

Comparing the Learning Bases

An evaluation of Foundation Phase curricula
in South Africa, Canada (British Columbia),
Singapore, and Kenya

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June 2010

PUBLISHED BY



Council for Quality Assurance in
General and Further Education and Training

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Acknowledgements

This composite report was written by Dr Ursula Hoadley. The analyses of the different learning areas were carried out by the following researchers; their contribution is thankfully acknowledged:

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Life Orientation: Ms Sheila Drew (Team Leader), Prof. Maropeng Modiba, Ms Tsakane Baloyi, and Prof. Jean Baxen

Mathematics: Prof. Mamokgethi Setati (Team Leader), Ms Hanlie Murray, Dr Anne-Mari Dicker, Ms Ana-Paula Lombard, and Ms Cally Kühne.

This work forms part of Umalusi's ongoing *Maintaining Standards* research into the standard of the National Curriculum Statement. This is the first report in a series that focuses specifically on the General Education and Training band of the schooling system (Grades R to 9).

Mr Biki Lepota managed this research project, coordinating the work of the three learning areas teams and ensuring the interpretation and application of the research instrument. The administrative support of Mr Frank Chinyamakobvu must also be noted with thanks. The critical readers for the report, especially Ms Liz Burroughs, are also acknowledged.

Umalusi once again extends its thanks to all who have made this report possible.

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Executive summary

Comparing the Learning Bases: An evaluation of Foundation Phase curricula in South Africa, Canada (British Columbia), Singapore, and Kenya reports on a research project undertaken by the Council for Quality Assurance in General and Further Education and Training, Umalusi, that compared the South African Foundation Phase curriculum (Grades 1 to 3) for English, Mathematics, and Life Orientation with the curricula of Canada (British Columbia), Singapore, and Kenya for the same grades. The analysis is based on a comprehensive collection of curriculum documents from each of these countries, which lay out the intended learning for students at this level of the schooling system. Teams of four researchers undertook the initial analysis of the documents, based on an instrument developed over time within the broader Umalusi *Maintaining Standards* research project. This document combines the three analysis reports produced. The report begins by framing the context of the research in relation to Umalusi's broader research agenda. It describes the broad social and educational context of the countries under study. It presents the methodology deployed in the study, and the theoretical framework underpinning the analysis of the three curricula. The theory draws on that of Bernstein (1990) and his analysis of the organization of knowledge and its transmission, and previous Umalusi research that considered curriculum standards (including breadth, depth, and complexity). Each subject is then dealt with individually. Various dimensions of each curriculum are considered: These are the aims, the organizing principles, the content and skills coverage and depth, the time allocation, sequencing, pacing, progression, teaching approach, assessment, integration, and user-friendliness of the curriculum documents from the different countries. Trends across the curricula of the four countries are then presented, covering similarities, differences, and strengths and weaknesses of the different curricula relative to one another. In general the South African *National Curriculum Statement* is found to be under-specified in terms of content to be taught, and in terms of progression, assessment, and pacing. It has a strong emphasis on integration, which is inadequately modelled for the teachers. This report makes the broader argument that the *National Curriculum Statement* does not represent a curriculum that the average South African teacher can easily access. It argues for curriculum revision to provide a curriculum that resonates with teachers' existing training and practice, a curriculum they can understand and relate to, which at the same time protects the need for students to learn internationally-recognized content in a way that is optimal for their development. Specific recommendations in relation to the dimensions of the curriculum analyzed are provided in the conclusion of the report.

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1. Introduction

This is the first in a series of reports emanating from an Umalusi research study aimed at comparing the South African national curriculum for the General Education and Training (GET) Levels (Grades 1 to 9, or basic schooling) with those of other countries. This report compares the South African Foundation Phase curriculum (Grades 1 to 3) for English, Mathematics, and Life Orientation with the curricula of Canada (British Columbia), Singapore, and Kenya for the same grades. Grade R, the reception year that forms part of the South African Foundation Phase curriculum, has been omitted from the analysis to enhance the cross-country comparative aspect of the research, as the other countries treat the pre-Grade 1 years separately. The aim of the research is to learn from selected well-performing systems in order to inform discussions about improvements to the South African curriculum. The central question informing the research is: What are the standards of the Languages, Mathematics, and Life Orientation curriculum offered to South African school learners in Grades 1 to 3 of the GET band relative to the equivalent curricula in three selected other countries: Singapore, Canada, and Kenya?

This report is produced concurrently with a separate report that considers the teaching and learning of African languages at the Foundation Phase level. In order to achieve a comparison for a selection of languages, the South African Setswana literacy curriculum was compared with those of Lesotho and Botswana, and the South African isiZulu curriculum with those of Zimbabwe and Swaziland. Two further reports are planned for the GET research project; a report on the Intermediate Phase of primary schooling (Grades 4 to 7) and one on the Senior Phase (Grades 8 to 10) will follow. These reports will also take a comparative approach with the aim of learning lessons from the curriculum structuring of other countries for the improvement of the South African curriculum. Further, as part of the GET project a number of other issues will be addressed in other reports. The issue of teacher preparation for the Foundation Phase has already been reviewed (Umalusi, 2009). The purpose of this review is to pull together current research knowledge on the quality and scope of teacher training for the Foundation Phase specifically. Given that the report has been commissioned by Umalusi, the report places an emphasis on issues relating to curriculum. The review then considers research in relation to a number of issues identified by Umalusi as crucial to our understanding of the current state of Foundation Phase teacher education.

