

Curriculum Development

**A Report for the International Baccalaureate
Organization (IBO)**

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Executive Summary

Background to the Report

This report examines the development and revision of curricula in jurisdictions, regions and countries around the world. In addition, it provides examples which could further inform the International Baccalaureate Organisation's (IBO) own curriculum development. We identified thirteen countries and jurisdictions that we thought likely to be *productive locations for learning* in relation to curriculum development and reform: Finland; Massachusetts, USA; Scotland; Ontario, Canada; Netherlands; Mexico; Germany; England; Chile; Singapore; New Zealand; Victoria, Australia; and Queensland, Australia. Our sources of information included government documents as well as books, and academic and professional journal articles. We collected information about a wide range of issues, from the organization of schooling in these different countries, to the aims and purposes of the schools' curricula, and their arrangements for delivery and assessment.

Our findings are as follows:

1. Review Cycles

With the exception of Ontario, most mass systems of education do not have established curriculum review cycles. Curriculum reviews tend to be ad hoc, unplanned, dependent on the political cycle, and a response to a particular problem by government. The IBO, on the other hand, has the benefit of being able to rise above national considerations, and uses a strongly defined and structured seven year process of curriculum review in relation to their programmes. This is unusual.

2. Flow of Reform

The point of entry for a reform in most countries is at the top of the system or the apex of the power structure. The general direction of flow is fragmented and multi-directional. Reforms generally lose their shape, structure and contents during the exploration, development, recontextualization, implementation and institutionalization phases of the reform process. In most countries institutionalising processes are undeveloped. In contrast, the IBO's curriculum reform processes demonstrate coherence across all parts of the organization, although as we found from our interview with an IBO staff member, this may in some cases be compromised by an inconsistent uptake of continuing professional development for International Baccalaureate teachers, perhaps on grounds of cost.

3. Curriculum Aims

Most reforms of education systems now emphasise assessment driven, goal directed and fact based forms of learning. And in addition, most education systems have similar curriculum standards or curriculum aims/objectives, and likewise are driven by summative processes of assessment, which in turn appears to have been influenced by the imposition of external tests such as the Programme for International Student Assessment (PISA). The IBO curriculum is specifically aimed at university preparation, rather than inter or intra-country comparisons, and as such goes beyond the usual requirements of many curricula. However, there is a risk that the emphasis on high stakes assessment at the end of the programme may affect the integrity of some of the pedagogical approaches adopted by the IBO, particularly in the case of schools which have not had face-to-face visits since initial accreditation.

4. Subjects and Forms of Knowledge

In all countries, an emphasis is given to Language (Literacy), Mathematics and Science. Although most of the countries we sampled do not use text books written by government agencies, most are nevertheless preserving traditional knowledge forms and strong insulations between them in the school curriculum. In contrast, in addition to an emphasis on Language, Mathematics and Science, the International Baccalaureate specifically “aims to develop inquiring, knowledgeable and carrying young people who help to create a better and more peaceful world through intercultural understanding and respect.” (IBO, 2014). Once again, this is unusual.

5. Modes of Progression

Most countries start formal schooling as early as possible, often between the ages of 4-5. And they use progression modes which prioritise educational extension rather than increasing the complexity of, and deepening, learning. Knowledge is therefore expressed in terms of lower and higher domain-levels, with the latter having to be taught before the former, and sequenced correctly. This is similar to the Diploma Programme, particular with some courses being taken at a higher level (HL). However, the provision of extended essays and similar assessment methods may mitigate the negative effects of such practices.

6. Curriculum Reviews

As a supra-national organization, the IBO is in a unique position within education internationally. Its privileged position allows it to set the tone for contemporary curriculum review, should it so wish. Currently there is a coherent system of review in place that appears

to be operating across all parts of the organization, and this is a positive aspect of the IBO's work. However caution is recommended here, despite the ostensibly thorough framework for review that has been put in place. Although carefully drafted guidelines for such a review process were intended to act as a useful project planning tool, and indeed appear to succeed in this regard, the process underpinning curriculum review gives the impression of being overly complex and detailed, which may result in a form of 'guideline exhaustion'. This runs the risk of trivializing certain aspects of the reform, making it into a tick box exercise for some participants. The fact that accreditation after the initial phase is based only on submission of paperwork is likely to increase the risk. The IBO should therefore consider:

- Developing strategies for enhancing the uptake of professional development courses in relation to curriculum review. For example, the IB might investigate the likely impact of reducing the cost of professional development courses, or introducing a credit system with minimum requirements for teacher reaccreditation (or a combination thereof).
- Increasing the number of quality assurance visits rather than relying on paper-based checks after initial accreditation. These could be conducted at standard or irregular intervals, depending on the availability of resources and other practical considerations.
- Undertaking an empirical study to investigate the current alignment between the IB's intended curriculum and its implementation in schools.
- Limiting the number of reviews a draft curriculum may undergo, in order to simplify the process. Ensuring teacher involvement and action research at various stages to ensure those teachers' experience and knowledge is taken into account sufficiently well, and that the process is suitably democratic and pluralist.
- Developing the role of the teacher as an embedded researcher, with implications for professional development practices and the curriculum development and review process.
- Slimming down the review guidelines and making them less detailed and prescriptive, although there should continue to be an emphasis on their value as a project planning tool.

Chapter 1: Purposes, Methods and Design

This report examines the development and revision of curricula in jurisdictions, regions and countries around the world. In addition, it provides examples which could further inform the International Baccalaureate Organisation's (IBO) own curriculum development processes. In sampling countries and jurisdictions around the world, we did not assume that a country's practices in curriculum development and reform are evenly effective or applicable. We instead identified countries and jurisdictions that we thought likely to be *productive locations for learning* in relation to curriculum development and reform. This reflected our concern that the focus needed to be on how practitioners, including curriculum developers, learn from the work and experience of each other, rather than on the apparently exemplary practice itself. Because we identified the countries and jurisdictions as productive locations for learning, the effectiveness of our investigation depended to some extent not on the practices adopted in the countries we studied, but on the quality of the learning derived from them. The focus here then, is on generative practices rather than on generalising educational practices across very different contexts.

We selected jurisdictions and/or productive practices (c refers to a criterion and these criteria are numbered):

- that demonstrated strong outcomes derived from their educational policies and initiatives (c₁);
- where the education system was managed in the context of shared responsibility between national government, regional or state government and local initiatives, because these contexts were likely to demonstrate some of the complexities of curriculum reform processes (c₂);
- where the education system was managed in the context of high levels of social and/or cultural diversity (c₃);
- where education confronted issues of the linguistic diversity of its student cohort (c₄);
- from both European (c₅) and non-European jurisdictions;
- that reflected examples of recent developments in curriculum reform (c₆);
- and with high levels of practical applicability (c₇).

The countries/jurisdictions chosen were (with their applicability to the criteria indicated):

- Finland (c₁; c₂; c₅; c₇)
- Massachusetts, United States of America (c₁; c₆; c₇)
- Scotland (c₁; c₄; c₅; c₆; c₇)

- Ontario, Canada (c₁; c₄; c₆; c₇)
- The Netherlands (c₁; c₅; c₇)
- Mexico (c₂; c₃; c₄; c₆; c₇)
- Germany (c₁; c₂; c₅; c₇)
- England (c₁; c₃; c₄; c₅; c₆; c₇)
- Chile (c₃; c₄; c₆; c₇)
- Singapore (c₁; c₃; c₄; c₆; c₇)
- New Zealand ('The Best Evidence Synthesis Programme') (c₁; c₃; c₆; c₇)
- Victoria, Australia ('Schools for the Future') (c₁; c₂; c₆; c₇)
- and Queensland, Australia ('Focus on Schools') (c₁; c₂; c₃; c₇).

We did not develop profiles for the last three of these countries/jurisdictions; however, we did examine important reform programmes in each of them: *The Best Evidence Synthesis Programme*, *Schools for the Future*, and *Focus on Schools*. Our reason for not developing these profiles is that our focus is on the mechanics of, and processes associated with, particular reforms; and not on formal and whole scale national processes of reform in these three countries/jurisdictions. Analysing the patterns of curriculum reform in our sample of countries and jurisdictions allowed us to understand better the various processes involved in reforming, changing, and amending the curriculum. We were also fully aware that the focus of our observations was the formal curriculum and that this is very different from the way the curriculum is enacted.

The first phase of the investigation comprised the collection of information about the characteristics of curricula in these countries and jurisdictions. Information sources were: relevant government-endorsed curriculum documents; secondary source material (i.e. books, academic and professional articles), which describes the characteristics of the curriculum; and secondary source material (i.e. books, academic and professional articles), which offers a critical perspective on those characteristics of the curriculum relevant to the project. In addition, we collected information relating to the characteristics of curriculum reforms in the sample of countries. Our sources for this activity were similar to those above.

We collected information about our thirteen countries/jurisdictions in relation to the following issues:

- types of control and administrative organization in relation to curricula and curricular reform processes;
- general aims, purposes, goals, key skills, knowledge structures, dispositions and principles of curriculum, and curricular reform processes at national level;
- starting age, minimum school leaving age, and duration of mandatory schooling;

- educational phasing and access;
- school structures, access, internal grouping and progression;
- progression within phases;
- range of subjects studied at primary and secondary levels, and minimum curricular content;
- curriculum materials;
- relations between curriculum standards, pedagogic standards, and assessment standards;
- curriculum arrangements (pedagogic approaches and strategies; relations between knowledge domains; knowledge, skill or disposition orientations; knowledge framing; progression and pacing; relations between teacher and taught; relations between types of learners; spatial arrangements; temporal arrangements; formative assessment and feedback processes; criteria for evaluation);
- national standardized assessment systems and national examination or certification frameworks;
- control and supply of school textbooks;
- histories of curriculum reforms;
- contents of curriculum reforms;
- level and extent of subject experts' involvement;
- phases of development of curriculum reforms;
- contents and purposes of each phase of development;
- and curriculum alignment and articulation.

The final phase comprised an investigation into the characteristics of the IBO's own curriculum development, and how these related to world-wide curriculum developments. Information sources were: IBO curriculum documents that relate to the reform processes discussed above; secondary source material (books, academic and professional articles), which describes the characteristics of the IBO curriculum; secondary source material (books, academic and professional articles), which offers a critical perspective on those characteristics of the proposed reforms; and a telephone interview with an IBO curriculum expert.

Chapter Two: Education Reform Processes

Education systems around the world are in a constant state of reform and change (cf. Rizvi and Lingard, 2009; Slee, 2010; Ball, 2008; and Chapman and Gunter, 2009). The imperative for reform emanates from multiple sources. It may result from political forces where governments seek to demonstrate different priorities and emphases in education to the opposition parties on the one hand, or accede to a range of constituents' demands on the other. Reforms may reflect the growing globalisation of education policy wherein national education systems seek to align their programmes to improve their rankings on international comparative assessments such as the Organisation for Economic Co-operation and Development (OECD)'s Programme for International Student Assessment (PISA) (cf. OECD, 2005; 2007). National imperatives reflecting local economic and cultural priorities may initiate reforms. Modernisation of systems may be necessary to mitigate inefficiency, poor performance, inequities and gaps in professional knowledge.

In reviewing education reforms across different countries and jurisdictions we have observed instances where the reform agenda is very narrowly based, such as, for example, closing the gap in student performance on Literacy and Mathematics tests (cf. Johnson and Johnson, 2006; Rizvi and Lingard, 2009; Levin, 2005; and Stobart, 2008). The reform agenda may be too ambitious in its scope when it addresses pedagogy and assessment, curriculum, school organisation and administrative leadership, and support at a system-wide level (Ministry of Education, Singapore, 2008) or through piloting initiatives as the test-bed for more general reforms such as the *New Basics Research* (Education Queensland, 2004). The vision for reform may be too 'vague and vacuous', repeating tired epithets such as 'world-class education' and 'world-class performance' (Hargreaves, 2009: 76). Whatever the source or scope for reforming education systems, the challenges to successful reform are usually significant and systems' leaders need to be able to deal with complexity and engage stakeholders in the reform vision and process at all levels of the organisation. Moreover, the priorities articulated in the reform documents need to be seen to be important by a range of stakeholders to establish credibility and to be acceptable to the community.

Education policy researchers offer a range of approaches to and tools for policy analysis. The American political scientist, Thomas Dye (1972), represented public policy-making as a linear process whereby a government drafts the policy programme that they pass down to the civil service that is responsible for implementing and administering the government's mandated programme of public policy. This understanding of the transmission of policy is often depicted as a top down model and based upon a command approach to education reform and improvement. Accordingly, hierarchy supersedes trust and there is little room for

professional contributions from the recipients of education reform. Resistance and indifference can result.

In an important study of disability, policy-making and education reform across Australia, England and Scandinavia, Gillian Fulcher (1999) observes that policy is made and then continuously re-made at all levels of the organization. In other words, when stakeholders at various points in an organisation's structure receive policy documents or instructions they enter into a process of interpretation where they apply their own experiences and understandings to make sense of the policy announcement. In this process of mediation, the policy is adjusted and forms a new policy or programme, albeit framed within the government's discourse. They implement the policy according to their interpretation of what the system requires. Accordingly, what is implemented may bear little resemblance to what the originators of the reform programme had in mind.

More recent education policy researchers, such as Stephen Ball (1994), depict education reform and policy-making as a 'messy', complex and contested enterprise. As has been frequently observed (Whitty, 2002; Ball, 2008; and Apple, Kenway and Singh, 2005) policy is an object of contest and struggle between competing ideologies, education visions, personal interests, and political or organisational positions. All of these forces foment in an incubator of international, national and local contexts. For Ball, understanding education reform presses us to interrogate policy cycles, policy discourses, policy actors, policy arenas and contexts. His nuanced and more realistic approach to analysing education reform developed over years through a series of empirical analyses of policy sites, discourses, and contexts (Ball, 1987; 1990; 1994; 2007; and 2008). Policy is produced through a series of struggles involving many actors and agencies. In addition, local policy cannot be understood without reference to the global impact of transnational agencies, such as the OECD, UNESCO, UNICEF, the World Bank, not-for-profit and for-profit organizations, and so forth.

2.1 Decentralization in a Federal System

According to the OECD (2008), decision-making in education in most countries became increasingly decentralised between 2003 and 2007. In Australia, decentralization has steadily evolved since the early 1970s, but there is growing pressure for greater centralisation of curriculum and assessment. The establishment of the Australian Curriculum, Assessment and Reporting Authority (ACARA) in 2009, together with the *National Assessment Plan Literacy and Numeracy* (NAPLAN) has brought the states under direct Federal gaze more than was the case previously. ACARA also launched the *My School Website*, which publishes comparisons of the performance of some 10,000 schools across Australia.

In some federal systems, including Australia, Canada, and the United States, constitutional powers for making laws in relation to education belongs to the states (or the provinces in Canada), and, in Australia, the government can influence educational arrangements through its powers to make grants available to the states. It is worth acknowledging that Canada does not have a Federal Ministry of Education. The form of decentralisation varies across Australia's different states. In Victoria, one of six states and two territories (Gamage and Zajda, 2009), the 'Schools for the Future' reform in 1993 introduced changes in the proportion of funding from about 10 per cent to 90 per cent, and the state subsequently shifted significant responsibility of decision-making in education to the schools, albeit within a centrally determined framework (*ibid.*). Currently, 94% of the state's recurrent budget is deployed to the school level for local decision-making, making the state education system more decentralised than in England and New Zealand (Caldwell, 2011).

Queensland provides another example of decentralisation. In the 1990s, *Focus on Schools* set out the guidelines for a gradual devolution of responsibility to the school level. The state-wide implementation of school-based management started in 1997 through the *Leading Schools Programme*, followed by the *Education and other Provisions Amendment Act* of 1997. The new Act reorganised education regions and support centres by establishing 36 school districts. The number was reduced to 33 in 2004 in order to reduce administrative costs and to bring the decision-making closer to schools. This was a part of the Queensland School Education 2010 reform agenda. The development of a school council at each school enabled increased engagement of parents and the community in governance and decision-making. Notwithstanding the movement of decision-making responsibilities to schools the centre still exerts tight control through guidelines, fiscal accountabilities, reporting cycles, and evaluation schedules.

2.2 Target-Setting and Assessment-Driven Reform

The setting of educational priorities and the content of national curriculum documents have been dominated by the proliferation of targets based on student achievement measured by test scores. Priorities and testing instruments are routinely imported from what are perceived as more or less successful systems or among counterparts that speak the same languages or have political linkages (Bray *et al.*, 2007). Examples include England, Victoria (Australia), Queensland (Australia), New Zealand, and Ontario (Canada). Hargreaves (2009) argues that using tests of functional literacy as the systemic reform priority and as a political expedient is educationally misdirected. The use of cross-national student achievement results, such as the OECD's *Programme for International Student Achievement* (PISA) and *The International Mathematics and Science Study* (TIMSS) (Bray *et al.*, 2007), has accelerated cross-national comparisons of educational systems and 'education policy borrowing' (Phillips, 2005).

