of the revised National Curriculum for primary education to be implemented in 2014.
Finland	• New National Core Curriculum for basic (compulsory) and pre-primary education to be completed by the end of 2014; introduction from 2016.
France	• Introduction of *socle commun* (common foundation of knowledge and skills) in 2007. • New government programme to 'restructure schools' from 2012/13.
New Zealand	• Revised New Zealand Curriculum published in 2007 following extensive 'stocktake' and implemented in 2010. • National standards for literacy and numeracy introduced in 2010.
Northern Ireland	• 'Every School a Good School' – the strategy for school improvement - introduced in 2009. • Revised literacy and numeracy strategy introduced in 2011. • New literacy and numeracy assessments piloted in autumn 2013.
Scotland	• 'Curriculum for Excellence' published in 2004; implementation began in 2009-10. • 'Experiences and outcomes' for Curriculum for Excellence published in 2009. • Guidance for assessment being developed in a National Assessment Resource (NAR), based on assessment for learning approaches.

Singapore	• 2009 recommendations from Primary Education Review and Implementation Committee will result in structural change from 2016 with the introduction of the single-session primary school. • 2010 launch of framework for 21st century competencies. • Revised curriculum for pre-school education introduced in 2012.
Wales	• Introduction of the Foundation Phase between 2008 and 2011/12. • Introduction of the National Literacy and Numeracy Framework and linked tests in 2013.

8.1 Drivers for change

Drivers for change vary across the ten jurisdictions, although changes of government and consequent changes in priority for education policy often have an impact. This has been the case in England, where the Coalition Government, formed in 2010, is reforming the National Curriculum and associated assessment regime, and in France, where a new President, elected in 2012, is looking to reform the French school system. In New Zealand, a newly elected government in 2008 introduced National Standards (in 2010) to monitor and improve literacy and numeracy standards across the country, in response to a promise to parents that there would be regular assessment of primary and intermediate students against the new standards, and that reports to them would be in plain English, so that they could clearly see if their child was making expected progress or falling behind.

Two jurisdictions have revised their curriculum through a 'stocktake' beginning before 2007. Scotland reviewed its curriculum in 2002, identifying areas for change and improvement which have been introduced gradually since that time, beginning with the launch of *Curriculum for Excellence* in 2004. The aim was to offer a less crowded and better connected curriculum framework, which would offer more choice and enjoyment and prepare children for adult life in the 21st century. New Zealand's stocktake also began in 2002, with a revised curriculum published in 2007 and implemented in 2010, and had a similar impetus; ensuring the appropriateness of the New Zealand Curriculum in the current educational, social and economic climate, improving student outcomes, and meeting the expectations of a range of stakeholders. In Ontario (Canada), a regular cycle of curriculum review – by subject area – takes place for this reason; to ensure that the curriculum remains current, relevant and age-appropriate.

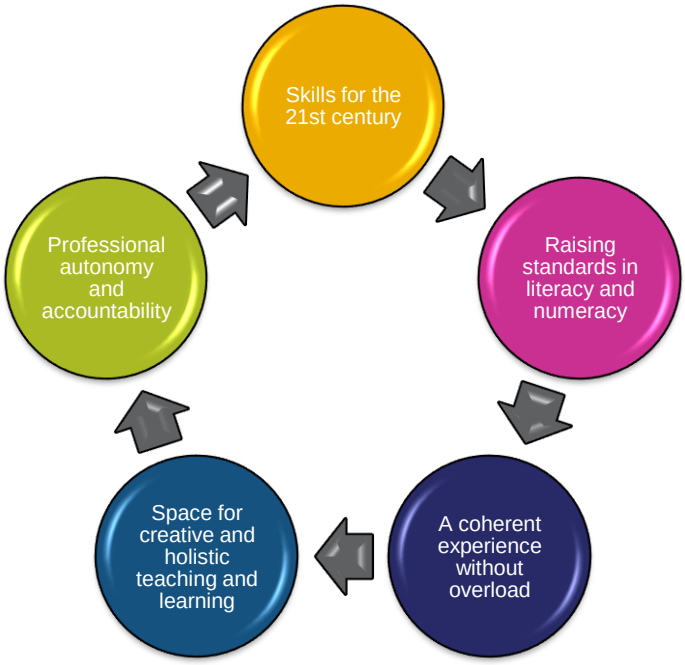
Wales and France have both recently introduced reforms to primary education in response to apparent failings in the current system. For Wales, this was a reaction to poor performance in OECD's Programme for International Student Assessment (PISA) study in 2009; for France this was in order to tackle what were regarded as high rates of school failure and to reduce the numbers of children leaving primary education with serious difficulties. This chimes with experience in Ireland where the