The *Comparing the Learning Bases* research takes place in the context of on-going attempts to improve the South African national curriculum. The first post-apartheid curriculum, *Curriculum 2005*, was implemented in 1998 in schools, and introduced outcomes-based education (OBE) into the education system, as well as a number of progressive education tenets, such as learner-centeredness and constructivist epistemologies. As a result of the strong criticism surrounding its implementation *Curriculum 2005* was reviewed two years later in 2000. Amongst other aspects, the review criticized the strong programme of integration in the curriculum, as well as the lack of clear knowledge stipulations. The result of this review was the construction and implementation of a revised *National Curriculum Statement (NCS)* in 2002, which addressed a number of the criticisms of *Curriculum 2005*, but did so unevenly across the different levels and subjects. OBE was retained in the revision of *Curriculum 2005* – the *NCS* remained based on the measurable outcome – as were many of the progressive education features associated with it (such as an emphasis on themes for integration and on group work as a strategy for teaching and learning). On-going criticism of the *NCS*, and in particular OBE, led to another review of the curriculum in 2009. This review was also

conducted in the context of the on-going failure of the system to provide a high enough quality of education as measured by various systemic and standardized tests. The 2009 review recommended that the curriculum policy be clarified, making what was to be learnt clearer (i.e., greater stipulation of knowledge) and recommended the abolishing of outcomes as the central curriculum organizing device. It is hoped that this report, while providing insights afforded by a comparative curriculum approach, will also inform the policy processes currently underway in relation to the current revision of the NCS.

The connection of this evaluation with Umalusi's other research

Umalusi has conducted several studies into curriculum standards. In 2004 Umalusi investigated whether or not standards in the Senior Certificate examination had declined (published as the *Investigation into the Senior Certificate Examination* (Umalusi, 2004)). In 2005 research was undertaken to compare the standards of college and school subjects (published as *Apples and Oranges: A comparison of school and college subjects* (Umalusi, 2006a)). In 2006, a further study compared the syllabuses and examinations of Ghana, Kenya, South Africa, and Zambia in order to ascertain the relative standards of South Africa's Senior Certificate courses in Mathematics, Physical Science, Biology, and English in relation to the same subjects at Senior Secondary level in these countries (Umalusi, 2006b). All of these studies highlighted debates and complexities about what is meant by standards, what standards should be in our education system, and how we should measure them. The research also aided the development of tools with which judgments could be made about the standards of curricula and examinations. Umalusi has, with the assistance of experts, further developed these tools.

The Umalusi studies thus far have focused on further education. To fulfil its mandate of monitoring the standards and appropriateness of curricula in the whole of the South African education system, however, Umalusi identified the need to investigate the standards of general education – the years below the level of senior secondary school. While the standards of further education are important benchmarks, the standards of the GET years leading into these higher levels need to ensure an adequate foundation for, and smooth progress to, further education.

Aside from the policy review processes referred to above, there has been no large-scale, research-driven process to investigate the curriculum at the GET level. Based on the findings of the senior secondary level studies and the tools refined in the process, Umalusi intends through the research reported here, to make judgments about the standards and appropriateness of the curriculum available to school learners in the GET band.

2. Research aims and questions

As described above, the GET project is broader than the research reported here and will eventually consist of a number of related research reports. For this particular report the questions were framed as:

- What are the standards of the English, Mathematics, and Life Orientation curriculum offered to South African school pupils in Grades 1 to 3 of the GET band relative to the equivalent curricula in three selected other countries: Singapore, Canada, and Kenya?
- To what extent do these curriculum documents provide guidance for the teaching and assessment of these curricula?

The research process reported on here also aims to feed into a process of further developing the tools Umalusi currently deploys for monitoring and evaluating curriculum documents and examinations.

How the report is structured

The introductory sections are presented above, the research sample is now discussed, followed by the methodology and the conceptual framework that informed both the design of the research instrument as well as the analysis of the data. The findings of the research are then presented. Each subject area (English, Mathematics, and Life Orientation) is discussed separately. This is followed by a summary of the analysis, and a discussion of the trends with respect to the three different subjects across the four countries. Some recommendations derived from the research for the South African curriculum context are then identified.

3. The study sample

Four countries were selected for the study: South Africa, Kenya, Canada (specifically, British Columbia), and Singapore. The three latter countries were selected on the basis of their high rankings on international standardized comparative tests in general, and in international studies involving developing countries in particular. They were also chosen as they use English as their language of learning and teaching thus making analysis of their curriculum documents more feasible for South African researchers. Singapore is in the top five countries in the Progress in International Reading Literacy Study (PIRLS) 2006 and Trends in International Mathematics and Science Study (TIMSS) 2003 studies. Canada is in the top ten countries in the TIMSS 2003 and Programme for International Student Assessment 2006 studies, with British Columbia coming third in the PIRLS 2006 study. Kenya is in the top five countries in the Southern and Eastern Africa Consortium for Monitoring Education Quality (SACMEQ) 2005 study. The research aims to identify the most significant differences and similarities between the South African curriculum and those of the high-performing education systems. Without claiming a direct causal link between the nature of the intended curriculum and student outcomes, the research uses student performance as a limited indicator of the efficiency and effectiveness of the education systems of various countries. The crucial issue of classroom practices and the quality and nature of the schooling system in general is not taken into account in the research. However, we do provide some context below regarding the countries involved in the study and their schooling systems.

Social and educational indicators of the selected countries

The social contexts of the countries in the study are very different, this is evident in the social indicators presented in **Table 1** below.

Table 1: Social Indicators for the four countries

Country	Population Size (in Millions)	Urban Population (% of total)	Life Expectancy at birth	Infant Mortality Rate (per 1,000 live Births)	Human Development Index ranking
Canada	32.6	85	81	4	4
Kenya	36.5	22	53	80	147
Singapore	4.8	100	78	3	23
South Africa	48.2	59	46	53	129

The discrepancies between the social indicators for South Africa and Kenya on the one hand, and Canada and Singapore on the other are clear from the table. South Africa and Kenya have larger rural populations, lower life expectancy, and higher infant mortality rates. The countries' rankings on the Human Development Index (out of 182 countries) are, in descending order, Canada (4); Singapore (23); South Africa (129); and Kenya (147).

As with the social indicators the four countries reflect quite different educational indicators (Table 2).

Table 2: Education Indicators for the four countries

Country	Primary Gross Enrolment Ratio (%)	Pupil:Teacher Ratio	Survival Rate to Grade 5	Expenditure On Education (% of Gross Domestic Product)	Literacy Rates United Nations Report 2007/8
Canada	99	18:1	97	6	99% (Rank 17)
Kenya	79	47:1	83	7	73.6% (Rank 131)
Singapore	96	26:1	99	4	92.5% (Rank 78)
South Africa	92	36:1	82	5	82.4 (Rank 113)

In particular the two sets of countries vary significantly in their pupil:teacher ratios; literacy rates, and survival rates to Grade 5. Singapore spends the least on education as a proportion of its Gross Domestic Product, and Kenya has the lowest primary gross enrolment ratio. Canada has the smallest classes, the highest enrolment, and the highest literacy rate.