It is important to note that while it may seem self-evident that setting targets monitored by rigorous testing instruments is necessary to raise standards, the sometimes perverse effects of policy (i.e. distortions of, and reductions in, the curriculum; the creation of poor learning environments; and teaching to the test at the expense of proper learning) need to be considered prior to adopting and adapting policies, programmes and practices from elsewhere. Gillborn and Youdell (2000) have demonstrated the way in which schools in England screen students from enrolment based on projections about their examination performance in GCSE at the age of sixteen. They refer to this as ‘educational triage’. This is an outcome of the intense scrutiny placed on schools’ rankings on national performance league tables or of fear of the Office for Standards in Education, Children's Services and Skills (OfSTED) inspection failure. Diversionary student tracks are being created through the growth in the number of student referral units (PRU), referrals to special educational needs (SEN) categories or alternative schooling. We suggest that these, now institutionalized, practices distort the data on school performance and may discourage the building of authentic assessment environments (cf. Newman, 1996; Darling-Hammond, 1997; 2008; Stobart, 2008; and Slee, 2010). In addition they may distort curriculum priorities.

Reform is about capacity building across a system. It is not a matter of importing and grafting an approach from elsewhere and restructuring the organisation; professional learning is at the heart of the reform. In the state of Queensland in Australia the *New Basics Research* is an example of a carefully managed system reform through the engagement of schools in a shared vision of improving the quality of students’ educational experiences, through a strong focus on what is being taught (curriculum), how it is taught (pedagogy), how we know whether it has been received and understood by students (assessment), and the organizational requirements to support teacher capacity building (school improvement, monitoring and evaluation). Investment was directed to professional development in *New Basics Trial* schools, to the building of an independent research programme around those schools, to appointing critical friends to the school, and to developing new curriculum materials and rich assessment schedules that included student portfolios (individual and collaborative). Here we have a genuine process of assessment for learning.

As a part of building teachers’ professional learning communities, teacher-researcher collaboration and infrastructure were also developed as a way of sustaining and strengthening research-practice links (Coburn and Stein, 2010; OECD, 2005: 213-221). The *Best Evidence Synthesis* programme implemented in New Zealand in 2002 by Adrienne Alton-Lee (2004; 2008) is an example of the productive relationship between researchers, teachers and education policy-makers. Other examples include the work established by Allan Luke and Peter Freebody at the National Institute of Education which supports research into pedagogy and practice across the Singapore Ministry of Education (Singapore Teachers’ Union, 2003)

and the *New Basics School Reform Research* programme in the Australian state of Queensland (Ainley, 2003). The *Best Evidence Synthesis* programme provides a systematic approach to linking the evidence of diverse learner outcomes, including relevant variables related to policy approaches and student and school demographic circumstances, to policy and teaching practices.

In New Zealand, optimizing teachers' effectiveness and developing pedagogy have been associated with highly developed data literacy, a culture of inquiry and a focus on classrooms that improved (Hattie, 2003; Alton-Lee, 2004; 2008). It is important to acknowledge Hargreaves' (2010: 92) critique of teacher collaboration in education reform, that such initiatives have not always been connected to learning and achievement. The emphasis of teacher driven change and mandated collaboration in past reforms has sometimes reduced collaboration to rituals of 'contrived collegiality' (*ibid.*), instead of genuine teacher inquiry. Teachers' efforts have been spent on quantifying outputs because of the increased focus on testing outcomes rather than on the exploration and development of their teaching and learning practices (*ibid.*).

2.3 Systemic Change

The central issue that concerns us is the way education systems are and can be reformed. Change to an education system is always a change to the status quo; to what already exists. Thus in trying to understand how national education systems and their curricula change, we need to understand how those systems and curricula are currently structured. What this means is that the same programme of reform delivered in different countries is likely to have different effects on the different elements of the system and will have different histories within the system. We can categorize reform effect and history in five ways: point of entry into the system and direction of flow (i), sustainability of the integrity of the reform (ii), intensity of the reform or capacity to effect change (iii), malleability of the system or capacity to change (iv), and institutionalization processes (v).

With regard to the first of these, *point of entry and direction of flow* (i), it is possible to identify a number of possible scenarios. There are different points of entry and these may be characterized as: at the top of the system where this is understood either as the progenitor of policy or as the apex of a power structure, however, diffuse it is or becomes; at the bottom of the system so that the point of entry is not at the political, policy-making, bureaucratic or official level but at the level of teacher and classroom; or at a series of entry points with the result that reform processes may or may not be integrated. Broadly three models depicting direction of flow can be identified: a centrally controlled policy process where the direction is uni-directional, and downward oriented; a pluralist model where the direction of flow is still

uni-directional, however, the developmental flow is to all parts of the system and the orientation is pluralist; and a fragmented and multi-directional model where new policy (which represents the reform) is always in a state of flux as policy texts are received and interpreted at different points in the system and the process is understood as fragmented, non-linear, contested and as a place where original intentions are rarely fulfilled in practice. In other words, without consistent flow that is distributed throughout the system, there will always be an element of risk involved that reform will result in unintentional outcomes.

The second of these elements is the *sustainability of the integrity of the reform over time* (ii). What we mean by this is the capacity of the reform to retain its original shape, form and content as it is disseminated through the system. A curriculum reform is embedded in what already exists. Most obviously the reform itself as it was originally conceived (in its pure and ideal state) undergoes processes of amendment, modification, correction and revision, and it does this at different points in the process. These different points we might want to describe as: exploration and development, recontextualization, implementation, re-implementation, and institutionalization. When we refer to the integrity of a reform, we should not understand this in any ideal or absolute sense. A reform or an intervention in a system is always an amalgam of different ideas and prescriptions, which is never completely coherent. What we can suggest, however, is that in the long process of formulation of the reform to application or implementation, to institutionalization, the original integrity of the reform is either strongly or weakly maintained.

The third feature is the *intensity of the reform (or intervention) or its capacity to effect change* (iii). This refers to the structure of the reform or the way it is constituted. Some reforms are focused on relations within the system, which are likely to have a minimal impact on the system as a whole; others aim to influence the whole workings of the system. Examples of the former include labour market reforms, which though they usually come within a package of other reforms, are designed to impact on one part of the system and not the whole. On the other hand, reforms, which focus on the curriculum and the way it is delivered, as in the 1988 Education Reform Act in the United Kingdom, which changed the whole tenor and orientation of education in that country, can be thought of as whole system reforms or interventions. Furthermore, some of these reforms are crafted so that, even given the state of the system into which they are being introduced, they have a more fundamental impact than other reforms. This in turn points to the degree of resilience of the system or capacity to resist a reform. And, indeed, any educational system has a limited capacity to resist being reformed, not least because those elements, which allow it to resist may be the objective of the reform; systems thus have a greater or lesser capacity to resist reforms. Equally, a reform itself has a greater or lesser capacity to impact and change the structures and environments into which it is being introduced, and in part this refers to how it is going

to be introduced, but also to the structures and constitution of the reform package itself. Its penetrative power (though this may not be realized) or capacity to effect change is different with different reforms. We might want to call this the intensity of the reform or intervention, and clearly its obverse is the resilience of the current arrangements within the system. This is the *malleability of that system* (iv).

Then there are institutionalizing (v) elements in the system. The first of these refers to the longevity and sustainability of: resource arrangements, allocations of particular people to positions of responsibility, particular roles and arrangements of power and authority, the capacity of key people in the system, new policy discourses, new policies and new priorities. And the second element is the capacity of a system to adapt to changes. An example of an institutionalized mechanism is a formal curriculum review at a set point in time, though most educational processes of review, development and implementation around the world are conducted on an ad hoc basis; when, where and how are decided by political imperatives. What we have been identifying here are internal relations in a change process.

Chapter Three: Case Studies

We now examine the histories and practices of educational reforms in our sample of countries and jurisdictions. It should be noted that these profiles vary in length and focus on different elements of the reform process. The countries/jurisdictions were chosen for this reason.

3.1 Finland

In Finland, central government provides limited guidance to teachers on school curriculum, for example, through the *National Curriculum Framework for Basic Education*. However, curriculum planning is the responsibility of schools and municipalities. Accordingly, teachers develop deeper curriculum knowledge and planning expertise during their pre-service training. Along with their role in curriculum development, assessing students is also left to the judgement of teachers instead of using standardized testing. This also contributes to teachers' in-service training to focus on 'systematic, theoretically grounded school wide improved efforts' (Sahlberg, 2011: 18), as opposed to narrow and fragmented drilling of students to raise test scores. There are three principal reasons why Finland does not employ standardised testing. The first of these is that the system gives 'a high priority in personalised learning and creativity as an important part of how schools operate' (*ibid.*), therefore, students' progress is assessed in terms of individual development. The second of these is that education authorities 'insist that curriculum, teaching, and learning, rather than testing, should drive teachers' practice in schools' (*ibid.*). And the third of these is that 'determining students' academic performance and social development are seen as a responsibility of the school, not the external assessors' (*ibid.*). These perspectives explain the absence of assessment for school accountability purposes in Finland (OECD, 2010a).

The core principles of the Finnish system include the following: a common curriculum throughout the entire system; extensive and effective teacher education through research-based Master's degree programmes; teachers and schools making decisions about what and how to teach autonomously, with little interference by the central education authority; no external standardized tests used to rank students or schools; providing resources for those who need them most, including health and dental care, special education services, and transportation to schools; and high standards and supports for special needs students.

The achievement of Finland in its economic reform and educational development has drawn much attention from policymakers and researchers worldwide, but their success is underpinned by particular contextual features: a strong sense of professional independence, sprung from the historical legacy fed by a Lutheran religious ethic of hard work and devotion to duty, a strong welfare state, and a homogeneous culture. These particular national

characteristics enabled their investment in a well-supported educational system, allowing the capacity building of stakeholders at all levels to exercise their creativity while developing ownership and professional responsibility, rather than trying to meet the accountability demands created and managed by the central government (cf. Hargreaves, 2010).

As a result, education reform processes are framed in a particular way. Though some curriculum reform in Finland is top-down (see *the National Curriculum Framework for Basic Education* above), changes to teaching and learning practices are initiated at the municipality and school levels, and are driven by well-trained teachers operating within schools and clusters of schools. Some attempts have been made to develop top-down, centrally-controlled reform processes, but the relative success of Finland in international systems of testing such as PISA have left those seeking changes to the way the system is and can be reformed in a weak position. In addition, this devolution of responsibility for the curriculum (this is understood in its widest sense, so that it includes pedagogy and evaluation/assessment) and decision-making about the curriculum to schools and teachers has resulted in weakly framed networked approaches to curriculum integration (see 4.4) and a prioritisation of formative rather than summative forms of assessment in the system (see 4.9).

3.2 Massachusetts

The Department of Education coordinates its state-wide student assessment programme so that it fits with the curriculum framework. Standards are monitored through the Massachusetts Comprehensive Assessment System (MCAS), developed and administered by the Student Assessment Services (SAS). MCAS was developed to meet the requirements of the Education Reform Act 1993. The law dictates that the testing programme must: test all public school students, including those with disabilities and English Language Learner students; measure performance based on the Massachusetts Curriculum Framework and learning standards; and report on the performance of individual students, schools and districts.

No qualifications are awarded upon completion of the compulsory phase of education at the end of Grade 10 (Age 16), but to receive the High School Graduation Diploma students must have successfully completed the MCAS Grade 10 tests in English and Mathematics (and, since 2010, Science and Technology). These tests are referred to as ‘competency determination’, and are taken to indicate whether students have mastered the necessary core skills, competencies and knowledge in these subject areas. There are plans to expand the MCAS Grade 10 tests to include History and Social Science, depending on funding.

In addition to being a condition for high school graduation, the MCAS acts as a mechanism for ensuring standards and accountability. Schools and districts are ranked on a five-level scale, with '1' being the highest performing level, and '5' being the lowest. The 2010 Act *Relative to the Achievement Gap* provides 'tools, rules and supports' to allow the state to engage 'aggressively' with schools and states that fall into categories 4 and 5. The stated aim is to provide appropriate tools for diagnosing problems and identifying appropriate interventions.

Districts and schools that perform well are held up as exemplars and used as sites to harvest 'best practices', which are then displayed on the Ministry of Education website. District and School Assistance Centres (DSAC) have been established (six at the time of writing) to help schools and districts make use of professional development materials and 'best practices', and to thereby allow them to 'engage in a continuous cycle of improvement'. The DSAC staff is also partnered with an external evaluator to assess the quality and impact of their 'assistance services' (another 'continuous cycle of review').

The curriculum review process in Massachusetts is largely democratic and open to debate. Rather than being instigated by political shifts in power, the curriculum frameworks are all treated as works in progress and are therefore subject to a continual process of review and refinement. This continuous process of review is primarily motivated by a concern to ensure that the framework is 'current'. There is not a rigid schedule for the review of curriculum frameworks, and the time taken varies considerably from subject to subject. The review process involves a broad array of stakeholders from across the state, including, teachers, administrators, associations, parents, the public, businesses, higher education faculties, and students. When a framework has been reviewed, a first draft is generally published for public feedback. This will be followed by further consultation, drafts and feedback. The process can involve many revisions, but is again, highly variable.

The English and Mathematics curricula were recently reviewed after the decision was taken to become a part of the Common Core Standards (CCS), a nationwide initiative intended to raise standards in Mathematics and Literacy and to ensure that American students receive a 'world class education'. The amended curricula for Literacy and Mathematics were published with implementation guides for the 2012/13 school year. States participating in the CCS are encouraged to benchmark performance with one another and to share experiences and best practices. It may therefore feature as an impetus for future review, and as a source of research evidence. However, despite this attempt at engendering a professional ethic, this reform has resulted in a curriculum which is strongly framed (i.e. there are clear and strong boundaries between the subjects, see 4.4), has adopted progression modes which prioritise extension, rather than intensification and complexity (see 4.5), and is dominated by an emphasis on

summative forms of assessment (see 4.9). Its reform processes, though initiated at state-level in keeping with the federal system of government in the United States of America, are centrally-directed, the direction of flow of the reform is uni-directional and downward-orientated (see 4.2), and they derive their power from strongly framed accountability systems to the central authority.

3.3 Scotland

The majority of schools in Scotland are state-maintained but there are a small number of independent fee-paying schools, attended by 4-5% of the population. Independent schools are afforded charitable status but they do not receive support from the state. Political responsibility for all levels of education rests with the Scottish Parliament and the Scottish Government's Education and Lifelong Learning Department. State schools are the responsibility of local authorities (LAs), while independent schools are generally represented by the Scottish Council of Independent Schools.

The curriculum has recently undergone a comprehensive process of review, resulting in the introduction of the *Curriculum for Excellence* (CfE). The new curriculum has been described by the Scottish Executive as the most significant reform in Scottish education for a generation. Previously, the curriculum was structured according to three distinct stages: early years, covering ages 3-5; primary and S1-S2, known as the 5-14 framework; and the senior phase, covering S3 onwards. The CfE is the first attempt in Scotland to develop a continuous and coherent programme of learning for students from 3-18 (Scottish Executive, 2004). Progression in the CfE is determined by a series of levels, encompassing five stages of learning. The first four levels are described as 'experiences and outcomes', with progression to qualifications occurring once the student has entered the fifth and final 'senior phase' of the CfE. The eight curriculum areas in CfE are: Expressive Arts, Health and Wellbeing, Languages, Mathematics, Religious and Moral Education, Sciences, Social Studies and Technologies.

Like most other mass systems of education, Scotland does not have an established curriculum review cycle. Two reports, *Improving Scottish Education* (HMI, 2009), and *Quality and Equity of Schooling in Scotland* (OECD, 2007), are cited in the *Case for Change for the CfE* (Scottish Government, 2008). Yet by the time these reports were published the review process was already well underway. By the mid-1990s there was widespread feeling that the current curriculum arrangements were not working. Although delivery of the English and Mathematics curricula was generally felt to be adequate, other areas were found to have been implemented less well. Consultations and debates began promptly after the Scottish Parliament was convened in 1999.

The 1999 *Review and Consultation of Pre-School and 5-14 Education* concluded that current testing arrangements had become fragmented and were not ‘working well’ for students. Hutchinson and Hayward (2007) noted that the main problems identified were: the separation between curriculum and assessment, with assessment being treated as a ‘bolt-on’ task; the approach to staff development, with key materials intended to improve professionalism and assessment made available only on request, and largely not taken up; and the wider context of accountability, target-setting and mistrust of the teaching profession, which led to assessment being prioritised over professionalism.

The 1999 review was followed by a consultation in December 2000, involving a broad range of stakeholders and communities (Hutchinson and Hayward, 2007). It identified three main areas for change: formative assessment as a part of everyday activities, reconciling the relationship between assessment for learning and assessment for accountability, and managing evidence to keep the emphasis on learning rather than bureaucracy. A subsequent Parliamentary Debate, *Effective Assessment in Scotland’s Schools* (Scottish Parliamentary Debate, 2001: 46), concluded that Scotland needed ‘a coherent and effective system of assessment focused on progress and learning’. The Assessment Action Group (AAG) was established to help inform the development of the *Assessment is for Learning* (AifL) programme, the main purpose of which was to support learning. AifL drew on a range of research (for example, Black and Wiliam, 2003; Fullan, 2005; 2006; and Black *et al.*, 2004) that ‘emphasised a set of shared principles across participating communities, collaborative projects that created real context for deeper understanding and development structures and support for the collaborative communities’ (Hayward, 2007: 32). Teachers were expected to be involved in continuous professional development, and the major issue was taken to be the alignment of the curriculum with pedagogy and assessment.