literacy and numeracy strategy was also introduced, in part, as a response to performance in PISA 2009.

Consultations with experts, teachers, researchers, other stakeholders and the public, along with the formation of expert advisory or working groups (e.g. a Curriculum Council or a 'Review and Implementation Committee') are commonly used to aid the process of reform.

8.2 Policy themes underpinning primary reforms

Figure 14: Policy themes underpinning reform



A key policy theme underpinning recent primary education reforms across the ten jurisdictions is to raise standards, with a particular focus on improving literacy and numeracy skills at the primary level. At the same time, there is also a desire to increase teachers' professional autonomy, and/or to ensure that primary level education is more joined-up, holistic and creative, and is ensuring that children develop the skills they need for the 21st century.

Like Ireland, Northern Ireland and Wales have introduced literacy and numeracy strategies, along with associated testing, with a view to improving the literacy and numeracy skills of primary age children. England has long had a literacy and numeracy strategy and, in 2011, introduced a phonics check for six-year-olds (at the end of Year 1); phonics is the recommended method for teaching reading now employed in primary schools in England. New Zealand also has introduced National Standards to monitor children's achievement in literacy and numeracy across the

curriculum and, in Scotland, one of the aims of the *Curriculum for Excellence* reforms is to ensure that young people develop the literacy and numeracy skills and knowledge they will need for life and work. In France, Northern Ireland and Wales, in particular, strategies to raise standards through changes to primary education also point specifically towards reducing social and regional inequalities in educational outcomes and academic success by, for example, reducing the impact of poverty on educational attainment (narrowing or closing the gap).

In England, one of the stated policy drivers for the recently completed review of the National Curriculum – additional to the overriding driver which is that of improving academic standards and performance – is to reduce prescription for schools and increase teacher autonomy. New Zealand's 2007 curriculum reform also aimed to support quality teaching and strengthen school ownership of the curriculum, whilst Scotland's *Curriculum for Excellence* aims to allow 'professional space' for teachers and other staff to meet the varied needs of all children and young people.

Ensuring that the curriculum is 'joined-up' across the phases of education is also one of the policy drivers for recent reform. This is a key theme in Ireland, where there has not only been concern to ensure consistency between *Aistear* – the early childhood framework and the primary curriculum, but also to 're-present' the primary curriculum to ensure coherence and remove overlap. In Singapore, recent revisions to the kindergarten curriculum reflected these same concerns regarding transition from kindergarten to Primary 1, and the concern to ensure a more joined-up and coherent curriculum experience was also one of the key reasons for the introduction of the *socle commun* (the common foundation of knowledge and skills) in France. In Scotland, it is one of the overriding policy principles behind the creation of *Curriculum for Excellence* which, for the first time, aimed to offer a single curriculum continuum for those aged three to 18, and the current curriculum consultation in Wales is similarly examining continuity and progression from the Foundation Phase onwards. In Ontario (Canada) the particular focus is on ensuring that policy on assessment, evaluation and reporting in Ontario schools is coordinated and consolidated, with the aim of maintaining high standards, improving student learning, and benefiting students, parents, and teachers in elementary and secondary schools across the province.