Table 3: Entry into and out of primary education

	British Columbia	Kenya	South Africa	Singapore
Entrance age of pre-primary	4	3	5	4
Duration of pre-primary	2	3	1	3
Entrance age of primary	6	6	6/7	6
Duration of primary education	6	6	7	6
Duration of compulsory education	11	8	9	10
Starting age of compulsory education	6	6	7	6
Ending age of compulsory education	16	13	15	16

In all four countries children begin formal schooling in primary school at the same age – six years of age. The countries vary, however, in terms of the provision and duration of pre-primary schooling – ranging from three years in Kenya and Singapore, to two years in British Columbia, and one year in South Africa. The duration of primary schooling is similar in all the countries, with the majority of South African schools having one year more than the other countries' six-year primary cycle. Compulsory education has a longer duration in Canada and Singapore than in Kenya and South Africa.

English is an official language in all four countries. It is also the language of government and commerce. It is taught in the Foundation Phase in all the countries, however, there is variation with respect to whether it is taught as a first or second language. More detail is provided below in the language section.

To summarize, the four countries vary substantially in terms of their socio-economic context. In relation to schooling, structurally the systems are similar, although there are significant differences on various educational measures, with Canada measuring highest on a number of indicators, and South Africa and Kenya fairing more poorly on measures such as class size and enrolment. Below we consider the structuring of the curriculum in each of the countries.

4. The curriculum structure of the four study countries

South Africa

In 1998 South Africa adopted an overarching OBE curriculum framework, emphasizing learner-centred and activity-based learning. The outcomes, rather than content, were understood to be the key organizing drivers of the curriculum, with an emphasis on generic skills and integration across grades and across areas of learning. The starting point of the curriculum was the critical and developmental outcomes. These described broad, life-long outcomes for learning that all learners were expected to achieve, and encapsulated the general principles of democracy, social justice, and human rights of the constitution in the curriculum. The curriculum was revised in 2001 in the light of a review that argued that it was lacking in content, and failed to show conceptual progression. The revised curriculum, the NCS, is the current national curriculum. The NCS is still OBE-focused and is organized into eight learning areas, each specifying learning outcomes and assessment standards that are intended to relate back to the critical and developmental outcomes developed in the first post-apartheid curriculum. 'Learning areas' are used instead of 'subjects' to indicate an integrated approach to knowledge in the curriculum. In primary schooling in South Africa the following learning areas are offered:

- Languages
- Mathematics
- Social Sciences
- Natural Science
- Life Orientation
- Technology
- Arts and Culture
- Economic and Management Sciences.

The South African curriculum is organized into grade phases. The Primary phase consists of three phases: Foundation Phase (Grades R to 3); Intermediate Phase (Grades 4 to 6); and Senior Phase (Grade 7, continued in Secondary school in Grades 8 and 9). Curriculum statements stipulate the knowledge, skills, and values on a grade-by-grade basis. The learning outcomes provide the main organizers for the curriculum. The assessment standards are meant to show progression, and in some cases, indicate content to be taught. In some subjects content frameworks have been provided.

As opposed to the eight learning areas above, at the Foundation Phase level three 'learning programmes' are offered: Languages, Numeracy, and Life Skills. Life Skills mainly entails the subject Life Orientation, which deals with the holistic development of the child, and focuses on health, social, physical, and personal development. Life Skills also incorporates elements from the Social Sciences, Natural Sciences, Technology, Arts and Culture, and Economic and Management Sciences learning areas. All learning programmes are meant to integrate knowledge from other learning areas.

In 2008, as a response to the drastically low performance of Grade 3 learners on national standardized tests, a national strategy was launched in Literacy and Numeracy entitled the 'Foundations for Learning Campaign'. Abandoning learning outcomes, assessment standards and the strong emphasis on integration as curriculum organizers, these curriculum documents provided highly stipulated guidelines regarding the content to be taught and assessed per term for each of the grades in the Foundation Phase in Literacy and Numeracy (Department of Education (DOE), 2008a). Both the *NCS* and the *Foundations for Learning* are considered in the analyses below¹.

The national Ministry of Education (MoE) develops the curriculum centrally.

Canada (British Columbia)

The foundation part of the primary curriculum in British Columbia is organized in two grade clusters, namely Kindergarten to Grade 1 and Grades 2 to 3. Eight subjects are offered in the British Columbian primary school curriculum. These are:

- English Language Arts
- Mathematics
- Science
- Social Studies
- Physical Education
- Health and Career Education
- Fine Arts
- Daily Physical Activity.

The overarching document for the curriculum is the *Primary Program Framework*, which sets out the general principles for teaching and learning. Separate *Integrated Resource Packages (IRPs)* for each subject provide an overview of the key concepts to be learnt across primary school; prescribed learning outcomes specifying the area of study; learning descriptors; foundation statements; and areas of development linked to the *Primary Program Framework*. Learning outcomes also specify compulsory activities to be carried out. Clear links in diagrammatic form are made between aims, goals, and curriculum organizers, and specific learning outcomes. The content that should be covered in addressing the outcomes is also clearly indicated. Detailed achievement indicators accompany each of the learning outcomes. Finally, the *Performance Standards* document provides rating scales for assessment, as well as samples of student work to illustrate assessment procedures and performance levels.

Singapore

The Singapore primary school system is organized in key stages: Primary 2, Primary 4, and Primary 6. The Singaporean curriculum is organized around subject syllabi, each one a self-contained entity. The content, concepts, and skills specific to that subject area are used as the basis for organization. Content is specified per level in detail. Aims for the subjects

¹ At the same time, however, a certain amount of confusion has been caused by provincial departments of education sending out lesson plans and work schedules for the first three grades for a year, some of which emphasize integration and work with assessment standards and learning outcomes. Teachers have experienced policy overload, and also have lacked clarity on what policy takes precedence, especially where there is contradiction.

are provided, as well as a limited number of principles informing the development of the curriculum for that particular subject. These vary across subjects, as does the presentation of content. In Social Studies themes are used as an organizing principle, in Health Education objectives are used, in Mathematics topics and in English Language required learning is specified in terms of learning outcomes (language skills, strategies, and attitudes), text types, and grammar focus. The single document per subject is concise, comprehensive, and clear.