A further national debate in 2002, on *Education and Young People*, invited responses from a broad range of stakeholders, and the Scottish Executive’s response, *Educating for Excellence* (2004), expressed the intent to review the national curriculum, 3-18. A curriculum review group was duly established, and tasked with identifying the purposes of education 3-18 and the principles for curriculum design. They were asked to consider: views expressed in the National Debate, international comparisons, and current research, as well as global factors which might affect the aims and purposes of education in the coming decades (for example, changes in the job market).

In November 2004, the Curriculum Review Group published *A Curriculum for Excellence*, which claimed to ‘establish clear values, purposes and principles for education from 3 to 18 in Scotland’ (CfE., 2004: 3). It further stated that, ‘the starting point... [for curriculum development] is the set of values which should underpin policies, practice and the curriculum

itself' (*ibid.*: 10). They determined that the curriculum would provide a basis and ends, but not dictate means. Further, the development of the curriculum would be underpinned by a concern for process, and not content, with implications for assessment practices. The group established principles for curriculum design, namely: challenges and enjoyment; breadth, progression, and depth; personalization and choice; coherence; and relevance.

In their rationale for reform, the Curriculum Review Group had noted 'global social, political and economic changes, and the particular challenges facing Scotland: the need to increase the economic performance of the nation; reflect its growing diversity; improve health; and reduce poverty' (CfE, 2004: 10). They further anticipated 'more changes in the patterns and demands of employment, and the likelihood of new and quite different jobs during an individual's working life.' (Scottish Executive, 2004: 10). This was met with a resolution to move towards a 'continuous cycle of review' (Scottish Executive, 2004: 7). As the ministers' official response stated: 'this is not a once-and-for-all task but a continuing process... there will be a continuing cycle of evaluation, refreshment and renewal, taking account of developments in technologies for learning and in our knowledge and understanding' (*ibid.*: 10). Despite this, there does not yet seem to be any progress on a standardised curriculum review cycle.

The CfE attempted to 'move away from central prescription of curriculum, towards a model that relies upon professional capacity to adapt curriculum guidance to meet the needs of the local school communities' (Priestly and Humes, 2010: 345). This, accompanied with the proposed reduction in summative assessment during the early phase and levels 1-4, indicated a shift away from rigid accountability and towards a culture of self-evaluation in schools and their local authorities.

Priestly and Humes (2010) assert that the CfE follows a trend that has emerged since 2000, one which recognises that sustained and meaningful improvement should, to a significant extent, be shaped and owned by those who will put it into practice. A similar resolution was outlined in the review of subject content. Groups were formed in each of the eight subject areas (see above) at an early stage. Members of the groups reflected a wide range of professional experience, including teachers and staff from education authorities, curriculum bodies and teacher education institutions, with support from the inspection service. The first step was to carry out an initial review of existing curriculum guidance against the values, purposes and principles of the curriculum. They provided initial advice on updating, prioritizing and simplifying outcomes, and reducing over-crowding. Examples of possible outcomes and experiences were developed and tested against the principles of curriculum design (Scottish Executive, 2006: 26). Members of the curriculum development teams were expected to draw on the expertise and advice of staff across all educational settings: early

years, schools, universities, and colleges. To do this, they organized meetings, events, seminars and focus groups. They maintained contact with subject networks and other specialist forums, collating ideas and case studies of good practice. Learning and Teaching Scotland (LTS) published the proposed experiences and outcomes to allow practitioners and broader stakeholders to comment. This was followed by extensive engagement during the process of refinement leading up to publication.

The Scottish Executive has acknowledged that the impact of the curriculum reforms will rest largely on approaches to teaching. Teachers have been encouraged to employ a broader range of approaches, utilizing different learning styles and collaborating more with their colleagues. The curriculum review has therefore been accompanied by a programme of professional engagement and professional development. Further, the Educational Institute of Scotland (EIS) has stressed that teachers need to be given sufficient time during their working week to meet and discuss issues that have arisen from the review, and for local authorities to ensure that teachers they employ can undertake the necessary programmes for professional development (EIS, 2006). These initiatives reflect concerns for both the reforms' capacity to effect change and their sustainability.

Timeline of the Process of Review (CfE)¹

2002 – National Debate on Education - A consultation to determine what was working well and what needed to change in school education. Teachers and educationists decided that there was a need to offer more engaging and relevant experiences to ensure that Scotland's children and young people were equipped for life and work in a globalized society.

2003 - Curriculum Review Group established - The Curriculum Review Group was established by Scottish Executive Ministers to identify the key principles to be applied in the curriculum redesign for ages 3-18. It looked at evidence of 'best practice', research evidence, international comparisons and global, local, economic and social changes.

2004 - A Curriculum for Excellence - A Curriculum for Excellence was published in November 2004 as a result of the work of the Curriculum Review Group, together with the Ministerial response. This provided explicit aims for education in Scotland and principles for curriculum redesign. The Curriculum Review Programme Board was established.

2005 - Research and Review Process - Research was commissioned and practitioners, drawn from different sectors of education and from around the country, were seconded to *Learning and Teaching Scotland* (LTS) to review existing guidelines and research findings,

¹ Adapted from www.educationscotland.gov.uk/

hold focus groups with practitioners and begin the process of developing simpler, prioritized, curriculum guidelines.

2006 - Progress and Proposals published and Building the Curriculum series begun -

The Progress and Proposals document set out key features of the new curriculum. The Building the Curriculum publications (numbered 1-5 and published over the coming years) provide guidance on how different aspects of the curriculum would contribute to the aims of Curriculum for Excellence.

2007-2008 - Draft experiences and outcomes published - The draft experiences and outcomes were published in stages. Teachers and all those with an interest in children and young people's learning were encouraged to reflect on the draft experiences and outcomes and feed their comments back through an extensive engagement process. Findings were also fed back from trialling activities and from focus groups.

2008 – Analysis of feedback and responses - Feedback was analysed by the University of Glasgow and actions were identified to respond to the issues raised. There was then a process of refinement, further development, consultation and quality assurance.

2009 - Publication of the new curriculum guidelines - Following further quality assurance processes, the new curriculum guidelines were published for implementation.

2009-2011 - Planning and implementation - Schools planned throughout 2009-10 for implementation of the new curriculum in 2010-11. Education Scotland continues to support the profession, local authorities, schools and teachers in developing Curriculum for Excellence.

2013-2014 - New National Qualifications - Students will sit the new National Qualifications for the first time in place of the old Standard Grades and Access Courses. The Higher and Higher Still qualifications (S5-S6) are still under review.

Scotland's reform process is intended to be cyclical; however, as yet there is no regular curriculum review cycle (see 4.1). This means that curriculum reviews, when they happen, are ad hoc, unplanned, dependent on the political cycle and a response to a particular problem by government. The formal process that did happen involved information collection, analysis of the current curriculum, a genuine engagement with expert advice, recommendations for change, *and* implementation and institutionalisation phases. Furthermore, implementation of the reform had a multi-directional orientation.

3.4 Ontario

Ontario is the largest province in Canada, with a population of approximately thirteen million. The province educates around two million students (around 40% of Canada's total student population) and has one of the country's most diverse student populations. Ontario's students are among the highest performers in international student assessment surveys (such as the OECD's PISA). They also demonstrate high levels of equity in outcomes. As recently as 2002, Ontario's students had been performing relatively poorly in such comparative assessments, leading to the perception that the education system was 'stagnating'. The dramatic improvement in student outcomes has generated global interest in their reform initiatives.

There is no education ministry at the federal level in Canada. Each province and territory is empowered to determine the direction of education policy. They are, however, encouraged to cooperate and to use one another as benchmarks when formulating major policy initiatives (e.g. funding, curricula, and student assessment). This collaboration is aided by the Council of Ministers of Education Canada (CEMC), which is composed of the heads of the ministries of education in each province. Perhaps as a result of this close collaboration, studies have demonstrated great similarity across the provinces and territories in key policy areas.

Though the education system in Ontario has undergone a high number of policy changes since the early 1990s, the main catalyst for these improvements is most often associated with the liberal government's ascension to power in 2003. In 1995, the new conservative government had begun an aggressive programme of reform, part of an agenda that became known as the 'common sense revolution'. Reforms included a new, more standardized, curriculum; the reduction of high school from five to four years; the reintroduction of tracking students in Grade 9; higher graduation requirements; the reduction of high school streams from three to two streams; standardized report cards; and a literacy test requirement for high school graduation (Anderson and Ben Jaafar, 2006). Several of these initiatives still stand.

The focus of the reforms to the curriculum was to drive up numeracy and literacy, with the resulting product termed the 'back to basics' curriculum. Critically, however, the government focused improvement heavily on centralized testing and punitive teacher accountability. Aside from failing to generate the desired improvements in student outcomes, the policies alienated teachers and their unions, creating a combative environment marked by distrust.

The 2003 Liberal government brought with it a resolution to develop 'positive partnerships between educators and policy makers' (Levin *et al.*, 2008). Transforming a combative environment into one of collaboration was itself an important policy goal. Although the

Liberals also insisted on high academic standards, they engaged a broad range of stakeholders, including teachers, in a joint effort to improve the capacity to meet targets. The Liberal government further adopted an approach to school improvement, which views schools as ‘ecologies’ (Levin *et al.*, 2008), working on each of its distinct but interrelated aspects (for example, improving leadership, teacher professionalism, parent involvement, policy initiatives, including curriculum reform, and enhancing resources) simultaneously to effect change. The new government felt that there were too many ‘top’ priorities, electing to focus their efforts primarily on improving literacy and numeracy rates (and closing the achievement gap), and improving high school graduation rates. Although they emphasized the importance of other aspects, these aims were considered non-negotiable, and also fundamental to the achievement of other targets. Among other things, a review of the curriculum was considered necessary to support these priorities.

In 1996, the *Education Quality and Accountability Act* was passed, in response to the recommendations of the 1994 Royal Commission on Learning. This led to the formation of the Education Quality and Accountability Office (EQAO), which would conduct province-wide testing to ensure independent and public scrutiny of Ontario’s education system. Prior to the implementation of its programme of assessment, the EQAO consulted widely on elements of design and also the purposes of assessment. The process drew on feedback sessions with a range of stakeholder groups, including educators in Ontario and the public. It also drew extensively on commissioned research into similarly large-scale assessment programmes from around the world and in North America.

One of the key requirements was that the assessments were clearly connected to the Ontario Curriculum expectations for students at key points in their education. The key principles of the assessments were as follows: they should be curriculum-based; educators should be involved in all areas of assessments (e.g. administration, development, and scoring), so as to guarantee that they would be practical and relevant, and also to build the professional capacity of educators; and all students would be expected to participate. Results would therefore be available at the provincial, school board, school and individual student levels; student achievement data should be comparable year on year, to enable the tracking of performance; and there should be constant communication and collaboration with all stakeholders.

The EQAO’s annual assessments are administered to students at four ‘key stages’ throughout their education (grades 3, 6, 9, and 10), as follows: in grade 3 (age 9), Reading, Writing and Mathematics are tested upon completion of the ‘primary division’; in grade 6 (age 12) Reading, Writing and Mathematics are tested upon completion of the ‘junior division’; in

grade 9 (age 15), Mathematics is tested in the first year of secondary school; and in grade 10 (age 16), students sit the Ontario Secondary School Literacy Test, a graduation requirement.

The EQAO publishes the profiles of high-performing schools alongside the policies that are perceived to have led to the schools' success. The scores are not used punitively, but rather to establish transparency. Teachers' pay is no longer performance related and schools are encouraged to invest more in the professional development of any teacher who is perceived to be struggling, rather than hire a replacement. To ensure that its 'strategic priorities' are being met, the EQAO is itself committed to a continuous review of its initiatives, resources and tasks. The first of these was conducted in 2002, five years after the organization had administered its first assessment. The review processes have drawn on: studies of 'best practices' (both procedures and processes) of testing organizations worldwide, conducted by EQAO staff, external reviews, conducted by a team from the Ontario Institute for Studies in Education, and consultation with stakeholders.

In 2003, the Ontario Ministry of Education established a seven-year cycle of review for each individual subject. Under this system, each year a number of subjects are entered into the review process. The stated purpose for establishing a standardized review cycle was to ensure that curriculum materials remain up-to-date, relevant and age-appropriate. Other rationales given are the perceived need to 'thin down' or 'rebalance' the curriculum to combat overload, and the need for the curriculum to be 'modernized'. In 2007 the Curriculum Council was established to advise the Ministry of Education. The group is composed of community leaders and education experts. They review a broad range of issues at the request of the ministry, providing strategic advice, and are generally supported in their work by experts in the given area.

In addition to these subject-based reviews, entire stages or phases of the curriculum may be reviewed at any time. For example, in 2008, the Curriculum Council began to review the curriculum for the entire elementary phase of the curriculum (grades 1 to 8, ages 1 to 14). The main impetus for the review was the perceived need to reduce 'overcrowding', thereby thinning content and allowing students to achieve deeper learning. The Working Group on the Elementary Curriculum was established in 2009 to assist the Curriculum Council in the process, examining the curriculum, consulting with the public and reviewing information before providing recommendations.

Ordinarily, working groups consider a wide range of sources, including: studying research in the subject area; comparisons with other jurisdictions; focus groups comprised of educators from all Ontario school boards; technical content analysis conducted by subject experts; consultations with stakeholders, including the Minister's Advisory Council on Special

Education, faculties of education, employers, parents, students, universities, colleges, other branches of the Ministry of Education, other ministries, and NGOs (Non-Governmental Organizations).

Recommendations from these sources are then passed through a further series of stages, including: feedback consultation on the draft curriculum from educators and stakeholders; overall fact-check for accuracy and subject integrity; and expert checks to ensure alignment with government policies and frameworks, such as environmental education, First Nation, Métis and Inuit Policy Framework and equity and inclusive education strategies; publishing processes, including editing; and approvals processes.

Some of the changes that have been implemented as a result of this cyclical review since 2003 are as follows: a reduction in content in each subject; the addition of examples and other aids to assist teachers' preparation and planning; more information for teachers supporting English language learners; embedding expectations to enhance students' language and numeracy across all subjects; and the alignment of curriculum aims with new policy initiatives, for example, in the area of environmental education. This is the one example we found of a regular review cycle (see 4.1).

3.5 The Netherlands

The current system of organizing education in the Netherlands dates from 1969. Provision is divided between the maintained and independent sectors, although as a matter of principle enshrined in the constitution since 1917, virtually all education is funded by the State's *Ministerie van Onderwijs, Cultuur en Wetenschap* (Ministry of Education, Culture and Science) if the necessary criteria are met. It is considered important for public and private schools to be run on an even footing. Out of the total number of students ~~pupils~~, one third attend local authority run schools chosen by their parents, and two thirds attend independent schools chosen by their parents on religious or pedagogical grounds, for example Catholic, Protestant, Jewish, Montessori, Jenaplan, Dalton, Freinet and Steiner schools, and partially financed by government grants. Although schooling itself is usually free, voluntary parental contributions for certain activities are required, a practice known as *ouderbijdrage*. The costs of text books, exercise books and other materials are also met by the parents. In addition to pupils being divided on the basis of attendance at local authority and independent schools, older pupils are also divided into different ability groups as well as academic/vocational paths. However, regardless of type, all schools come under the remit of the official Government inspection body, known as the *Onderwijsinspectie*. The Netherlands is seen as having a high performing education system and is ranked 11th out of 66 in the most recent PISA tests in 2009, 9th out of 36 for Mathematics in the 2007 TIMSS test, 17th out of 36 in

the 2007 TIMSS test, and 12th out of 45 in the 2006 Progress in International Reading Literacy Study (PIRLS) test. These results appear to have been fairly stable over the last decade.

Since the Compulsory Schooling Act of 1969, schooling in the Netherlands is required between the ages of 5-16, and is known as *leerplicht*. Prior to that, children are able to attend kindergarten (VVE) if their parents wish, with means tested parental contributions. This can be a playgroup, pre-school or day nursery. Children then move to a *basisschool* (BAO) at the age of four or five. From the age of 16, young people are required to attend school for a minimum of one day a week until the age of 18, and they are required to achieve at a minimum a basic qualification equivalent to the *Voorbereidend Middelbaar Beroepsonderwijs* (VMBO), the *Hoger Algemeen Voortgezet Onderwijs* (HAVO) or the *Voorbereidend Wetenschappelijk Onderwijs* (VWO).

At the age of around 12, children are divided into different streams for their secondary education, based on their results in aptitude tests, such as the *Cito Eindtoets Basisonderwijs* (CITO test) and the recommendation of their class teacher. Transfer is possible between programmes at the age of 16, although there have been criticisms that the system is not sufficiently flexible in this regard. At the end of primary school, 85% of pupils sit the Cito, or ‘school leavers’ test in primary education’. The results of this multiple choice test are also aggregated to provide data about school standards. At the end of secondary education students take final examinations in their profile subjects, as and when it is appropriate. The final examination has two parts: a school based examination, and a nationally administered one. Schools have considerable autonomy in determining the structure and scope of the school based examination. However, sometimes the results of this assessment process are weighted less heavily than those of the national examination. For school inspection purposes, the output indicator of a school is considered to be its average result in the national examinations, and this metric is also used as a means of checking the validity of school based examinations (Beguin and Ehren, 2010).