At the same time as seeking to ensure that curriculum is coherent and joined-up, there is also a policy concern across the jurisdictions, as in Ireland, to ensure that the curriculum is not overloaded. In England, for example, the Early Years Foundation Stage learning and development requirements have recently been simplified, reducing the number of learning goals from 69 to 17 and placing stronger emphasis on the three prime areas of communication and language, physical development, and personal, social and emotional development. Overload was also a policy concern in a recent review by the Curriculum Council in Ontario and, in Wales, Phase 2 of the current curriculum consultation will focus on ensuring that there is a broad and balanced curriculum, fit for the 21st century, but that is not overcrowded.

Ensuring that children gain cross-cutting, cross-curricular skills that are relevant for the 21st century is not only a focus of policy reform in Wales, but also features in policy development in New Zealand and Singapore and in *Curriculum for Excellence* in Scotland, which seeks to ensure that all children gain the essential skills and knowledge they will need for life and work. This future focus is key to curriculum reform and review in Ontario – where curriculum areas are regularly reviewed to ensure not only their currency but that they are also 'future-proof' – and is a significant policy driver behind the current reform of the National Core Curriculum in Finland. Alongside these skills for the 21st century, jurisdictions including France, Scotland and Singapore are also seeking to ensure that the frameworks in place allow space and time for extra-curricular activities, for creative and holistic teaching and learning, and for activities that broaden the life experiences - and life chances - of children and young people.

Appendix 1: lines of enquiry

Jurisdiction: enrolment in primary school and landmark stages

Question	Output
How many years are there in primary school education?	a. Number of years
Are distinct stages recognised within the primary school years? If yes, how many stages?	a. Yes/No b. Number of stages
What class years are included in each stage? What age(s) are the majority of children at each stage?	a. Stage Name b. Class/Year Name c. Age(s) of children (per stage)
Are multi-age/year settings planned for particular stages? If yes, at which stage(s) and where is further information available?	a. Yes/No b. Stage Name c. URL

Jurisdiction: primary curriculum – contents and structure

Question	Output
How is the curriculum structured and organised in curriculum areas/ subjects for children from age 4 to age 12 (If children are *not* in primary school at age 4 (or older), what kind of pre-school curriculum structure exists?)	a. Curriculum areas and subjects for all stages
Does a curriculum structure (e.g. a framework) exist that is not based on curriculum areas or subjects? If yes, what is it? Where can we find it?	a. Yes/No b. Name of structure c. URL
How does the curriculum differ in contents and structure for children at age 4 compared with provision for children at age 12?	a. List up to 3 key differences
Are learning outcomes used with children from age 4 onwards whether in an early childhood setting or a primary school? If yes, provide a link to examples.	a. Yes/No b. Class/Year Name c. (Corresponding) Ages d. URL
What stem or preamble is used with the learning outcomes/objectives for children from age 4 onwards—whether in an early childhood setting or a primary school? For example, in the Primary Curriculum (DES, 1999), the following stem is used for objectives, 'Children should be enabled to….'	a. Stem/Preamble
Does the stem or preamble to objectives/outcomes differ across the stages of primary education? If so, how?	a. Yes/No b. List the difference(s)
Are learning outcomes differentiated by children's age or stage of education in any other way? If so, how do they change?	a. Yes/No b. Differences
Are skills and dispositions identified which cut across	a. Yes/No

Question	Output
curriculum areas? If so, what are they?	b. List up to 8 (in order of importance if possible)
Does the curriculum provide clear expectations for children's learning and development at particular points in their primary education? If yes, what are these points?	a. Yes/No b. Children's Age c. Class Year/Stage
. Does the curriculum describe progression between these points and if so, how? Where can we find more?	a. Yes/No b. URL (e.g., to 'learning pathways, learning journeys, descriptors of achievement, etc.)
. Have curriculum and assessment priorities been identified in policy for children's primary education in the last 6 years (since 2007)? If so, what are they? Where can we find more information (link to relevant policy document)?	a. Yes/No b. List up to 3 c. URL

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