The following subjects make up the primary school curriculum in Singapore:

- English
- Mother tongue
- Mathematics
- Science (included from Primary 3)
- Arts and Craft
- Music
- Social Studies
- Civics and Moral Education
- Health Education
- Physical education.

The Singapore MoE develops the curriculum and at the end of primary education, pupils sit the Primary School Leaving Examination.

Kenya

Primary education in Kenya is organized into Lower Primary (Classes 1 to 3) and Upper Primary (Classes 4 to 8). The Kenyan curriculum is organized around subjects. The following ten subjects are taught to pupils in primary schools:

- Mother tongue
- Kiswahili
- English
- Mathematics
- Science
- Geography
- History
- Civics
- Religious Education
- Arts and Craft.

National goals are stipulated for all curricula. General objectives are specified for each subject, incorporating the values that the teaching of each subject intends to transmit. The organizers for the different subjects vary. Languages, Religious Studies, and Social Studies are organized around themes, Mathematics around topics and Physical Education around physical domains (e.g., swimming, dance). Each subject has clearly specified specific objectives and comprehensive content lists. The curriculum (it is called a 'syllabus') is minimalist, with little additional information beyond the specification of objectives and content.

The curriculum is developed by the Kenya Institute of Education and, at the end of 8 years, pupils sit the Kenya Certificate of Primary Education examinations.

Summary

It is clear from the above that the design of the curricula in the four countries is very different, with different central organizers, different levels of complexity of design, and differences in the levels of detail provided with respect to different aspects of teaching and learning particular subjects. There is also variation in terms of the subject offerings, with South Africa unique in integrating all the subjects aside from Language and Numeracy into a single programme for learning. Kenya and Singapore represent more traditional subject-based curricula, with no emphasis on integration. Both British Columbia and South Africa stress integration, and both deploy an outcomes-based framework. They do this in very different ways, however. Whereas the South African curriculum emphasizes skills, and generic learning skills, the British Columbian curriculum specifies skills but provides detailed content specification through concept overview maps, assessment indicators, and performance standards. The British Columbian curriculum is the most complex in terms of design and the most comprehensive in terms of offering guidance and specification to teachers. The Kenyan curriculum provides the least specification and guidance, although their focus on content makes their knowledge specification more detailed than that of South Africa.

The other point of interest arising from the overview above is that whereas the South African and the British Columbian curricula use uniform organizers across subjects, the Kenyan and Singaporean curricula vary in the organizers used across different subjects. These organizers would appear to be judged appropriate to the subject matter being taught.

5. Methodology

For each of the three subject areas – English, Mathematics, and Life Orientation – groups of four expert evaluators were appointed as researchers. An initial three-day briefing workshop was held during which the learning area groups worked with a proposed instrument for the research in relation to their learning areas. The initial curriculum document analyses were carried out in groups so that the experts could develop a shared sense of the evaluation criteria they were using.

The research instrument was a refined version of tools used in Umalusi's previous research (Umalusi, 2004, 2006a, 2006b), in particular the *Maintaining Standards* (2008) study. The instrument required researchers to make judgments on a number of curriculum dimensions, related to the research questions stated above. These theoretically-driven categories for analysis are described in detail below.

Subsequent to the workshop, researchers worked individually to evaluate the intended curricula. Individual reports were submitted to a team leader who compiled a composite report. These three composite reports, one for each subject area, form the basis of the present report. This report also serves, however, to validate some of the findings produced in the analyses, to extend the discussion of certain dimensions researched, and to synthesize the findings arising from the separate studies of subjects.

Subject areas selected

English and Mathematics were selected as the two fundamental areas for consideration in the curriculum comparison, providing as they do the basic set of skills required for learners to progress through schooling. In addition Life Orientation was selected for comparison, mainly because it constitutes the bulk of the third learning programme in the South African curriculum, Life Skills. A number of appropriate subjects from the Kenyan, British Columbian, and Singaporean curriculum were selected to make a comparable subject area to the South African Life Orientation curriculum.

The issue of language is central to the research, especially in the GET, and in the Foundation Phase in particular. This is because learning to read and write is so critical to the entire learning enterprise. Initially, the project sought to consider both English as well as African languages in its research. Instead, comparisons for isiZulu and Setswana with Nguni and Sesotho languages in other countries will form part of a separate report. English was chosen as the language for consideration in this report partly because it will become, for many learners, the language of learning and teaching in later years, and partly because it provides a basis for comparison with the other countries. English taught both as a Home Language (HL) and as a First Additional Language (FAL) is considered in the report.

Documentation used

A comprehensive set of curriculum documents was collected for each of the countries and for each subject area. A full list of the documents analyzed is contained in Appendix 1, 2, and 3.

Limitations of the study

While this research has several important and achievable aims, the project also has some limitations.

First, each team of expert evaluators consisted of only four researchers. As a result, judgments were confined to their experience and expertise. Undeniably, having larger teams would potentially have led to more balanced or broad-based judgments, but budget constraints did not allow for larger teams. Umalusi selected the researchers very carefully, in an attempt to ensure that a range of experience and expertise was represented.

Another limitation is that the countries included in the comparative evaluation were selected on the basis of their high performance in international comparative studies (TIMSS, PIRLS, and SAQMEC). Only countries performing at consistently high levels were selected. There are two potential limitations in relation to this selection. First, Umalusi was confined to countries with curriculum documents in the English language. There may have been other high achieving countries with high quality curricula in other languages. Second, in the worldwide studies, top-achieving countries are generally developed ones and are limited in providing socio-economic contexts directly comparable with those of South Africa with its dual first-world–third-world economy. It would have been ideal to include a wider range of countries in this evaluation; including more countries would have made it possible to consider similarities and differences between the curricula of a range of high-achieving countries, including those with social contexts more similar to South Africa's.