As in other Western countries, recent curricular and structural reform in the Netherlands has been heavily influenced by the agenda of the political parties in power at any given time. For example, many initiatives were introduced in the 1970s by the social democratic government, in its ‘constructive educational policy’ centralized programme. These included: curriculum reform, experimental comprehensive schooling and the integration of nursery and primary schools. However, in hindsight, the impact and effectiveness of such initiatives remains unclear, as the objectives and lines of responsibility for implementation were not always sufficiently transparent, making retrospective evaluation difficult (Scheerens, Ehren, Slegers and de Leeuw, 2012). Similarly during the 1980s and 1990s, there were further centralized

changes to the structure of secondary schooling. Yet, just as with earlier changes, it is not clear whether any of these structural reforms had any impact on student pupil-performance or labour market outcomes (Berkhout, Berkhout and Webbink, 2011). However, this should be considered in the context of the Netherlands' long term status internationally as a high performer in a number of performance tables such as PISA, PIRLS and TIMSS.

At the same time as the top-down structural reforms of the late 1990s, there were also upward-orientated, school-based, reforms, based on developing teacher capability and introducing more independent study skills amongst-students, as well as personalization in learning (Veugelers, 2003). Teacher flexibility has been an important part of these reforms, with lesson times, tasks and content determined and monitored at school level rather than centrally, although there are national reference standards (minimum standards with basic and advanced levels aimed at different types of student) for Mathematics and Literacy. In addition, since the reforms of the 1970s, there has been an increased emphasis on independent study skills, with opportunities for self-directed learning known as 'study house' (*het Studiehuis* – introduced in 1998), ideally complemented by personal coaching and mentoring. The aim of such initiatives has been to raise standards while preparing pupils better for engagement with further and higher education, which itself divides into academic, professional, and vocational institutions and routes (WO, HBO and MBO). However the policy has been criticized on the grounds that evidence for the use of study house is somewhat limited, and its implementation is restricted in some cases as a result of the large numbers of subjects students are required to study at secondary school (Veugelers, 2003). Indeed the apparent conflicting imperatives of study house and a highly structured set of subject profiles offers a useful example of the tension between centrally driven policy and the day to day reality of schooling, which is certainly one that is not confined to the Netherlands, and would seem familiar to teachers in England, as well.

Though the reforms of the late 1990s were influential and encountered little resistance from practitioners, as we have suggested, there have been some attempts at upward-orientated reforms since then. These have been less effective and have generally been overshadowed and marginalised by reforms which operate within a centrally controlled, uni-directional and downward-oriented model (see 4.2). This in part was because the penetrative power of these top-down reforms was greater than the penetrative power of these upward-orientated reforms. The curriculum model that emerged from these reforms was subject-orientated (see 4.8), traditional or fragmented in relation to integration processes (see 4.4), assumed progression modes which emphasised extension (see 4.5), and prioritised summative assessment processes (see 4.9).

3.6 Mexico

In the wake of the Mexican Revolution (1910-1920), significant efforts have been made to offer public education to all Mexican children, to combat illiteracy and to raise achievement levels. Today, basic education is available to almost all children, although problems of infrastructure and resources persist, particularly in the more remote areas. Mexico has a significant proportion of private primary and secondary schools as well as universities, accessible only to the well-off strata of society. While these institutions are also subject to formal authorisation by the Secretary of Public Education (*Secretaría de la Educación Pública* or SEP), they have more leeway in the implementation of curricula. While basic education is anchored in the constitution, upper secondary and higher education is post-compulsory and still out of reach for many families for economic reasons, even at public institutions.

Under the presidency of Carlos Salinas de Gortari, the National Programme for Educational Modernization (*Programa para la Modernización Educativa*, 1989-1994) was issued. Its main aim was to modernize the education system alongside the economic system so that both could reinforce and strengthen each other. The programme targeted the allegedly out-dated and irrelevant knowledge that was imparted in schools, in particular in the area of information and communication technology. It also criticized the centralized structure of the education system, the reproduction of social inequality through the system and the lack of participation of other key stakeholders, such as parents and communities in decisions related to educational processes. Under this reform, all educational institutions apart from universities had to be accredited and validated by the SEP. The reform initiated by Salinas was strengthened through the *National Agreement to Modernize the Basic Education System* (*Acuerdo Nacional sobre la Reforma de la Educación Básica*) signed in 1992 by the governors of the 31 states of the Mexican Republic and the *National Union of Education Workers* (*Sindicato Nacional de Trabajadores de la Educación* or SNTE) who had so far strongly opposed any reform in this direction. This agreement initiated and fostered, above all, a decentralisation process and thus encouraged federal states to find innovative solutions to regional needs and challenges.

The Educational Development Programme (*Programa de Desarrollo Educativo*, 1995-2000) by the subsequent government under President Ernesto Zedillo followed a similar direction by promoting the liberalization and devolution of the basic education system in order to enhance the quality of schools and equity in terms of access to and opportunity through education, the creation of national standards, the modernization and decentralization of the education system, the strengthening of national values, as well as an increase of the participation of society in educational matters.

In 2001 the National Education Programme (*Programa Nacional de Educación 2001-2006: Por una educación de buena calidad para todos. Un enfoque educativo para el siglo XXI*) of President Vicente Quesada Fox was published. The challenges were still very similar to the ones previous governments had faced, i.e. to improve the level of educational quality and access; to offer more teacher education and continuous professional development; to level out the effects of socio-economic inequality; to transfer power away from the center and into the regions in a coordinated way; and to increase the participation of parents and communities in educational decisions.

Throughout several consecutive governments there has been a consensus of the positive effects of decentralization; an opinion that is widely shared internationally. In the case of Mexico there is nevertheless criticism of the system still being overly centralized in terms of content control, statutory norms and hierarchical decision-taking that often results in inflexible and overly bureaucratic procedures (Ornelas, 2004: 403). Thus, education decentralization in Mexico was in part a means to redress serious efficiency problems (Gershberg, 1996); in part it also meant that problems were pushed from the center down to the states. At the same time, the states are not regarded as equal partners in negotiations with the central government.

Mexico adopted the competency approach to its curriculum in 1994 with support from the World Bank through its *Project of the Modernization of Technical Training and Education (Proyecto para la Modernización de la Capacitación de la Educación Técnica)*. In the context of this project, the *National Council for Standardization and Certification of Competency Standards (CONOCER)* was created and curriculum reforms in institutions of technical education initiated. After a trial period through *The National Development Plan (1995-2000)*, the competency approach was adopted also for the generic curriculum, and textbooks were written to support teachers in class.

The Integral Reform of Upper Secondary Education (*Reforma Integral de la Educación Media Superior* or RIEMS) has been developed by the SEP, which is responsible for the nationwide policies, curricular frameworks, evaluation and training in the education sector. Each federal state, however, has to specify the particular curricular contents. Decision-making has thus, in theory, moved closer to the site where actual educational needs can be met in concrete regional contexts. In practice, however, reforms have not been specified in terms of implementation procedures or time scales and therefore currently generate a variety of different forms of interpretations and realizations. Again, the lack of a centralized regulation stands in contrast to the actual objectives of the reform, namely to standardize standardise the structural heterogeneity at this educational level through a common curricular

framework and official validation of coursework and certificates. The new curriculum is meant to integrate previous curricular reforms that have been developed by different sub-systems, such as the reform realized by the technological system in 2004 (currently operating); the curriculum issued by the ‘General Upper Secondary Commission’ (2003/2004); the CONALEP (*Colegio Nacional en Educación Profesional Técnica*) in 2003, designed independently on the basis of a system of competencies in English (another one is currently being designed); the curriculum, based on the Spanish system, by the CCH (*Colegio de Ciencias y Humanidades*) and the ENP (*Escuela Nacional Preparatoria*). The reform is also meant to improve equity and equality, to improve instructional quality, to lower the dropout rate and ensure employability. It is based on four basic principles: universal recognition (validity) of all modalities and sub-systems of Upper Secondary Education; applicability (pertinence) and relevance of curricula; transition between sub-systems and schools; and competence-based curricula.

The curricular framework follows three principles: firstly, it aims to generate the personal and social capacities of young people (general component); secondly, it aims to develop the capacities to continue with higher and further education (propaedeutic component); and thirdly, it aims to generate general capacities for students to allow them to join the labour market (vocational component). On the content level, the RIEMS attempts to overcome the traditional knowledge-based curriculum that emphasised memorization and a top-down pedagogy. The new framework emphasizes applicability of knowledge and a collaborative, practical and project based approach that is designed to lead to increased relevance of the curricular content to the professional and life worlds of students and their communities.

Mexico is a relatively large and very diverse or heterogeneous society where much educational time and space is spent trying to create a nation and where educational planning is a much more complex procedure. This is because it is based upon underlying patron-client relations within a corporatist state where all negotiations are channelled through vertical bonds of loyalty and obligation, the giving and taking of favours. To some extent these practices exist in all bureaucracies, but in the Mexican case these practices predominate and are immune from public scrutiny, even while operating in an apparently modern public administration. As such, the bureaucratic elites in their interactions with each other become remote from their clients and represent their own interests rather than the interests of their clients in the reform process.

Selection, therefore, becomes subordinated to the personalistic interests of the elites and control is exercised through granting or denying access to resources and services that they hold by virtue of their position in the *rentier* state. At the same time the elites are drawn by their relations with international organizations, particularly funders, toward administrative

reform and aligning with internationally recognized systems of selection and control. This trend often comes into conflict with patron-client practices. Moreover, power is not as diffused as it is in Finland or England, but tends to be concentrated in the hands of the decision-making elite. Hence it is personalised, with decision-making becoming more dependent upon individuals because there is no institutional basis for devolved systems of decision-making. This means that there is no easy and straightforward path for reforming the system. Here we have a paradigm example of a country's reform processes where the reform as it was originally conceived loses its shape, structure and contents during the exploration, development, recontextualisation, implementation and institutionalisation phases of delivery (see 4.2).

3.7 Germany

While schooling had been a national affair during the dictatorship (1933-1945), the post-war government (1949) shifted policy decisions and responsibility to a lower level and re-established the authority and independence of federal states in cultural issues and education (*Kulturhoheit der Länder*). The sixteen states are responsible for the design of curricula, the selection and placement of teachers, the development of textbooks, the internal organization and accountability of schools etc. The PISA reports have had a strong impact upon public discussion and educational policies in Germany. One effect of the international comparison is, according to Hopman (2008: 438), the wish for a greater homogenization and centralized control of the system.

One negative effect of decentralization is the differences, between curricula, teaching material, entry requirements and qualifications, students and their families are confronted with when they move from one state to another. On the level of each federal state, however, decisions are tightly controlled by the respective state government. As a consequence, educational policies depend greatly on the political standpoint of the political party or coalition in power. In order to harmonize this system and ensure some coordination and commonality, the Standing Conference of Ministers of Education and Cultural Affairs (*Kultusministerkonferenz* or *KMK*), established very soon after the Federal Republic of Germany was founded, made recommendations in the areas of education, science and cultural affairs, which have to be subsequently ratified and implemented by the *Länder*.

Schools are free (with a small percentage of private institutions) and mandatory to the age of eighteen. While attendance at Kindergarten and pre-school is voluntary, all children enter primary school (*Grundschule*) between ages the ages of 5-7, generally at the age of 6. After four years, normally a teacher conference (*Zeugniskonferenz*) decides on the basis of grades and psychological evaluations, which type of secondary school a child can go to. In some

federal states, however, parents can make their own decision if their child fulfils the basic grade requirements.

The secondary school system is stratified, divided between different strands for ‘high’ and ‘low’ achievers, providing, for example, different schools for ‘academic achievers’ (*Gymnasium*), for more ‘practically oriented’ youth (*Realschule, Hauptschule, Berufsschule*), and for children with ‘special needs’ (*Sonderschule*). Germany has a system of vocational education combining school with on-the-job training, sometimes beginning at the lower-secondary level, but more usually covering those who do not attend a *Gymnasium* or the like for upper-secondary education (cf. Hopmann 2010: 436). After finishing the *Haupt-* or the *Realschule*, which takes between five and six years, students usually enter the labour market by taking up an apprenticeship in a trade, craft or the service sector or go to a full-time vocational school. The ones who start their training in a company also have to attend a part-time vocational school (*Berufsschule*) until they are 18 years old or until they conclude their apprenticeship.

This stratification of children at the age of ten or eleven into different school types, and thereby into ‘manual’ and ‘academic’ workers, unfortunately, also reproduces socio-economic divisions. Children from a lower socio-economic background or from immigrant families tend to go to a *Hauptschule* or sometimes even to a special education school (*Sonderschule*), whereas middle and upper class children from a German family background constitute the majority of the student population in the *Gymnasium*. At the same time though, the system allows movement between the different strands. It is not uncommon for an adolescent to start an apprenticeship or go to a vocational school and begin a university career at a later stage in life, after the completion of an evening or part-time education programme leading to the *Abitur*. Moreover, the system ‘equalizes resources within each type, thus legitimizing differences’ (Baker and LeTendre, 2005: 47). It is guided by the principle that general and vocational training are of equal value and that participants in vocational training should receive support comparable to that given to university students (Federal Ministry of Education and Research, 2003: 33).

After having successfully passed through any of the secondary schools described above, young people have several options at the upper secondary level depending on the school they have attended as well as their grades and talents. They can either continue with the *Gymnasium* (which qualifies them to enter higher education after having successfully passed the *Abitur*), acquire a vocational qualification at a full-time vocational school (*Berufsfachschulen, Fachoberschulen, Berufsoberschulen, Berufskolleg, Berufsschulzentrum* etc.), or take up an apprenticeship in a company. The attractiveness and enormous importance

of the latter two options is demonstrated by the fact that about 60% of each age cohort complete a training programme by the age of 25 (Reuling and Hanf, 2003: 12).

The German vocational education and training (VET) system is, as a matter of fact, marked by a complex coordination of social actors who share a common responsibility. This governmental, institutional and private cooperation has evolved historically and been restructured and modified over several centuries. While the Chambers and the Federal government are responsible for the professional regulation and validation of qualifications and in-company training in accordance with the *Vocational Training Act*, the sixteen federal states (*Länder*) are, as in the general education system, responsible for the *Berufsschule* (vocational schools). They nevertheless cooperate closely with the Federal Government through the Federal Ministry of Education and Research (BMBF) in order to coordinate their decisions. This means, as the OECD report by Reuling and Hanf (2003) outlines, that the national qualifications system and its continuous development is based on negotiations and agreements between the individual federal states, the Federal Government and social partners, such as the Chambers, the Federal Institute for Vocational Training (*Bundesinstitut für Berufliche Bildung* (BIBB)), unions and employers. While the system bears high costs for employers, there seems to be generalized agreement that vocational training and education is an investment in the future.

The curriculum is divided in three parts: the vocational specific learning areas (berufsbezogener Bereich), the area of differentiation (Differenzierungsbereich), and the general area (berufsübergreifender Bereich). In the dual vocation system, the general part of the instruction is taught in accordance with the curriculum and schedules of the respective federal strand. The vocational part of the instruction is based on the framework curricula of the KMK, which are harmonised with the relevant training regulations. All three are integrated in order to achieve professional competence, although the generic part is also meant to contribute to the social and ethical education of the student. The vocational specific part consists of twelve learning fields (Lernfelder), which have to be realized in the classroom through learning situations that the teachers develop. In the professional strand 'Textile' we find, for example, *Sewing Techniques*, *Decoration Techniques* and *Sewing of Clothes*. In the professional strand 'Wood', *Planning Products*, *Planning Work Processes* and *Maintenance* might be on the agenda. Other vocationally specific fields include *Mathematics*, *Administration* and *English*, which in a traditional curriculum, would have figured in the general knowledge area. The latter, however, solely consists of *German*, *Physical Education/Health Studies*, *Religion/Religious Studies* and *Politics/Social Sciences*. The area of differentiation offers students the possibility to either acquire additional or more profound competencies in their vocational specialization or to amplify their general knowledge. These

could include, for example, *Business English*, *Marketing*, *Computer Science* or an internship in a company.

Germany is an example of a country with a well-developed system for allowing reforms to succeed, though implementation and institutionalisation of these reforms are the responsibility of the states or *Länder* in this federal system. The system into which these reforms in Germany are introduced has a strong capacity for maintenance and longevity, where this refers to the system's resource arrangements, allocations of particular people to positions of responsibility, particular roles and arrangements of power and authority, the capacity of key people in the system and its policy discourses and new policies (see 4.2).

3.8 England

In the United Kingdom (UK), Scotland, Northern Ireland, England and Wales have very distinct educational systems, policies and curricula. As Harris and Gorard (2009) report, free elementary education was (near) universal in the UK by 1900. In order to achieve the same for secondary education, the government issued an Education Act in 1944 that made schooling mandatory up to the age of 15. Three types of schools prevailed in the following decades: *technical schools*, which de-emphasized academic content and focused on the preparation of pupils for the crafts and trades; *grammar schools*, which had the most academically oriented curriculum; and *secondary schools*, which catered for the majority of children and offered a mixed academic, general and vocational curriculum. From the 1960s onward, most secondary institutions were converted into comprehensive schools.