Finally, a direct relation between a country's curriculum and its levels of student performance is NOT assumed in this study, despite the sampling strategy. Rather we are interested in comparing the curriculum features of systems that appear to be working well (as measured in student performance) with that of South Africa, in order to discern any lessons through the comparison for our own curriculum development processes.

6. Conceptual framework: Description of the specific aspects of the curriculum covered by the evaluation instrument

For the purposes of this research a 'curriculum' is defined as the structuring and organization of knowledge for educational transmission. Because the aim of the research was partly to describe and partly to evaluate the standard and quality of the curricula, a working definition of a quality curriculum is required. For the purposes of this report, a good quality curriculum is coherent, clear, unambiguous, assessable and, as per the definition of curriculum above, draws on the essential, specialized knowledge for learning from different disciplines, subjects, or areas of learning. Key to this definition is the clarity and explicitness of the curriculum stipulations.

In considering the curricula of different countries, we draw on the theoretical concepts provided by Bernstein's (1990) theory of curriculum, pedagogy, and evaluation. Curriculum contains both a 'what' (classification) and a 'how' (framing). The 'what' refers to the knowledge included in a curriculum, in other words, from the universe of possible choices of what to teach, the selection of educational knowledge that is included in a programme of learning. Curriculum also contains a 'how'. The 'how' specifies the selection, sequence, and pacing of this educational knowledge within and across the series of grades under consideration. Evaluation refers to both the 'what' and the 'how' – what is assessed, and how it is assessed.

These conceptual categories draw attention to a number of features of a curriculum, which may vary across different contexts. The 'what', or classification, alerts us to the degree of separateness of the knowledge categories. It is concerned with boundaries between subjects. A weakly classified curriculum is one that emphasizes integration, or weak boundaries between subjects, and between topics within specific subjects. A strongly classified curriculum will have more clearly bounded subjects with fewer relationships between different subjects. Thus, the first conceptual category of interest is cross-curriculum classification.

Topics within specific subjects may also be treated discretely or may be related to each other. In this way, it is possible to have weak within-subject classification (where topics within a subject are integrated) or strong classification within subjects, where topics are treated separately. Our second conceptual category is thus within-subject classification.

A consideration of the classification principles underlying a curriculum can also attend to the aims and objectives for subjects. These again may be strongly or weakly classified, depending on the extent to which they render the subject area as based in the discipline and knowledge of that subject (strongly classified), or refer to broader national goals, personal development, etc., (more weakly classified). Finally, classification is also read off the relationship of subject knowledge and everyday knowledge. Where there is an emphasis on the everyday, local knowledge of the learners, the curriculum is more weakly classified, and where the curriculum focuses strictly on the formal knowledge to be taught, it is characterized as more strongly classified.

Framing draws our attention to the explicitness of the curriculum. The framing of the 'how' – the sequencing, selection, and pacing – of the curriculum indicates whether a curriculum is highly stipulated and explicit, or whether weak framing predominates, where there is more implicit suggestion of how knowledge is organized for transmission, and greater discretion for the school and teacher in implementing the curriculum. Evaluation may also refer to specific subjects and be clearly bounded (strong classification) and clearly stipulated (strong framing), or it may be integrated (weak classification) and less stipulated (weak framing). These aspects of framing and classification generate a further set of conceptual categories. The entire set is summarized in **Table 4** below. Conventional Bernsteinian notation is used in the table to indicate strong boundaries (C+) and weak classification (C-) and strong and weak framing (F+ and F-).

Table 4: Classification and framing dimensions in the analysis of curriculum

Across-curriculum classification	C+	C-
Within-subject classification	C+	C-
Sequence	F+	F-
Selection	F+	F-
Pace	F+	F-
Evaluation – what	C+	C-
Evaluation – how	F+	F-
Evaluative criteria	F+	F-
Regulative discourse	F+	F-

There are two final issues that will be considered in the analysis of the variation between the curricula of different countries. In relation to the first issue, Bernstein describes how, in the constitution of a curriculum, one can analytically find an instructional discourse embedded in a regulative discourse. The instructional discourse refers to the knowledge and skills of particular school subjects to be learnt. These are the evaluative criteria – that which is to be learnt, and may be clearly specified and explicit (F+) or implicit and not specified (F-). In addition to instructional discourse, Bernstein identifies 'regulative discourse', essentially the moral order, or the social norms that underpin the curriculum, which includes a theory of the learner and learning. This regulative discourse directs the way in which knowledge and the means for its transmission are selected. In other words, regulative discourse contains a model of the teacher, a model of the learner, and a model of the relationship between them (for example, teacher-centred, or learner-centred implies different relationships between teacher and learner). Bernstein's theory shows how, in the construction of a curriculum, what knowledge is selected and how it is organized for learning is predominantly determined by these 'regulative' considerations. For example, a country that has a strong political project of nation building, and a learner-centred view of teaching and learning may drive different knowledge selections to one that places a strong emphasis on building technological capacity. Similarly, a theory of learning based on constructivist principles would suggest a different way of organizing the curriculum to a theory of learning based on stringent disciplinary principles and the assertion of subject experts as teachers. The regulative discourse can be named, and it can also be characterized in terms of how explicit it is made in the curriculum (F+ or F-).

The second issue to be considered in the analysis is that of curriculum standards, an aspect of curriculum and pedagogy not adequately addressed within the Bernsteinian theoretical apparatus, but an on-going concern of Umalusi's research. Standards traditionally have to do with levels of difficulty in education systems – the breadth, depth, and level of cognitive

demand in the curricula of different knowledge fields. Breadth and depth are affected by the number of knowledge fields, subject areas, and sub-topics that learners are required to study, and by the level of detail addressed in each area. The level of cognitive demand is influenced by the types of content and skills outlined, and is usually revealed most clearly in assessment items (questions upon which tasks, tests, and examinations are based). General education aims to provide learners with meaningful language and mathematical knowledge and skills, as well as introducing other science and social-science fields – at sufficiently broad and deep levels to equip learners with a general knowledge base and the conceptual means to pursue further learning. Curricula need to be designed to ensure that all learners – across a wide range of contexts – acquire sufficiently broad and deep general education to enable them to further their studies. Breadth and depth are measured in different ways across the three subjects, as we will show below. Level of cognitive demand will be measured where possible through a discussion of curriculum topics and content, but this analysis is limited by the fact that assessment items were not considered in the analysis. **Table 5** below summarizes these final dimensions considered in the analysis.

Table 5: Breadth, depth, and cognitive demand dimensions in the analysis of curriculum

Breadth	+	-
Depth	+	-
Cognitive demand	Low	High

The foregoing summarizes the dimensions of a curriculum, drawn from the Bernsteinian framework and from Umalusi's on-going concern with standards, that organize the analysis presented below. In discussing the results of the analysis of the curriculum documents of the four countries, each of the subject areas – English, Mathematics, and Life Orientation – is taken separately. Each subject area is discussed in relation to the conceptual categories discussed above. These conceptual categories also broadly informed the design of the research instrument.

7. English findings

7.1 Introduction

English is an official language in all four countries. In South Africa it is one of eleven official languages, in Singapore it is one of four official languages, and in Kenya and British Columbia it is one of two official languages. The English curriculum for British Columbia evaluated in this report is intended to be used by learners who speak English as their mother tongue; English is also the medium of instruction. The English curriculum for Singapore is designed as a first language curriculum for learners who are not mother-tongue speakers and it is taught alongside the learners' mother tongue. English is the medium of instruction in Singapore primary schools and the mother tongue is taught as a subject. In Kenya, children learn three languages in the Foundation Phase: their mother tongue, Kiswahili (the lingua franca), and English. English is taught as a second language; it does not become the medium of instruction until Grade 4. In South Africa, there are, broadly speaking, two systems operating. In many formerly white, coloured, and Indian schools, English is the medium of instruction in the Foundation Phase and children follow the English HL curriculum, although for many of them it is not their mother tongue. They do not have to study a second language until Grade 3, when this becomes mandatory. In the majority of South African schools, however, an African language is the medium of instruction in the Foundation Phase and FAL English is taught; in some schools English is introduced as early as Grade R/1 and in others as late as Grade 3. English typically becomes the medium of instruction in these schools from Grade 4 onwards. South Africa has different curricula for these contexts – English HL and English FAL – both of which are evaluated in this report. It is important to keep in mind that a minority of relatively privileged learners follow the English HL curriculum; the majority of relatively underprivileged learners follow the English FAL curriculum.

7.2 Curriculum aims

The **Kenyan** syllabus, similar to that of the South African English FAL curriculum, aims to prepare learners to use English as a medium of instruction from Grade 4 onwards. The Kenyan syllabus clearly spells out that by the end of Grade 3 learners “should have acquired a sufficient command of vocabulary and language patterns to be able to use English as the medium of instruction” (Republic of Kenya Ministry of Education (KME), 2002a) in Grade 4. In order to achieve this, general aims are specified in terms of language skills: listening, speaking, reading, and writing.

The **South African** English FAL curriculum lacks the clarity of the Kenyan syllabus, but it refers to the fact that children will eventually study “some of their other Learning Areas through their additional language” and that “they must be prepared for this”. For example: “they should be able to conceptualise in their additional language, and to ask and answer challenging questions” (DOE, 2002a: 9). Like the Kenyan syllabus, the English FAL curriculum emphasizes the importance of building vocabulary.

The aims of the South African English HL curriculum also lack clarity. In the HL document “purpose” and “unique features and scope” are used in place of ‘aims’ (DOE, 2002b: 5). The aims for both HL and FAL have to be read from the learning outcomes and encompass the

main language skills, but with a broader range than the Kenyan ones: to listen, speak, read, view, write, think, and reason in English for a wide range of purposes. There are a number of documents in the Foundation Phase that augment the NCS documents, and provide more detail regarding the aims of the curriculum. The *National Reading Strategy* (DoE, 2008b), which is part of the Foundations for Learning Campaign, puts reading and writing firmly on the agenda and clarifies and simplifies curriculum expectations. The broad aim is that all learners should be able to read basic texts by the end of Grade 3.

The aims of the **Singaporean** curriculum are more detailed and explicit: to ensure that by the end of their primary and secondary education, learners will be able to communicate effectively in English. Learners should be able to listen to, read, and view a wide range of fiction and non-fiction texts from print, non-print, and electronic sources. They should be able to speak, write, and make representations in internationally acceptable English that is grammatical, fluent, and appropriate for purpose, audience, context, and culture. They should be able to interpret and evaluate fiction and non-fiction texts from different sources, and interact with speakers from their own or different cultures. In the introduction to the *English Language Syllabus*, it is stated that: "As the language of public administration, education, commerce, science and technology, and global communication [English] has become the medium by which most Singaporeans gain access to information and knowledge from around the world. The ability to speak and write English effectively, therefore, has become an essential skill in the workplace, and a mastery of English is vital to Singapore's pupils" (Singapore Ministry of Education (MoE), 2001: 2). There is a much stronger emphasis on language for social interaction (language functions, appropriate use of language) and pronunciation in the Foundation Phase than in the other curricula, and less emphasis on language for thinking, as suggested in the South African and British Columbian curricula.

The broad aims of the **British Columbian** curriculum are clear but complex. They are specified in terms of three over-arching goals (intellectual, human, and social development, the primary one being intellectual), three pedagogic principles (active participation, differentiated learning, and learning as an individual and a group process) and five areas of development (aesthetic and artistic, emotional and social, intellectual, physical, social responsibility). Essentially the aim is one of holistic development, literacy being understood as part of this (Canadian Ministry of Education (CME), 2000: 12–24). Specific aims for English Language Arts are spelled out in the *IRPs*: "to provide students with opportunities for personal and intellectual growth through speaking, listening, reading, viewing, writing and representing to make meaning of the world and to prepare them to participate effectively in all aspects of society" (MOEBC, 2006a: 2). The rationale behind these broad and specific aims is that literacy is taught in a holistic and integrated fashion. It is seen primarily as an intellectual endeavour with thinking and meta-cognition emphasized, but including aesthetic, social, and emotional dimensions. Learning is seen as social as well as individual. Collaborative and scaffolded learning are prominent notions in the curriculum. Literacy is viewed as a developmental process; learners are not seen as progressing at the same pace and therefore differentiated learning is advocated.