Traditionally teachers had been granted autonomy in terms of the curriculum. Until the 1960s control over curriculum and examination was in the hands of the Schools Council for Curriculum and Examination (SCCE), a teacher-controlled body. The Conservative Government abolished this institution and returned control to the Department of Education and Science (DES) (McKernan 2008: 43). In 1988, a first national curriculum was implemented and schools were allowed to opt out of the Local Education Authorities (LEAs) and control their own budgets. The first National Curriculum was a definite step towards greater control and homogenization of school subjects and the maintenance of particular teaching and learning standards controlled by a school inspection system (under the auspices of the Office for Standards in Education (OFSTED), followed by the introduction of national league tables, labelling 'good' and 'poorly' performing schools (Harris and Gorard 2009: 2). Core subjects of the National Curriculum include Mathematics, English and Science. Other foundation subjects at KS3 are Design and Technology, Information and Communication Technology, Geography, History, Music, Physical Education and Art and at KS4, in addition to the ones previously mentioned, ICT, Citizenship, and a Modern Foreign Language (Harris

and Gorard, 2009: 8). Further developments in the same direction were the National Literacy Strategy (1998) and the National Numeracy Strategy (1999), both of which established national curricular objectives and standards.

Since the election of the first Labour government in 1997 various reforms targeted issues, such as social exclusion, educational failure, and access for all to quality education. This was meant to be achieved through increased regulation and governance of education, including the allocation of resources, depending on, for instance, the respective position of schools in league tables, the admission of students to schools and the appointment of staff, the formulation and control of contents and standards of teaching, learning and assessment, for example, through the design of curricula and monitoring of its provision, etc.

Education in England has gone through many changes in the last decades, among them: an increased standardization, regulation and auditing of the education system. While the social status of teachers had been continuously diminished, there is an increasing awareness that teachers are the essential factor for educational quality. Therefore, increased emphasis is put on initial qualifications and continuous professional development of teachers and principals, as indicated by the *Qualified Teacher Status* (QTS) and the *National Professional Qualification for Headship* (NPQH) qualification. The focus on accountability and evaluation of performance has generally led to a marginalization of areas that are not and cannot be assessed. Social class remains the key variable associated with educational participation and opportunity in the UK. There is considerable reproduction of status and education within families across generations.

This is not a complete history of educational reform over this period, since the volume of centrally-directed experiments and interventions was such that it is difficult to document them all. However, we can characterize it as a continuous process of change and flux, in which successive governments experimented with, intervened in, and changed the governance of, the system. By changing the types of rewards and sanctions for teachers, the criteria for judging quality within the system, the compliance capacity of the workforce, and how they judged themselves and each other, this also contributed to changing the types of learning experiences for children. Ball (2010) argues that the processes of public sector transformation in the English education system had five key elements: deconcentration, disarticulation and diversification, flexibilization, destatalization, and centralization. The first of these, he suggests, comprised the ‘devolving of budgets and teacher employment to school level’ (*ibid.*: 24). The second of these processes, those of disarticulation and diversification, comprised processes of weakening of the local government structure, the introduction of new types of schools with different governance and financing arrangements (for example, city

technology colleges, grant maintained schools, academies, and free schools), and diversification.

The third of Ball's processes of public sector transformation is flexibilization, whereby a plethora of approaches to teachers' conditions of service were legitimated, a new tier of teaching assistants was introduced into schools, and new and competing (with existing and well-established forms) systems for training teachers were introduced. The fourth process is destatalization and destabilization. Ball (2010: 26) explains this as, the 'introduction of new providers by contracting-out of services, programmes and "policy work", drastically blurring the already fuzzy divide between the public and private sectors: reallocating tasks, and rearticulating the relationship between organizations and tasks across this divide'. The last of Ball's processes of public sector transformation is, perhaps paradoxically, that of centralization. This was manifested in the retention of a national curriculum, albeit that large swathes of the sector were allowed to opt out of the central funding and governance of certain types of schools, and the creation of an inspection service with substantial powers to act as an enforcer of government policy, though this rapidly became known as a standards and quality agenda.

A profound change to the English education system over the last twenty-five years was achieved through devaluations and revaluations of the currency of education for schools, teachers and students. This happened because successive governments drove through an assessment-led reform process, with consequences for curriculum, governance, notions of quality, learning and accountability. The main features of these reforms have been high-stakes testing and external forms of control (see 4.1). Education professionals at all levels are required to provide numerical evidence to show how they perform, and this is expressed as indicators of effectiveness. Rewards and sanctions based on these numerical indicators have created pressure on school managers and teachers. The expectations and roles of school principals and teachers are reduced to targets and numbers, instead of the quality of teaching and the quality of the learning experience. School principals increasingly see themselves as managers who interpret and manipulate these numbers. Teachers teach curriculum content that is relevant to standardised testing, focusing on improving test results. The curriculum is narrowed while students are drilled to master tests. Comparison and hierarchy based on test scores in schools demoralises less successful children and reduces the value of learning from making mistakes. This process dissuades schools from long-term improvement processes as it 'places people in a high-alert dependency mode jumping from one solution to another in a desperate attempt to comply' (Fullan, 2005: 11). This technocratic school culture disengages teachers from high quality teaching and a commitment to shared practice.

As in Finland there is no need to use educational policy in England to create a national model

and policy-makers and practitioners can concentrate on selection and control, with nation-building not of significant importance. That is, the country as a whole and service provision such as education are run and integrated according to relatively open bureaucratic principles. Debate and procedures seem to be relatively straightforward, unlike more patrimonial societies where nation building is a priority. An increasingly heterogeneous population and cultural norms challenge uniform notions of nationhood, though these differences are worked out more through public debate and consequent pluralist policies rather than the power brokering that occurs in patron-client societies. The curriculum model that emerged from these reforms was subject-orientated (see 4.8), adopted traditional or fragmented integration processes (see 4.4), assumed progression modes which emphasise extension (see 4.5), and prioritised summative assessment processes (see 4.9).

3.9 Chile

Compulsory education includes eight years of basic education (*educación básica*) and four years of secondary education (*educación media*). During the first two years of secondary education students follow a general curriculum. During the last two years they choose between the general track (*EMCH*) and the vocational track (*EMTP*). Two thirds enter general programmes and one third vocational programmes. Chile allocates 22% more resources per student to general education than to vocational/pre-vocational programmes. This contrasts with most OECD countries, where more is spent per student on vocational programmes (OECD, 2009).

Chile introduced a unique voucher system for school financing in the early 1980s, whereby publicly financed schools receive, for each of their students, a subsidy that was essentially flat until recently. Public schools, which have been run by municipalities since the reform, as well as private subsidized schools receive the voucher subsidy. Private subsidized schools, but not municipal schools, are allowed to top up the voucher subsidy with fees from parents. If these fees exceed a certain limit, private schools lose their right to the voucher subsidy and are financed by parents' fees alone. This school type is called a private fee-based school. Since the voucher reform, Chile has relied on free school entry and school competition as the main quality assurance mechanisms, with, until recently, little or no state intervention to ensure minimum quality standards. The reform has led to the creation of a large number of private subsidised schools, which have increased their share in enrollment from 30% to 48% since 1986, and a flight of the middle classes from public schools, with their enrollment share decreasing from 63% in 1986, to 43% in 2008. As before the reform, a small share of students (around 7%), mostly from high-income families, go to private fee-based schools. Private subsidized schools receive students from a wide range of low weaker socio-economic

backgrounds. Municipal schools receive the most disadvantaged children, around 60% of children from the two lowest income deciles.

Chile has made impressive progress in terms of educational coverage and attainment, which is in part related to the large increase in the number of private schools, but quality is still weak. The coverage of primary education is now almost universal, and secondary and tertiary attainment rates have increased rapidly. Yet, while PISA results improved considerably between 2000 and 2009, the scores of 15-year olds in Science, Reading and Mathematics are still well below the OECD average, even after adjusting for socio-economic background.

The Chilean system has four levels of education with universal coverage up to the standards of any first world country. Chile invests 7.5% of its gross domestic product in education, a considerable amount which surpasses some developed countries, such as Finland or the United States. Chile's education system is decentralized; administration for each establishment is executed by persons or municipal and private institutions known as sustainers, who are responsible for managing the educational establishment on behalf of the State. The system is made up of subsidized establishments, municipal and private establishments with four levels of education: pre-school or early education, elementary or primary, high school and higher education. Coverage of Chile's education system is practically universal. 99.7% of all children between the age of 6 and 14 are enrolled in elementary or primary school (Educación General Básica (EGB)). 87.7% of all children between the ages of 15 and 18 are enrolled in high school. 2009 higher education figures indicate that total enrollment in 2008 came to 752,182 students, the highest rate in history and up 14% compared to 2007. The system coverage is already surpassing 40%, which is very high and even comparable to some developed countries. Advances have been possible because the education system is now compulsory and the most recent administrations have made important efforts to improve education quality.

Pre-school or early education is the first level of education in the Chilean education system and it is provided free-of-charge for children up to the age of six. Pre-school coverage has increased substantially over the last few years. The category currently extends throughout the entire country, covering over 30% of the total population under the age of six. Education for this category is not obligatory, but the benefits provided by personalized education for boys and girls is so important that it is even considered an effective mechanism for interrupting the poverty cycle. Pre-school education is provided by a wide range of public and private institutions, including the following: municipal and subsidized private schools; subsidized private schools with shared financing; pre-schools and day care centres managed by the National Board of Early Education (JUNJI); private pre-schools and day care centres; day

care centres managed by Integra Foundation; and pre-schools and day care centres managed by companies.

Elementary education is the first level of obligatory education and it includes two four-year cycles. The system provides scholarships and other benefits. Elementary education consists of eight years of study divided into two cycles. The first four-year cycle teaches basic contents with universal methodology. The second four-year cycle features contents organized into subjects and more specifically educational activities. The structure of this level has been designed to provide students with an integral, general and basic education; *integral* in that the system encompasses all aspects of human development (affective, cognitive and ethical), focusing on the process of growth and personal self-affirmation and providing guidelines as to the way the person relates with others and with the world; *general* in that it promotes lessons learned and a wide range of knowledge pertaining to humanistic, scientific and artistic areas; and *elementary* because it provides the minimal formal education required in keeping with study plans.

Children between the ages of 13 and 17 prepare for university education and active integration into the workplace. Secondary school education lasts four years and is divided into two areas: scientific-humanistic and technical-professional. Scientific-humanistic education is divided into two cycles and includes general education subjects which aim to prepare students to enter university. The first cycle is ninth and tenth grade, while the second cycle is eleventh and twelfth grade. Technical-professional education aims to prepare students for the workplace and this comprises different categories: commercial, industrial, agricultural, and maritime. These are chosen with students starting these programmes in the tenth grade.

The curriculum model that emerged from these reforms was generally subject-oriented (see 4.8), adopted traditional or fragmented integration processes (see 4.4), assumed progression modes which emphasise extension (see 4.5), and prioritised summative assessment processes (see 4.9). In addition, the curriculum review process is adhoc, unplanned, dependent on the political cycle, and a response to particular problems as they are conceived by successive governments (see 4.1). The point of entry of the reform into the system is at the top or apex of the power structure (see 4.2).

3.10 Singapore

Singapore's education system has been characterized in terms of three phases: a survival-driven phase lasting from independence to about 1978; an efficiency-driven phase which lasted until 1996 and which culminated in government reforms known as *Thinking Schools*,

Learning Nation (Ministry of Education, Singapore, 2008); and finally from then to now an ability-driven phase. These phases of educational reform are now part of the historical narrative accepted by historians and chroniclers in Singapore and each of them was preceded by a series of government reforms.

At the survival-driven phase, the government focused on upskilling (in instrumentalist and economic terms) the future and current workforce. Under colonialism and especially that of the British, education was seen in manifold ways as a means for suppressing and controlling nationalism, while at the same time emphasizing an intimate link between economic expansion to the benefit of the colonial power and a national education system. In the survival phase the quest for a form of national identity took a different form with national integration of the various ethnicities being emphasized and the construction of an independent unified national state being prioritized. This translated, in educational terms, into: equal treatment for the four streams of education (i.e. Malay, Chinese, Tamil and English); the establishment of Malay as the national language of the new state, though fairly rapidly English became the legislative, bureaucratic and schooling first language; and a greater emphasis being placed on Mathematics, Science and Technical Subjects. Since the concern at this time was one of national survival, economic expansion was seen as an essential part of the creation of a nation state. Furthermore, the assumption was made that in a highly centralized state, the education system could be rapidly transformed to meet these aspirations. Compulsory elementary education was provided for all regardless of race, language, sex, wealth or status (and the dearth of private education providers persists to this day). Bilingualism became both the norm and an essential part of the system, and the learning of English alongside one or other of the ethnic languages fitted the desire of the government to be able to compete in world markets.

The second phase between 1979 and 1996 has been described as efficiency-driven. The focus at governmental level shifted from a labor intensive economy to a capital and skills-intensive economy. This entailed the introduction of new structures, new forms of educational governance, and new resource and accountability arrangements. The ease with which these changes were made to the system reflects a particular type of power structure in operation; this is a top-down, government-driven, autocratic arrangement, with few possibilities for resistance.

In January 1979, Singapore moved from a system which was designed to create a national identity, integrating the various ethnicities and constructing an independent unified national state, to a system of schooling, which was designed to produce a capital-rich and technically-skilled workforce. The Government at the time was moving the economy from an import-led and entrepot economy to an export-led technologically-driven and competitive economy.

This phase focused on reducing the variation in performance across schools and it heralded the introduction of students being streamed into different tracks, with little movement between them from an early age. For example, at the level of high school, multiple pathways included: academic high schools, which prepared students for college; polytechnic high schools that focused on advanced occupational and technical training and that could also lead to college; and technical institutes that focused on occupational and technical training for the a fifth of the students. To some extent this mirrored the grammar school/technical school/secondary modern divide that the United Kingdom had been and was still in the process of dismantling. That the United Kingdom has now begun to move back towards an elite system of public education, albeit by invoking mantras of choice and diversity, is a different story.

At the same time Singapore created a Curriculum Development Institute in order to supply to schools and teachers sets of curriculum materials. These curriculum materials which dovetailed at this time with a national set of curriculum standards and a national assessment system ensured some measure of standardization of curriculum, of assessment and more fundamentally of pedagogy within the public school system in Singapore, though because the emphasis at this time was on the development of human capital and the means for delivering it, this was deemed to be a stratified form of provision among the student body (based on performance in a series of tests). Each classroom and each teacher at this time received the same type of materials and the same resources for each grade. This standardization was in part driven and also validated by success in international league tables, such as TIMMS and PISA. By 1995, Singapore's school system was among the top-performing systems in the world, topping TIMSS rankings in both Mathematics and Science that year.

The third and final phase has come to be known as the ability-driven phase, and this suggests a paradigm-shift in thinking about education. In 1997, the Singaporean government launched *Thinking Schools, Learning Nation* (TSLN) (NIE, 2008; Ministry of Education, Singapore, 2008), marking the start of its ability phase and emphasizing a shift in focus, so that the emphasis was now on each student reaching his or her potential. This meritocratic initiative was in a sense a reaffirmation of some of the policies and practices in the education system that preceded it, such as the development of gifted and talented programmes of learning, the introduction of streaming from a young age and the clear separation of vocational streams from academic ones. However, what marked it as a distinct educational phase was the degree of autonomy now given to teachers and schools. The logic engendered by the focus on the ability of the student was that schools and teachers should be given more flexibility and responsibility in how they could teach and manage their classrooms. School clusters were introduced to create forums for school leadership development and this allowed the sharing of good practice in teaching and learning.

The thinking behind this initiative is somewhat paradoxical as its central tenet was to move away from a centralized- command position in the system and allow the possibility of failure. The centralized, standardized, top-down system, the emphasis on examination success and consequently rote-learning, the practice of tracking and the passivity of students in the learning process, all of which were seen as pivotal in the development of the nation and its economic success, were now seen as impediments in a post-industrial and globalized scenario. This has involved a shift from an efficiency-driven system to an ability-driven system.

Singapore's education system is characterised by a strong statist orientation; a belief that the state needs to have command of the control of the skills, knowledge and dispositions of its population, and that this is needed to create the conditions for the successful delivery of a market place economy; an initial emphasis on nation-building; an instrumentalist curriculum; and traditional strongly insulated curriculum practices. These characteristics are common to all the different reform phases of the education system in this country (see 4.1 and 4.2).

In the next chapter we examine curriculum, pedagogic and assessment practices in these countries.

Chapter Four: Curriculum, Assessment and Pedagogic Standards

In this chapter we identify similarities and differences between our thirteen case study countries and jurisdictions with regards to their curriculum and curriculum reform arrangements. The categories that we use in this chapter are: the extent and type of curriculum review, curriculum reform arrangements, curriculum standards or learning aims/objectives, curriculum integration, curriculum progression, the start date of formal schooling, learning arrangements in a curriculum, curriculum subjects, summative and formative assessment arrangements and textbook use. These categories represent trends and nothing more. Though a particular form of curriculum integration, for example, is noted below, this refers to current arrangements made by that particular country, and not to past ones. Furthermore, in this chapter we are making general statements about particular curriculum and curriculum reform arrangements, and these should not be understood as applying in every single case.