Although the fundamental skills entailed in becoming literate – speaking and listening, reading, writing, and viewing – all form part of the specific aims, the broader aims vary between countries. The British Columbian curriculum is focused on the holistic development of the individual child. Its broad nature renders the classification of the subject weaker. The Singaporean curriculum has a strong academic focus in its aims, all clearly linked to the development of language ability, and consequently strongly classified. South Africa's aims are not well articulated but diffuse. Kenya focuses strictly on literacy skills, clearly defining what is to constitute the study of English.

Table 6: Classification of the subject English as read through the specification of aims

	South Africa	Kenya	Singapore	British Columbia
Classification	C-	C+	C++	C-

7.3 Organizing principle

The organizing principle is discussed in two ways. Firstly, it is analyzed in terms of the technical design of the curriculum, and what structures the presentation of the content to be learnt. Secondly, the theory underlying the curriculum, in other words what informs its organization, is presented. The latter was discussed in the section on the conceptual framework in terms of regulative discourse, and its explicitness is measured in terms of strength over framing.

Technically, the **Kenyan** syllabus is explicitly organized in terms of 'themes', 'content' and 'objectives'. Each unit is organized around a familiar theme such as 'home', 'family', and 'school'. This is a common way of organizing second language learning, but it is unusual to specify the actual themes in the syllabus. Although seemingly inflexible, it may present a cost effective means for the provision of resources. The content, which is organized in terms of vocabulary and language patterns, derives from these themes. Lists of language content and of vocabulary are then provided. The theory underlying the curriculum is not explicit, but can be read as approximating audiolingualism, an approach to second language teaching that brings together structural linguistics and behaviourist learning theory. The focus on structure, the use of objectives, and the emphasis on accuracy rather than language development all derive from audiolingualism. This sets it apart from the other curricula. There is a positive aspect to this – audiolingualism is a well-developed model of language teaching with which teachers in Kenya are likely to be familiar. The danger is that teachers will focus too much on learners getting a small number of items right to the exclusion of broader language development. For example, it is unrealistic to expect learners "to use sentence structures correctly" in Grade 1 (KME, 2002a: 9).

The **Singaporean** syllabus is explicitly organized in terms of language skills (listening, viewing, speaking, reading, writing); language knowledge (text types, grammar, vocabulary); and functions or uses of language (language for information, language for social interaction, language for literary response and expression). The latter are expressed in terms of learning outcomes. The organizing framework is informed by Hallidayan systemic functional linguistics (shown diagrammatically in Singapore MoE, 2001: 6). When language is used for different functions, different text types are invoked (e.g., instructions, narratives). When language is used for different purposes and audiences in different contexts and cultures, different registers are created. This serves as a very strong organizing framework for the curriculum. The language outcomes are designed in terms of both language skills and functions. So, for example, learners will listen to, view, and read a variety of texts for information. At the end of each phase, text types are specified according to function and grammatical features so that the teacher can select appropriate information texts and know what grammar to teach. At the end of the syllabus a sequenced grammatical syllabus is provided so that one can locate the features within a grammatical programme. This makes it possible to integrate skills and grammar without losing the integrity of the grammatical component. It is perhaps worth noting that the previous Singaporean syllabus was organized around themes and was revised to give it a stronger grammatical framework (Lin, 2003; Kennedy et al., 2007).

Unlike the Kenyan and Singaporean syllabuses, the **British Columbian** curriculum for English has been designed with mother tongue speakers of English in mind. The organizing principle, or philosophy, of the curriculum is constructivist. In the curriculum rationale, the claim is made that “children actively construct knowledge and understanding as they seek connections to help them make sense and create new meaning” (CME, 2000: 19). The document does acknowledge that in the research community the constructivist claims around learning are debated, nevertheless, it is the integrating concept that holds the curriculum together. Piaget's influence is evident in the placing of enquiry at the heart of learning. Vygotsky's influence is evident in language being seen as mediating learning and play and imagination being perceived as central to young children's learning. The development of meta-cognition – reflection and the freedom to think out loud – is emphasized (CME, 2000: 36), as is the cultural situatedness of meaning (CME, 2000: 42). Developmentally appropriate teaching is advocated throughout, and Vygotsky's notion of the zone of proximal development is used to articulate this (CME, 2000: 83). This social constructivist philosophy is evident in the practices recommended. For example, developmentally appropriate goals are those which are described as “challenging but achievable with sufficient adult support” (MOEBC, 2006a: 29). Teachers are encouraged to model and scaffold learning.

The specific, technical curriculum organizers for English are expressed in terms of skills: oral language (speaking and listening), reading and viewing, and writing and representing. Each skill is unpacked in terms of purposes, strategies, thinking, and features (language structures). The emphasis on strategies and thinking is driven by the philosophy of the broad curriculum.

The **South African** curricula address the needs of both mother tongue and second language speakers of English in the context of a multilingual society. They are informed by the theory of additive bilingualism, which also underpins the Language in Education Policy. This theory argues that children acquire literacy best in their home language and should learn through the medium of their home language for as long as possible. The learning of other languages should be ‘additive’ and should build on the strong base of literacy in the home language. The HL curriculum is designed for children who speak English at home, often as a mother tongue. The English FAL curriculum is designed for learners who do not come to school in Grade R/1 speaking English, but who will eventually study through the medium of English, usually in Grade 4. The HL and FAL curricula have only two design features: learning outcomes and assessment standards. There are six outcomes: listening, speaking, reading and viewing, writing, thinking and reasoning, and language structure and use. Assessment standards are listed against these outcomes for each grade. The South African curricula lack the clarity of the British Columbian and especially the Singaporean curricula and a strong theoretical framework underpinning the curriculum is absent. Across the different curriculum documents, different approaches are suggested – ‘whole language’ and ‘balanced’, predominantly – without these being sustained across different articulations of the curriculum, nor with clear explanations of what the principles mean. The introduction to the Languages Learning Area tries to pull together a variety of different approaches to teaching and learning languages (reflecting different approaches to the teaching of English, Afrikaans, and African languages, which had separate curricula in the past). As a result of this rather eclectic approach, the supporting documents tend to speak in different voices – some advocating typically home language approaches such as the ‘whole language’ or ‘balanced approach’ and others typically second language approaches such as ‘communicative language teaching’. These problems relate to the lack of clear aims in the curriculum. There is some consistency in the advocacy of a ‘balanced approach’ to literacy in the HL curriculum statement. The *Foundations for Learning* documents exemplify a balanced approach most clearly without explicitly stating the principle taken (DoE, 2008a).