Governments around the world at the end of the twentieth century and in the early part of the twenty-first century, with a few notable exceptions, have reached a settlement about the nature of the school curriculum, learning approaches and assessment practices. This consensus now operates at all levels of the education system, and can be expressed in terms of a number of propositions: traditional knowledge forms and strong insulations between them need to be preserved; each of these knowledge forms can be expressed in terms of lower and higher level domains and the latter have to be taught before the former and sequenced correctly; certain groups of children are better able to access the curriculum than other children, and thus a differentiated curriculum is necessary to meet the needs of all school learners; the teacher's role is to impart this body of knowledge in the most efficient and effective way, and thus their brief cannot concern itself with the ends to which education is directed, but only the means for its efficient delivery; and the school's role is to deliver a public service that meets the targets set for it by governments.

4.1 Curriculum Review

Four areas of curriculum review are identified: occurrence, focus, extent of curriculum expert involvement, and type.

A. Occurrence

1. The curriculum review is **ad hoc**, unplanned, dependent on the political cycle, and is a response to a particular problem by government (**A₁ - Shaded Area – see Table 4.1**).

2. The curriculum review is **cyclical** and takes place on a regular basis. This is a formal process involving information collection, analysis of the current curriculum, recommendations for change, implementation, and institutionalization (**A₂ - Shaded Area – see Table 4.1**).
3. The curriculum review is **continuous**, on-going, and built into the particular curriculum arrangements (**A₃ - Shaded Area – see Table 4.1**).

B. Focus

1. The curriculum review(s) is focused on **learning standards** or curriculum aims and objectives (**B₁ - Shaded Area – see Table 4.1**)
2. The curriculum review(s) is focused on **pedagogic standards** or teaching and learning approaches (**B₂ - Shaded Area – see Table 4.1**)
3. The curriculum review(s) is focused on **assessment** or evaluation standards or approaches (**B₃ - Shaded Area – see Table 4.1**)

C. Extent of Curriculum Expert Involvement

1. The curriculum review(s) genuinely engages with curriculum expert advice (**C₁ - Shaded Area – see Table 4.1**)
2. The curriculum review(s) does not engage with curriculum expert advice (**C₂ - Shaded Area – see Table 4.1**)
3. The curriculum review has built in processes of engagement with expert advice, but this advice has a minimal impact (**C₃ - Shaded Area – Table 4.1**)

D. Type of Curriculum Review

1. The curriculum review(s) is full and comprehensive (**D₁ - Shaded Area – see Table 4.1**)
2. The curriculum review(s) is partial and directed towards one or two elements (**D₂ - Shaded Area – see Table 4.2**)

Table 4.1: Curriculum Reviews

	A: Occurrence			B: Focus			C: Expert involvement			D: Type	
	A₁	A₂	A₃	B₁	B₂	B₃	C₁	C₂	C₃	D₁	D₂
Finland	█		█	█			█			█	
Massachusetts	█			█	█	█	█			█	█
Scotland	█			█			█			█	█
Ontario		█		█	█	█	█			█	█
Netherlands	█			█	█		█			█	█
Mexico	█			█			█		█		█
Germany	█			█	█	█	█			█	█
England	█			█	█	█	█			█	█
Chile	█			█		█	█		█		█
Singapore	█			█	█	█	█			█	
New Zealand	█			█	█	█	█			█	█
Victoria	█			█	█	█	█			█	█
Queensland	█			█	█	█	█			█	█
IB		█	█	█	█	█	█			█	

A1 - Ad hoc
A2 - Cyclical
A3 - Continuous
B1 - Learning standards
B2 - Pedagogic standards
B3 - Assessment
C1 - Genuine engagement
C2 - No engagement
C3 - Engagement, little impact
D1 - Full
D2 - Partial

Most mass systems of education do not have established curriculum review cycles. Curriculum reviews tend to be ad hoc, unplanned, dependent on the political cycle, and a response to a particular problem by government.

4.2 Curriculum Reform Arrangements

Here we refer to the capacity of the education system to be changed, amended or reformed. We focus on five areas: point of entry of the reform into the system, direction of flow of the reform, sustainability of the integrity of the reform, intensity of the reform or capacity to effect change, malleability of the system or capacity to change, and institutionalization. We have already discussed this category (see 2.3 above).

A. Point of Entry of the Reform into the System

1. The point of entry is **at the top of the system** or the apex of the power structure (**A₁ - Shaded Area** – see Table 4.2).
2. The point of entry is **at the bottom of the system** or at the base of the power structure (**A₂ - Shaded Area** – see Table 4.2).
3. There are a number of **different points** of entry into the system (**A₃ - Shaded Area** – see Table 4.2).

B. Direction of Flow of the Reform

1. A centrally controlled policy process where the direction is **uni-directional**, and **downward** oriented (**B₁ - Shaded Area** – see Table 4.2).
2. A pluralist model where the direction of flow is **uni-directional**, however, the developmental flow is to all parts of the system and the orientation is **pluralist** (**B₂ - Shaded Area** – see Table 4.2).
3. A fragmented and **multi-directional** model (**B₃ - Shaded Area** – see Table 4.2).

C. Sustainability of the Integrity of the Reform during the Implementation Process

1. The reform as it was originally conceived **retains its shape**, structure and contents during the exploration, development, recontextualization, implementation and institutionalization phases of the reform process (**C₁ - Shaded Area** – see Table 4.2).
2. The reform as it was originally conceived **loses its shape**, structure and contents during the exploration, development, recontextualization, implementation and institutionalization phases of the reform process (**C₂ - Shaded Area** – see Table 4.2).

D. Penetrative Power of the Reform (or Intervention) or its Capacity to Change the Status-Quo

1. The reform itself has an **extensive and exhaustive capacity** to impact and change the structures and environments into which it is being introduced, and in part this refers to how it is going to be introduced, but also to the way it is constituted. This refers to its penetrative power (though this may not be realized) or capacity to effect change (**D₁ - Shaded Area – see Table 4.2**).
2. The reform itself has a **limited and restricted capacity** to impact and change the structures and environments into which it is being introduced, and in part this refers to how it is going to be introduced, but also to the way it is constituted. This refers to its penetrative power (though this may not be realized) or capacity to effect change (**D₂ - Shaded Area – see Table 4.2**).

E. Malleability of the System

1. The structures and environments into which the reform is being introduced are **resistant to change (E₁ - Shaded Area – see Table 4.2)**.
2. The structures and environments into which the reform is being introduced are **malleable and not resistant to change (E₂ - Shaded Area – see Table 4.2)**.

F. Institutionalization

1. The system into which the reform is being introduced has an **extensive and exhaustive capacity** to sustain the longevity of the reform and in particular, this refers to the system's resource arrangements, allocations of particular people to positions of responsibility, particular roles and arrangements of power and authority, the capacity of key people in the system, and its policy discourses and new policies (**F₁ - Shaded Area – see Table 4.2**).
2. The system into which the reform is being introduced has a **limited and restricted capacity** to sustain the longevity of the reform and in particular, this refers to the system's resource arrangements, allocations of particular people to positions of responsibility, particular roles and arrangements of power and authority, the capacity of key people in the system, and its policy discourses and new policies (**F₂ - Shaded Area – see Table 4.2**).

Table 4.2 Curriculum Reform Arrangements

	Point of Entry			Direction of flow			Sustainability of integrity		Penetrative power		Malleability		Institutionalization	
	A ₁	A ₂	A ₃	B ₁	B ₂	B ₃	C ₁	C ₂	D ₁	D ₂	E ₁	E ₂	F ₁	F ₂
Finland														
Massachusetts														
Scotland														
Ontario														
Netherlands														
Mexico														
Germany														
England														
Chile														
Singapore														
New Zealand														
Victoria														
Queensland														

A1 - at the top of the system
A2 - at the bottom of the system
A3 - different points of entry

B1 - uni-directional: downward
B2 - uni-directional: pluralist
B3 - multi-directional

C1 - retains its shape
C2 - loses its shape

D1 - extensive and exhaustive capacity
D2 - limited and restricted capacity

E1 - resistant to change
E2 - malleable and not resistant to change

F1 - extensive and exhaustive capacity
F2 - limited and restricted capacity

The point of entry for a reform in most countries is at the top of the system or the apex of the power structure. The general direction of flow is fragmented and multi-directional. Reforms generally lose their shape, structure and contents during the exploration, development, recontextualization, implementation and institutionalization phases of the reform process. In most countries institutionalizing processes are undeveloped.

4.3 Curriculum Standards or Learning Aims/Objectives

A. Types of Curriculum Standards

There are four types of curriculum standards currently being used in the world; all of them express standards in terms of statements of knowledge, skills and dispositions/inclinations which it is expected students will have acquired at set stages during a student's time at school.

The four types (i.e. extension, complexity, flexibility, reduction) are as follows:

1. Statements of curriculum standards are expressed at a high level of generality and abstraction organized in a hierarchical order, so that there are progressively more complicated versions of each of the main ideas at the key stages (usually articulated in terms of more than the previous stage) (**A₁ (Extension) - Shaded Area – see Table 4.3**).
2. A second version comprises a set of curriculum standards written as statements and at a level of concreteness, which can be easily and reliably converted into useable products. These capture the essence of the aims and objectives (sometimes written as competences) of the educational process (and of course of the written curriculum, which is an attempt to capture this framing of the process). There is an element of reductionism in this version, as there is in any version. The element of progression between the different key stages is understood as having a number of dimensions and not just extension. In other words, there are different forms of relations between the different levels and these have to be acknowledged (**A₂ (Complexity) - Shaded Area – see Table 4.3**).
3. A third version is where the standards are written so that there is a high level of generality of the statements, with at the same time a more flexible conception of progression, understood in terms of a multiplicity of progression modes, a non-linear (in relation to the key stages) progression pathway, and the possibility that some skills, knowledge sets and dispositions may not feature at all at some of the key stages. The problem with this version of the standards is that the very generality and abstractness of them may make their usefulness both more difficult and more unreliable (**A₃ (Flexibility) - Shaded Area – see Table 4.3**).

4. A fourth version is where assessment standards and curriculum standards are treated as equivalents. This has a number of problems: a reduction to what can be measured, a neglect of some standards which cannot be easily measured, and a possible distortion of the curriculum (**A₄ (Reduction) - Shaded Area – see Table 4.3**).

B. Curriculum Aims

These are sets of curriculum aims as they are expressed in the documentation of the various countries:

1. Personal and Social Development, Values/Ethics/Morals, and Educational/Spiritual Development (**B₁ - Shaded Area – see Table 4.3**).
2. Equal Opportunities/Multiculturalism (**B₂ - Shaded Area – see Table 4.3**).
3. Preparation for Work (**B₃ - Shaded Area – see Table 4.3**).
4. Basic Skills such as literacy and numeracy (**B₄ - Shaded Area – see Table 4.3**).
5. Scientific and Technological Skills (**B₅ - Shaded Area – see Table 4.3**).
6. Citizenship (**B₆ - Shaded Area – see Table 4.3**).
7. Nation Building, and Cultural Heritage (**B₇ - Shaded Area – see Table 4.3**).
8. Socialization (**B₈ - Shaded Area – see Table 4.3**).
9. Creativity (**B₉ - Shaded Area – see Table 4.3**).
10. Environmental Concerns (**B₁₀ - Shaded Area – see Table 4.3**).
11. Non-mother Tongue Language Learning (**B₁₁ - Shaded Area – see Table 4.3**).
12. Health/ Physical Well-being and Leisure (**B₁₂ – Shaded Area - see Table 4.3**).
13. Lifelong Learning (**B₁₃ – Shaded Area - see Table 4.3**).
14. Special Learning Needs (**B₁₄ – Shaded Area - see Table 4.3**).

Table 4.3 Curriculum Standards

	Types of Curriculum Standards				Curriculum Aims													
	A1	A2	A3	A4	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14
Finland		■			■	■	■	■	■	■	■	■		■		■		■
Massachusetts				■	■	■	■	■	■	■	■		■			■		■
Scotland		■			■	■	■	■	■	■	■			■		■	■	■
Ontario		■			■	■	■	■	■	■	■			■	■	■		■
Netherlands			■		■	■	■	■	■	■	■			■	■	■		■
Mexico	■				■	■	■	■	■	■	■			■	■	■		■
Germany			■		■	■	■	■	■	■	■			■	■	■	■	■
England				■	■	■	■	■	■	■	■		■	■	■	■	■	■
Chile				■	■	■	■	■	■	■	■			■	■	■		■
Singapore				■	■	■	■	■	■	■	■			■	■	■		■
New Zealand			■		■	■	■	■	■	■	■			■	■	■	■	■
Victoria			■		■	■	■	■	■	■	■		■	■	■	■	■	■
Queensland			■		■	■	■	■	■	■	■		■	■	■	■	■	■
IB					■	■			■	■		■	■	■	■	■		■

A1 - Extension
A2 - Complexity
A3 - Flexibility
A4 - Reduction

B1 - Personal and Social Development, Values/Ethics/Morals, and Educational/Spiritual Development
B2 - Equal Opportunities/Multiculturalism
B3 - Preparation for Work
B4 - Basic Skills such as literacy and numeracy
B5 - Scientific and Technological Skills
B6 - Citizenship
B7 - Nation Building, and Cultural Heritage
B8 - Socialization
B9 - Creativity
B10 - Environmental Concerns
B11 - Non-mother Tongue Language Learning
B12 - Health/ Physical Well-being and Leisure
B13 - Lifelong Learning
B14 - Special Learning Needs

Most countries have very similar curriculum aims/objectives.

4.4 Curriculum Integration

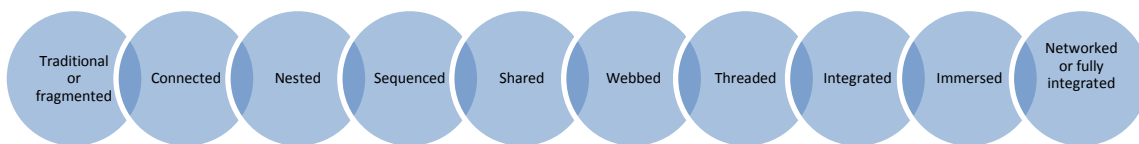
Fogarty and Pete (2009) have identified ten models of curriculum integration and these range from strongly classified and strongly framed curricula, as in the traditional approach, to weakly classified and weakly framed networked approaches to curriculum planning. Between the two extremes: traditional or fragmented *and* networked approaches, they identify eight other points on the continuum: connected, nested, sequenced, shared, webbed, threaded, integrated and immersed.

A *fragmented curriculum* has clear boundaries between the different subjects and thus this first type cannot reasonably be thought of as integrated. Subject delineations are clear-cut, they are taught in separate blocks on the timetable, they have their own formal knowledge structure, and content is treated as distinctive and belonging to the specific area. In a *connected curriculum*, reference is made to other content areas, connections are sought and suggestions are made as to how knowledge in another domain can supplement and contribute to knowledge in the specified domain. A *nested curriculum* has some similarities; however, a clear distinction is made between generic skills and specific content. This form is only partially integrated as the content of the subject area is still treated as specific to a curriculum area; however, some common skills are identified which cross the boundaries between different content areas and these are taught across the curriculum.

Further along the continuum is a reference point which we might want to describe as *sequenced*. Here deliberately planned topics are arranged to be taught at the same time so that learners moving between different subject areas are taught the same concept albeit that reference is made to a different application and a different discipline in two or more different contexts. The next point on the continuum is where the curriculum can be thought of as *shared*. Here, a particular topic is chosen which has a number of different disciplinary strands. Teachers from different subject disciplines are partnered and teach different aspects of the topic. A *webbed curriculum* is very much like a shared curriculum; the difference being that there is a greater degree of integration. The curriculum is divided into themes and each theme is treated in a different way by different subject teachers. Thus the integrity of each discipline is retained, and the methods and approaches that are distinctive to these disciplines are taught even if the generic subject matter is the same. Next to it on the continuum is a *threaded curriculum*, where the emphasis is on the process of learning, or on what might be called a meta-theoretical process. The content is subordinated to the teaching of these skills and a curriculum is devised, which cuts across the traditional disciplines and focuses on common skills. A threaded curriculum in turn gives way to an *integrated curriculum*. Here disciplinary boundaries begin to dissolve, as teachers work in inter-disciplinary teams to plan units around overlapping concepts and themes.

Almost at one end of the continuum is *immersion*. Here, integration becomes the responsibility of the learners as they focus on a particular topic or theme, and they borrow from different disciplines ideas, theories, skills and the like. There is little evidence here of any adherence to the methods and protocols embedded within particular disciplines. The disciplines themselves are treated as impediments to the development of knowledge and this strong classification is transgressively dissolved. This finally, gives way to a *networked curriculum*. Each of these forms of integration can be positioned along a continuum with a fragmented curriculum being strongly classified and framed, in contrast to networked approaches to curriculum planning, which are weakly classified and weakly framed (see Figure 1).

Figure 1: Curriculum Integration



These forms of integration are too refined to apply to systems in their entirety, though they are relevant to particular educational environments within those national systems (Scott, 2008). However, we can identify two general trends:

1. Strongly classified and strongly framed curricula, with strong subject boundaries between elements (**A₁ – Shaded Area – see Table 4.4**).
2. Weakly classified and weakly framed networked approaches to curriculum planning, with weak boundaries between elements (**A₂ – Shaded Area – see Table 4.4**).

Table 4.4: Curriculum Integration

	A ₁ : Strongly classified and strongly framed	A ₂ : Weakly classified and weakly framed
Finland		
Massachusetts		
Scotland		
Ontario		
Netherlands		
Mexico		
Germany		
England		
Chile		
Singapore		
New Zealand		
Victoria		
Queensland		
IB		

A₁ - Strongly classified and strongly framed curricula, with strong subject boundaries between elements

A₂ - Weakly classified and weakly framed networked approaches to curriculum planning, with weak boundaries between elements

Most of the countries we sampled are preserving traditional knowledge forms and strong insulations between them in the school curriculum.

4.5 Curriculum Progression

Curriculum progression can be understood in a number of ways (cf. Scott, 2008):

1. *Prior Condition*. In the acquisition of particular knowledge, skill and dispositional elements, there are pre-requisites in the learning process. An example might be mathematical where knowledge of addition is a pre-requisite of multiplication.
2. *Maturation*. A maturational form of progression refers to the development of the mind of the child. There are some mental operations that cannot be performed by the child because the brain is too immature to process them.
3. *Extension*. An extensional form of progression is understood as an increase in the amount, or range of an operation. Greater coverage of the material is a form of progression, so a child now understands more examples of the construct, or more applications of the construct, and can operate with a greater range of ideas.

4. *Intensification*. Related to the idea of extension is the idea of deepening or intensifying the construct or skill. Whereas extension refers to the amount or range of progression, intensification refers to the extent to which a sophisticated understanding has replaced a superficial understanding of the concept.
5. *Complexity*. In relation to the knowledge constructs, skills and dispositions implicit within the standards, there are four forms of *complexity* that allow differentiation between the standards at the four key stages and indicate progression. These are: behavioral complexity, symbolic complexity, affective complexity and perceptual complexity.
6. *Abstraction*. There is also a type of progression, abstracting, which involves moving from the concrete understanding of a concept to a more abstract version.
7. *Articulation*. A further measure of progression is an increased capacity to articulate, explain or amplify an idea or construct, i.e. the child retains the ability to deploy the skill and in addition, he or she can now articulate, explain or amplify what he/she is-able to do and what he/she has ~~they~~ have done.
8. *Pedagogic*. A final form of progression is pedagogical, and this refers to the way that the translation of the curriculum knowledge standard, for example, into a pedagogical knowledge standard also means that progression has to take account of this translation. An example could be moving from an assisted performance to an independent one.

These forms of progression are too refined to apply to systems in their entirety, though they are relevant to particular educational environments within those national systems (Scott, 2008). However, we can identify two general trends:

1. Progression modes, which prioritize extension (**A₁ – Shaded Area – see Table 4.5**).
2. Progression modes, which prioritize intensification and complexity (**A₂ – Shaded Area – see Table 4.5**).

Table 4.5 Curriculum Progression

	Prioritization of extension	Prioritization of intensification and complexity
	A ₁	A ₂
Finland		
Massachusetts		
Scotland		
Ontario		
Netherlands		
Mexico		
Germany		
England		
Chile		
Singapore		
New Zealand		
Victoria		
Queensland		

Most countries have developed progression modes, which prioritize extension. In this mode, each knowledge form can be expressed in terms of lower and higher level domains and the latter have to be taught before the former and sequenced correctly.

4.6 Starting Point of Formal Schooling

Our sample countries start formal education at different points:

1. Early start date for formal schooling, i.e. five years of age (see Table 4.6)
2. Late start date for formal schooling, i.e. six or seven years of age (see Table 4.6)

Table 4.6: Starting Age of Formal Schooling

Five Years Old: England, Scotland, the Netherlands, Singapore, Massachusetts, Chile, New Zealand, Victoria and Queensland

Six Years Old: Germany, Mexico, Ontario

Seven Years Old: Finland

	Starting age of formal schooling		
	A ₁	A ₂	A ₃
Mexico			
Massachusetts			
Scotland			
Ontario			
Netherlands			
Finland			
Germany			
England			
Chile			
Singapore			
New Zealand			
Victoria			
Queensland			
IB			

A₁ - Formal schooling starts at the age of 5

A₂ - Formal schooling starts at the age of 6

A₃ - Formal schooling starts at the age of 7

Most countries start formal schooling at an early age.

4.7 Types of Learning in a Curriculum

It is possible to identify from the curriculum documents of our sample of countries an inclination towards a particular pedagogic approach or style. Here is a list of possible teaching and learning approaches (cf. Scott, 2008):

1. **Observation** - Here the teacher performs the action which the learner is required to imitate in the classroom, and then later in the context of application. Three types are noted: a live model involving a demonstration or acting out of the behaviours to be learnt; a verbal instructional model where this comprises descriptions and explanations of behaviours; and a symbolic model, i.e. scenario learning, plays, etc.
2. **Coaching** - Here the focus is on a series of steps: *modeling* by the expert; *coaching* while the learner practices; *scaffolding* where the learner is supported during the initial stages with that support gradually being withdrawn as the learner becomes more proficient

(coaching here involves the teacher in identifying for the learner deviations from the model in the performance of the learner, and then supporting the learner as he/she makes attempts to correct this performance); *articulation* by the learner of that process; *reflection* on those processes and *comparison* with the expert's reasons for action; and *exploration* where the learner undertakes the various activities without support.

3. **Goal-Orientated Learning and Anticipation** - Goal clarity is a component of effective learning. To that end, teachers need to provide learners with explicit statements and explanations about the instructional objectives in a lesson or series of lessons.
4. **Mentoring** - This supports the informal transmission of knowledge, social capital or psychosocial resources. It is usually conducted face-to-face and involves a relationship between two people, one of whom is considered to have greater knowledge, wisdom or experience.
5. **Peer Learning** - This is defined as learning from and with the learner's peers. The other forms of learning comprise unequal relations between the teacher and the learner. Here the assumption is made that the learning relationship is between equals, and thus a different form of learning is implied.
6. **Simulation** - A simulation is a reproduction of an event or activity, conducted outside the environment in which that event or activity usually takes place. Simulations can be produced through computer games, role-plays, scenarios, presentations *and* affective and conceptual modeling.
7. **Instruction** – A sequence of events takes place: the teacher needs to gain the attention of the group of learners. This can be done by asking questions or addressing the purposes of the learning programme. The teacher then informs the learners of the objectives of the learning exercise, i.e. what is intended to be learned learnt. The teacher needs to stimulate recall of prior learning among the group of learners, so that the new information is related productively to previous and current learning. Content is now presented to the students, and this has to be carefully structured or scaffolded so that it can be accessed by the students. The next event is a performance relating to the curriculum objectives and this needs to be elicited from the student in an appropriate format. Feedback needs to be provided, which is a comment on the student's performance and allows corrective action to take place. The new performance is then assessed in order to determine if the desired performance has taken place. And students then apply that knowledge in appropriate ways.
8. **Concept Formation** - This process of learning focuses on the re-forming of conceptual schema that the learner has about the world and in the particular case here, about those conceptual matters relating to schools, classrooms and teaching-learning processes. Learning is complex and potentially rich and rewarding, where the student is presented with a mass of information, ideas, schema, opinions from a number of different sources (i.e. books, articles, lectures, seminars, emails, e-seminars, personal communications and so on). What the learner does is shape this mass of information, and this shaping can take

a number of different forms: partial shaping, complete shaping, discarding with no replacement, confusion, on-going, going backwards and forwards and so on.

9. **Reflection** - The Learning Cycle, developed by David Kolb, is based on the belief that deep learning (learning for real comprehension) comes from a sequence of experience, reflection, abstraction, and active testing.
10. **Meta-Cognitive Learning** - Meta-Cognitive Learning refers to learners' awareness of their own knowledge and their ability to understand, control, and manipulate their own cognitive processes. This term refers to the learner's ability to make adjustments in their own learning processes.
11. **Problem-Solving** - The learner finds out for themselves rather than being given answers to problems; this is a problem-solving pedagogy. The learner is required to engage in a series of interrogative processes with regards to texts, people and objects in the environment, and come up with solutions to problems.
12. **Practice** - Practice is the act of rehearsing a behavior over and over again, or engaging in an activity again and again. This reinforces, enhances and deepens the learning associated with the behavior or activity.

These forms of learning are too refined to apply to systems in their entirety, though they are relevant to particular educational environments within those national systems (Scott, 2008). From these accounts of types of learning, two broad general approaches can be developed:

- A. **Didactic**, instructional, assessment-driven, goal-directed, and fact-based forms of learning (**A₁** – Shaded Area - see Table 4.7)
- B. **Dialogic**, interrogative, problem-solving, experiential and reflective forms of learning (**B₁** – Shaded Area - see Table 4.7)

Table 4.7: Learning Approaches

	A: Didactic	B: Dialogic
Finland		
Massachusetts		
Scotland		
Ontario		
The Netherlands		
Mexico		
Germany		
England		
Chile		
Singapore		
New Zealand		
Victoria		
Queensland		
IB		

Most reforms of education systems now emphasise assessment-driven, goal-directed and fact-based forms of learning.

4.8 Curriculum Subjects

The curriculum in each of our sample countries is differentiated by subjects (see shaded areas table 4.8):

1. Mother Tongue (A₁)
2. Mathematics (A₂)
3. Science (A₃)
4. Geography (A₄)
5. History (A₅)
6. Modern Foreign Language (A₆)
7. Classical Foreign Language (A₇)
8. Design and Technology (A₈)
9. Physical Education (A₉)
10. Art and Craft (A₁₀)
11. Music (A₁₁)
12. Information and Communication (ICT) (A₁₂)
13. Civics (A₁₃)
14. Religious Education (A₁₄)
15. Careers Education (A₁₅)
16. Sex Education (A₁₆)
17. Work-Related Education (A₁₇)
18. Health Education (A₁₈)
19. Personal and Social Education (A₁₉)

Table 4.8: Curriculum Subjects

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19
Finland																			
Massachusetts																			
Scotland																			
Ontario																			
Netherlands																			
Mexico																			
Germany																			
England																			
Chile																			
Singapore																			
New Zealand																			
Victoria																			
Queensland																			
IB																			

- A1 - Mother Tongue
- A2 - Mathematics
- A3 - Science
- A4 - Geography
- A5 - History
- A6 - Modern Foreign Language
- A7 - Classical Foreign Language
- A8 - Design and Technology
- A9 - Physical Education
- A10 - Art and Craft
- A11 - Music
- A12 - Information and Communication
- A13 - Civics
- A14 - Religious Education
- A15 - Careers Education
- A16 - Sex Education
- A17 - Work-Related Education
- A18 - Health Education
- A19 - Personal and Social Education

In all these countries, an emphasis is given to Language (Literacy) (A₁), Mathematics (A₂) and Science (A₃).

4.9 Summative and Formative Assessment

Assessment standards can be used in a number of different ways, with different consequences. They can be used to determine whether and in what way the individual is meeting them, as well as providing information about how the individual can perform better in the future. Learning and assessment practices on the learning programme can be regarded as formative if: there is evidence of the student's achievement; that evidence is *elicited*, *interpreted*, and *used* by the teacher, the individual student and their fellow students; and such evidence is used by the teacher with the specific intention of deciding on the subsequent steps in the teaching-and-learning process (i.e. 'instruction' with the intention of further developing learning). The interaction between the teacher and their student(s) is formative when it influences the learner's cognition: the teacher's external stimulus and feedback triggers an internal production by the individual student. Or they can be used to summarize levels of achievement at group, school or national levels. In summary, they can be used summatively or formatively.

A. Different Curriculum Arrangements in relation to Assessment Standards

1. Summative Forms of Assessment predominate (A₁ – Shaded Area - see Table 4.9).
2. Formative Forms of Assessment predominate (A₂ – Shaded Area - see Table 4.9).

B. Summative Assessments – Occurrence

1. At the end of each year (B₁ – Shaded Area - see Table 4.9).
2. At the end of each key stage (B₂ – Shaded Area - see Table 4.9).
3. At the end of formal schooling (B₃ – Shaded Area - see Table 4.9).

Table 4.9: Assessment Arrangements

	Different Curriculum Arrangements in relation to Assessment Standards		Summative Assessments – Occurrence		
	A ₁	A ₂	B ₁	B ₂	B ₃
Finland					
Massachusetts					
Scotland					
Ontario					
Netherlands					
Mexico					
Germany					
England					
Chile					
Singapore					
New Zealand					
Victoria					
Queensland					
IB					

A₁ - Summative Forms of Assessment predominate
A₂ - Formative Forms of Assessment predominate

B₁ - At the end of each year
B₂ - At the end of each key stage
B₃ - At the end of formal schooling

In most of our countries, summative forms of assessment take priority over formative forms of assessment; sometimes to the detriment of learning processes.

4.10 Textbooks

Some countries in the world use textbooks sponsored and written by government agencies:

1. **State-sponsored** and state-written textbooks (**A₁ - Shaded Area - see Table 4.10**)
2. No state-sponsored and state-written textbooks (**A₂ - Shaded Area - see Table 4.10**)

Table 4.10: Textbook Use

	State-sponsored	No state-sponsored
	A₁	A₂
Finland		
Massachusetts		
Scotland		
Ontario		
Netherlands		
Mexico		
Germany		
England		
Chile		
Singapore		
New Zealand		
Victoria		
Queensland		
IB		

A1 - State-sponsored and state-written textbooks

A2 - No state-sponsored and state-written textbooks

These categories: curriculum review, curriculum reform arrangements, curriculum standards or learning aims/objectives, curriculum integration, curriculum progression, the start date of formal schooling, learning arrangements in a curriculum, curriculum subjects, summative and formative assessment arrangements and textbook use, have been chosen to illuminate our sample of countries' practices in this field. In the next chapter, we examine the International Baccalaureate Organisation (IBO) curriculum, pedagogic and assessment practices.

Chapter Five: International Baccalaureate Organisation's Curricular Practices

5.1 IBO Curriculum Development

This section examines aspects of the IBO's own curriculum development with reference to practices and trends around the world. A key feature of this report is its focus on the ways in which educational systems are reformed and can be reformed. That is, curriculum development is analyzed with regards to existing structures and practices, and sensitivity to the context in which the system of education is embedded. Prevailing social and political conditions exert a powerful influence on reform agendas and processes. This is illustrated by the ad hoc and politically motivated nature of the curriculum review processes in the majority of cases in this report.

Although some of the featured jurisdictions have moved towards establishing a continuous cycle of review (expressing similar rationales to the IBO), these cases remain a minority. Examination of these few contexts generally reveals a consensual, cross-party approach to education reform, and broad agreement over the direction of travel. Extricating the process of education reform from the political cycle may represent an important condition for enhancing the prospects of the sustainability of the integrity of reforms, and in this respect the IBO appears to enjoy a privileged position, situated beyond the caprice and contingencies of national politics.

Yet, we also recognize that the International Baccalaureate is embedded in its own organizational culture and history that it experiences both strategic and economic constraints, and that operating across such a range of national contexts brings its own particular difficulties in the process of change. As the Diploma Programme (DP) curriculum development guide acknowledges, 'any changes will need to consider practical and resource implications, be agreed by the internal review committee (IRC), and be scheduled on the Diploma review schedule'. There are also strategic concerns, as the IBO notes: 'compound annual growth rates for each of the four programmes demonstrate strong year-on-year growth'. And, further to this, 'managing this rapid growth while maintaining our reputation for high quality is central to the challenge of our strategic plan'. We, therefore, need to pay careful attention to the nature of the organization itself, its strategic priorities, and its existing curriculum (review) structures and practices.

5.2 IBO: Curriculum Aims, Culture and Change

The International Baccalaureate's mission statement declares the following aim: 'to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect'. This is translated into the IB Learner Profile, which outlines 'a set of learning outcomes for the 21st century', and 'a set of ideals that can inspire, motivate and focus the work of schools and teachers, uniting them in a common purpose'. These broad aims are woven into and infuse the curriculum, pedagogy and assessment practices in each of the four IB programmes. As Stobie (2007: 15) asserts, however, 'administrators, teachers, students and parents must buy into and live in the international philosophy to help ensure the experienced curriculum is the same as the intended curriculum'. Furthermore, 'internationalism must permeate the ethos of the school, as well as the intended curricula, and be essentially experiential' (*ibid.*). These concerns relate not only to the initial implementation of the intended programmes, but also the sustainability of the integrity of subsequent reforms.

Schools must successfully pass through the IBO's authorization process before they are permitted to implement any of the IB programmes. This mechanism ensures that IB World Schools largely share a common culture, one that reflects the IB's philosophy. The authorization process also aims to help schools plan to 'sustain the programme in the long term', while schools must also demonstrate a commitment to ongoing professional development (PD) 'before candidacy, at authorization, and at evaluation'. These levers may serve to enhance the prospect of IB students receiving a holistic educational experience that reflects the aims and values underpinning the IB programmes. We note, however, that this professional development is not stipulated as mandatory for all teachers on the Diploma Programme (DP).

The countries and jurisdictions in this study that have moved towards a continuous cycle of review have generally aimed to put in place mechanisms to ensure that teachers are engaged in constant professional development throughout their career, keeping abreast of developments in curriculum, pedagogy and assessment practices. This trend also reflects the broader shifts towards *lifelong learning*. Disparity in uptake of professional development programmes may have long-term effects for the implementation of programmes, potentially leading to uneven delivery and a departure from the intended curriculum. The introduction of minimum requirements for PD is problematic in the case of the IB programmes. Professional Development courses and materials must be purchased by IB schools and provide a significant portion of the IBO's revenue. They are, however, considered expensive, and if mandatory PD was extended, the costs may prove prohibitive to certain schools. Despite this, it must be acknowledged that documents made available with the new Diploma curriculum

guides compare favourably with those of other systems. This evokes the related issue of quality assurance.

After an initial site visit during authorization, quality assurance for the Diploma is largely based on a review of paperwork. In contrast, most of the education systems analyzed in this report have established some form of site-based quality control, allowing them to evaluate school culture and practices on the ground, ranging from the upkeep of facilities and ethos, to classroom environment, organization and pedagogy. The transnational nature of the IB's activity raises unique logistical issues for quality assurance, and the additional investment required represents a significant barrier to conducting on-site visits. Nonetheless, the issue cannot be lightly discounted. Quality assurance systems may act to help preserve the integrity of the principles and values underlying the delivery of the DP, preserving the conditions in which reforms can retain their original shape, form and content as they are disseminated throughout the system. The image presented by satisfactory paperwork may depart significantly from the experienced reality on the ground.

For example, one critical influence on the manner in which the intended curriculum is enacted lies with the impact of assessment on classroom practices. This may be experienced most acutely with regard to the Diploma, which is intended to 'provide an outstanding preparation for university education' and which is primarily assessed through formal examinations. IB curriculum development managers indicated that attempts to emphasize pedagogy, learning and process are regularly undermined by the influence of assessment. Stobie (2007: 149) has also identified the perception that, 'important learning objectives clearly identified in the Diploma Programme are considered less important (or not even recognized) by a number of teachers in practice because of the pressure they are under to get students through a tough and traditional academic examination'.

This finding is in line with other studies, which have demonstrated that systems of assessment and particularly examinations exert a powerful influence on pedagogy and classroom practice because they provide a hard and high stakes accountability measure (for example, Dore, 1976; Morris and Adamson, 2010). The IB's summary statistics collated and published at the end of each examination cycle may not be used to deliver punitive accountability measures, but will nonetheless exert an influence on how teachers allocate class time. As with all systems that aim to impart abstract principles and values within programmes involving high stakes formal assessment, there is 'a danger that fundamental principles that cannot be easily assessed through an external examination can be neglected' (Stobie, 2007: 143).

Systems typically respond to this problem by introducing ‘soft’, classroom-based evaluation, relying on the professional judgement of teachers and their familiarity with overarching values and principles. Whereas certain systems publish comparative league tables of student outcomes on ‘core’ subjects at various stages of their school career (e.g. Massachusetts and England), using these to incentivize, troubleshoot and to benchmark ‘best practice’, others (e.g. Scotland) are moving away from this practice on the basis that it is perceived to interfere with broader curriculum aims and with learning in general. There is evidence that the IB attempts to balance the impact of formative examinations with a range of classroom-based evaluative practices where possible, though it is unrealistic to expect the influence of assessment on learning in the DP to be eradicated completely.

5.3 International Baccalaureate Programmes and Curriculum Materials

Curriculum within the IB is defined as ‘all aspects of the teaching and learning process for students in an IB programme, namely its design, implementation, assessment and review’. The four IB programmes extend across the whole range of students’ educational experience, 3-19. The programmes are: the Primary Years Programme (PYP, ages 3-12), the Middle Years Programme (MYP, ages 11-16), the Diploma Programme (DP, ages 16-19) and the new Career-related Certificate (IBCC, ages 16-19). These were developed at different times and are managed independently, but are intended to provide a *continuum of education*. The emphasis on developing a continuum has clear implications for the process of review and implementation, requiring a collaborative and interconnected approach.

Although many IB World Schools offer more than one of these programmes, they may also choose to offer just one, or any combination of the four. This variation in uptake should not affect the planning of a coherent educational experience, though clearly each programme must also stand on its own. The Diploma curriculum is intended to follow on coherently from the PYP and MYP, though Stobie (2007) has asserted that in practice teachers’ delivery of the Middle Years Programme’s content and aims was being distorted by their desire to prepare students for the specific demands of the Diploma. This raises questions of alignment between the two programmes, and may represent evidence of an early impact of the high stakes nature of the Diploma Programme on the implementation of the curriculum.

It would be unfair, however, to allege that the Diploma is dominated, in principle, by an examination orientation. It is a two-year programme, intended to ‘address the intellectual, social, emotional and physical well-being of students’. The core consists of: the extended essay, ‘in depth study of a question relating to one of the Diploma subjects they are studying’; theory of knowledge, in which they ‘inquire into the nature of knowing and deepen their understanding of knowledge as a human construction’; and creativity, action, service

(CAS), the three strands of which, ‘enhance students’ personal and interpersonal development through experiential learning and enable journeys of self-discovery’. Diploma students further select a subject from each of five groups (1 to 5), developing ‘knowledge and understanding in their best language, additional language(s), the social sciences, the experimental sciences and mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5’.

The individual curriculum guides begin by reminding the user (primarily teachers) of the IBO mission statement and Learner Profile, further stating that the document is ‘intended to guide the planning, teaching and assessment of the subject in schools’. Coherence between programmes is emphasized with an overview of relevant links to the MYP, and there is a section discussing how the subject relates to other components of the Diploma, such as the theory of knowledge element. They indicate an interest in developing a holistic and interconnected educational experience, underpinned by the IB’s core principles.

Curriculum materials are available via the IB’s online curriculum centre (OCC). The centre boasts an extensive range of material, including curriculum guides, varying support materials, guidance for internal assessment, subject reports and grade descriptors. There are also forums on which teachers can discuss relevant issues, share resources they have created, or provide details of where to find other teaching aids. Aside from providing a platform for sharing pedagogic practices and experiences, the forum evokes the notion of teachers as active and ‘embedded’ researchers found in literature on professional development.

Teachers play a key role in mediating between institutional culture and the students. The fact that teachers have to take a multitude of sequential and simultaneous decisions which include personal, interpersonal, interactive, disciplinary, pedagogic and institutional factors requires a new approach to in-service teacher-training and development. One such approach is derived from Donald Schon’s seminal work, *The Reflective Practitioner* (2005, third edition), which examines how practitioners operate and learn in workplace settings.

Imposing a pre-defined and fixed innovation on teachers (and students) in diverse institutional and regional contexts in a coercive, top-down fashion is counter-productive and likely to make teachers revert to ‘safe’ routinized practices. It seems more promising to encourage practitioners to try out new ideas in their classroom, to make adjustments, generate new material and justify their decisions. Participants have to be enabled to analyse their own classes, strengthen their communicative competencies and classroom management strategies, and amplify their pool of teaching resources.

One area that attempts to overcome the gap between theory and teaching practice by involving teachers as agents in actual investigations is *Action Research*. Action Research seeks to solve practical, mostly classroom based problems and to foster the practical judgment of actors in real situations. Involving teachers in curriculum development and implementation allows practitioners to ‘own’ the knowledge they generate. It is assumed that innovation is more likely to be accepted if teachers are involved in the design of materials that is relevant for their students and adapted to their needs. Since curriculum development depends upon a high level of professional judgment, it is appropriate to build professional development around a teacher-as-local-expert model.

5.4 Curriculum Development and Review

The IB identifies its four main activities as: development of curriculum; assessment of students; training and professional development of teachers; and authorization and evaluation of schools. These different strands are interrelated and a review process should be coordinated to ensure that practices and structures in one area complement and reinforce those in the others. The curriculum is reviewed in a 7-year cycle, which in turn has implications for review of each of the IB’s other related activities.

The IBO documents state that a continuous cycle of review is desirable ‘to ensure that each curriculum is fit for purpose in a changing world and incorporates the latest educational research as well as lessons learned from a thorough evaluation of the existing curriculum’. This is consistent with the rationales of other systems that have initiated a continuous process of review. IBO curriculum development managers have, however, raised the question of whether it is ‘too wedded’ to the review cycle, particularly whether it is necessary to review all subjects with similar frequency.

In education systems operating with a continual or cyclical process of review, individual subject reviews are generally staggered, meaning that different curriculum subjects are at different stages of the review process. This is generally a practical decision, allowing the best use of resources. Coherence between subjects is achieved through a variety of mechanisms; for example, the establishment of an overarching curriculum council, sharing of best practices and research evidence, and the development of collaborative partnerships between those working on different curriculum subjects and stages. Similar mechanisms can be found in the IB curriculum development arrangements.

The regular amendments and revisions in these cases are generally of low intensity and are not intended to have a significant impact on the system as a whole. Systems that have established this continuous cycle of review have generally undergone a more intense phase of

upheaval, involving wholesale reform, and are primarily concerned with ensuring that their curricula remain up to date and that emerging issues within the system are dealt with at an early stage. Of course, this does not preclude the possibility of a broader, more extensive review if the need arises.

In common with the IBO, the review processes typically begin by inviting feedback from a broad range of stakeholders, including teachers and schools. Subject experts are involved throughout, from an early stage, and revisions are discussed in conjunction with assessment experts throughout the process. Although it may be desirable to trial assessment for individual components as the review proceeds, particularly in cases where assessment may prove difficult or is experimental, a full trial is only possible once the curriculum content and learning outcomes have been finalized. Approaches to trialling assessment vary and time-frames may be more flexible than those imposed by the IB's review cycle. In Massachusetts, for example, the number of reviews a draft curriculum and assessment system may undergo is not rigidly specified, and the process is highly variable across subjects. This flexibility eases pressure to reach publishing deadlines, as the curriculum will not be submitted until it has been agreed with all the relevant groups. In the case of the Diploma Programme, however, the Curriculum Subject Area Manager (CSAM)² must ensure that the material reaches the publisher within the rigid deadlines imposed by the review cycle.

The CSAM is required to map out the entire curriculum review schedule for the relevant subject area. A project management approach is adopted, with the rationale that this will encourage the 'development of a team with the curriculum subject area manager (CSAM) working closely and collaboratively with the wide range of stakeholders involved in curriculum review'. The document further stresses that the approach allows for accurate long range budgeting. The review cycle follows three main phases: (i) implementation, (ii) evaluation, and (iii) development. Subject chapters in the development guide are devoted to five elements spanning these three phases, each with a clearly stated standard and an array of specific practices associated with these standards.

The main elements are: (i) planning, (ii) research, (iii) consultation, (iv) document production, and (5) professional development for schools and teachers. A final chapter then provides guidance on policy and procedures for Diploma pilot subjects. The extensive nature of consultation, involving a broad range of stakeholders and across curriculum areas, is suggestive of a pluralist model, with the developmental flow reaching out to all parts of the system. This has parallels in the other systems studied, which have taken measures to

² The role of CSAM has now been replaced by a Curriculum Manager (CM) and Subject Manager (SM). The documents provided to the research team had not yet been updated to reflect this change.

improve the coherence of their curriculum with all parts of the system, ensuring they are pulling in the same direction to maximize the effectiveness of reforms.

The efficacy of the review process depends largely on how guidelines are interpreted and enacted by CSAMs and others involved in the process. Curriculum development managers have expressed concern that the current guidelines are excessive, with the exhaustive processes outlined acting as a barrier to comprehension. This raises the question of which aspects might be reasonably omitted from the guide and which must be retained, with the aim of preserving the precision and integrity of the process, while making the documentation more user-friendly. Most of the countries we looked at did not have statutory processes of review, and therefore, the issue of guideline exhaustion did not arise. In those countries, which did have formal processes of review, the process was generally explained in some considerable detail.

In addition to dictating the stages, standards and practices to be followed throughout the phases of review, the guidelines offer clearly defined timetables outlining when each of the stages must be completed. As we have discussed, this level of specification is quite unlike the levels we found in the countries we reviewed, and the guides appear to provide a valuable tool for project management, ensuring uniformity and consistency in the process across subjects. The question arises, however, of whether these rigid review timetables can really be appropriate in all cases, or whether they may on occasion place artificial constraints on the process of review. Pressure to meet the deadlines set by these timetables may encourage a tick-box approach to review that appears superficially to satisfy bureaucratic criteria, while glossing over and trivializing the complex nature of multi-level and inter-related processes of system change. In the last chapter of this report, we provide some general conclusions about the processes we have discussed above.

Chapter Six: Conclusions

6.1 Background to the Report

This report examines the development and revision of curricula in jurisdictions, regions and countries around the world. In addition, it provides examples which could further inform the International Baccalaureate Organisation's (IBO) own curriculum development. We identified thirteen countries and jurisdictions that we thought likely to be *productive locations for learning* in relation to curriculum development and reform: Finland; Massachusetts, USA; Scotland; Ontario, Canada; Netherlands; Mexico; Germany; England; Chile; Singapore; New Zealand; Victoria, Australia; and Queensland, Australia. Our sources of information included government documents as well as books, and academic and professional journal articles. We collected information about a wide range of issues, from the organization of schooling in these different countries, to the aims and purposes of their curricula, and their arrangements for delivery and assessment.

Our findings are as follows:

6.2 Review Cycles

With the exception of Ontario, most mass systems of education do not have established curriculum review cycles. Curriculum reviews tend to be ad hoc, unplanned, dependent on the political cycle, and a response to a particular problem by government. The IBO, on the other hand, has the benefit of being able to rise above national considerations, and uses a strongly defined and structured seven year process of curriculum review in relation to their programmes. This is unusual.

6.3 Flow of Reform

The point of entry for a reform in most countries is at the top of the system or the apex of the power structure. The general direction of flow is fragmented and multi-directional. Reforms generally lose their shape, structure and contents during the exploration, development, recontextualization, implementation and institutionalization phases of the reform process. In most countries institutionalizing processes are undeveloped. In contrast, the IBO's curriculum reform processes demonstrate coherence across all parts of the organization, although as we found from our interview with an IBO colleague, this may in some cases be compromised by an inconsistent uptake of continuing professional development for International Baccalaureate teachers, perhaps on grounds of cost.

6.4 Curriculum Aims

Most reforms of education systems now emphasise assessment driven, goal directed and fact based forms of learning. And in addition, most education systems have similar curriculum standards or curriculum aims/objectives, and likewise are driven by summative processes of assessment, which in turn appears to have been influenced by the imposition of external tests, such as PISA. The IBO curriculum is specifically aimed at university preparation, rather than inter or intra-country comparisons, and as such goes beyond the usual requirements of many curricula. However, there is a risk that the emphasis on high stakes assessment at the end of the programme may affect the integrity of some of the pedagogical approaches adopted by the IBO, particularly in the case of schools which have not had face to face visits since initial accreditation.

6.5 Subjects and Forms of Knowledge

In all countries, an emphasis is given to Language (Literacy), Mathematics and Science. Although most of the countries we sampled do not use text books written by government agencies, most are, nevertheless, preserving traditional knowledge forms and strong insulations between them in the school curriculum. In contrast, in addition to an emphasis on Language, Mathematics and Science, the International Baccalaureate specifically encourages interdisciplinarity and a focus on international mindedness which is in alignment with its intention (here paraphrased) of producing intelligent and well-educated 21st century citizens. Once again, this is unusual.

6.6 Modes of Progression

Most countries start formal schooling as early as possible, often between the ages of 4-5. And they use progression modes, which prioritize educational extension rather than increasing the complexity of and deepening learning. Knowledge is therefore expressed in terms of lower and higher domain-levels, with the latter having to be taught before the former, and sequenced correctly. This is similar to the Diploma Programme, particular with some courses being taken at a higher level (HL) of assessment at the age of eighteen. However the provision of extended essays and similar assessment technologies may mitigate the negative effects of such practices.

6.7 Curriculum Reviews

As a supra-national organization, the IBO is in a unique position within education internationally. Its privileged position allows it to set the tone for contemporary curriculum

review, should it so wish. Currently, there is a coherent system of review in place that appears to be operating across all parts of the organization, and this is a positive aspect of the IBO's work. However, caution is recommended here, despite the ostensibly thorough framework for review that has been put in place. Although carefully drafted guidelines for such a review process were intended to act as a useful project planning tool, and indeed appear to succeed in this regard, the process underpinning curriculum review gives the impression of being overly complex and detailed, which may result in a form of 'guideline exhaustion'. This runs the risk of trivializing certain aspects of the reform, making it into a tick box exercise for some participants. The fact that accreditation after the initial phase is based only on submission of paperwork is likely to increase the risk. The IBO should therefore consider:

- Developing strategies for enhancing the uptake of professional development courses in relation to curriculum review. For example, the IB might investigate the likely impact of reducing the cost of professional development courses, or introducing a credit system with minimum requirements for teacher reaccreditation (or a combination thereof).
- Increasing the number of quality assurance visits rather than relying on paper-based checks after initial accreditation. These could be conducted at standard or irregular intervals, depending on the availability of resources and other practical considerations.
- Undertaking an empirical study to investigate the current alignment between the IB's intended curriculum and its implementation in schools.
- Limiting the number of reviews a draft curriculum may undergo, in order to simplify the process. Ensuring teacher involvement and action research at various stages to ensure that teachers' experience and knowledge is taken into account sufficiently well, and that the process is suitable democratic and pluralist.
- Developing the role of the teacher as an embedded researcher, with implications for professional development practices and the curriculum development and review process.
- Slimming down the review guidelines and making them less detailed and prescriptive, although there should continue to be an emphasis on their value as a project planning tool.

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