All the curricula are informed by more or less explicit theories of language and language learning. These are summarized in **Table 7** below, which also indicates the degree of explicitness of this discourse (in terms of framing) that the curricula exhibit.

Table 7: Regulative discourse in the curriculum as read through organizing principles

	South Africa	Kenya	Singapore	British Columbia
Framing	F-	F-	F-+	F+
Theory of pedagogy/knowledge/learners	Balanced/ whole language/ communicative language teaching	Audiolingual	Systemic Functional Linguistics	Constructivism

The regulative discourse (or theory of learning and learners) underpinning the curriculum is strongest in the case of Singapore and British Columbia, although they represent very different approaches to language learning. The approach in the Kenyan document is implicit, and in the South African document inconsistent, and thus recorded as implicit.

7.4 Content/skill specification and coverage

All four countries specify the core language skills of listening, speaking, reading, and writing. South Africa and Singapore add 'viewing' to this list and British Columbia has both viewing and its productive side, 'representing', as well. The recent emphasis on the visual is likely to be driven by media and digital technology, which is perhaps less evident in Kenyan society.

With regard to content, the **Kenyan** curriculum focuses on language patterns (common phrase patterning and some grammar) and vocabulary. Themes provide the basis for the selection of vocabulary sets. It is a strongly content-based curriculum with clear content stipulation.

Singapore has particularly strong and systematic grammar coverage. It also has a very systematic approach to the specification of text types and makes strong links between grammar and text types. Text types and grammar in text/context form the knowledge component of the curriculum. Each text type to be covered in each phase level (Grades 1 to 2, 3 to 4) is specified, firstly in terms of its purpose, and then in terms of its grammatical features. At the end of the document, a 'grammatical programme' provides a sequenced grammar syllabus for teaching. A starter list of vocabulary is also provided. This allows for strong boundaries to be drawn between different elements of knowledge and skills, at the same time as supporting their integration. It makes it possible to integrate skills and grammar without losing the integrity of the grammatical component. It thus makes it possible to have integration within the subject across topics, achieving depth in learning.

The **British Columbian** curriculum has three skills-based curriculum organizers: oral language (speaking and listening); reading and viewing; and writing and representing. Each organizer is described in terms of purposes, strategies, thinking, and features to create learning outcomes. Language knowledge comes through strongly in the 'features' strand, which for writing and representing in Grade 3 includes grammar and usage, punctuation and capitalization, vocabulary and spelling, and handwriting. The way in which skills, strategies, and language knowledge are integrated in this curriculum is both sophisticated and

systematic. There is depth of both knowledge and skills. For example, by Grade 3 the more advanced learners will have developed a personal voice and style and will write at length, often using a word processor. Higher order thinking is required, and by Grade 3 learners are being given opportunities to compare and contrast, summarize, synthesize and evaluate.

In the **South African** HL curriculum, the knowledge component (English phonology, grammar, and text structure) is not strongly or systematically specified. There is confusion between phonemic awareness, phonological awareness, and phonics in some of the documents, which is likely to mislead teachers. The South African curriculum does not focus on meta-cognition and the development of strategies for learning. It is not clear from the content and skill specification how the relationship between the Home (generally African language) and First Additional (generally English) Language learning should be balanced so that they support the development of bilingualism.

With the exception of Kenya, all the curricula give explicit focus to the purposeful use of language. Again, the Singaporean curriculum does this systematically with its syllabus organized in terms of using English for information and ideas, literary purposes, and social interaction. The British Columbian curriculum has a strong emphasis on using language for thinking, and also focuses on the use of language for literary and imaginative purposes, to gain information, and for the expression of personal opinions and feelings. The South African curriculum also has a strong focus on using language for thinking and reasoning and for information. The other purposes are addressed but less explicitly and systematically. South Africa does not have as great an emphasis on children's literature as the British Columbian or Singaporean curricula.

In considering the depth of the curricula, one has to consider whom the curriculum in question is designed for. The South African FAL curriculum, the Kenyan curriculum and the Singaporean curriculum are all designed for learners who are not mother tongue speakers of English. However, whereas the South African and Kenyan curricula assume that children may arrive at school without any English and will learn to read and write first in their mother tongue, the Singaporean syllabus is designed to drive a 'first language curriculum' in which children are enliterated in English when they arrive at school. The British Columbian curriculum is designed for English mother-tongue speakers.

Singapore, British Columbia, and South Africa (HL) all address the initial development of literacy in their curricula. They all cover the basic elements of a literacy programme: phonemic and phonological awareness, phonics, sight words, concepts of print, handwriting, spelling, and comprehension. The Kenyan curriculum does not have this focus on initial literacy development. It covers alphabetic knowledge, reading, writing (including handwriting), and comprehension, but it does not deal with spelling, fluency, phonemic/phonological awareness, phonics, concepts of print, or sight words.

Whereas the British Columbian and South African curricula give explicit focus to the development of fluency in reading, the Singaporean curriculum does not. All three curricula give attention to language learning strategies: in the South African curriculum the emphasis is on reading strategies; in the British Columbian and Singaporean curricula, the strategies are part of the structure of the curricula. The British Columbian curriculum has a strong emphasis on meta-cognition, which entails applying and reflecting on learning strategies, evaluating one's own work, and planning how to improve.

To sum up, the curriculum with the most breadth and depth is the British Columbian one. This curriculum assumes that children come to school speaking English and from that starting point

develops strong literacy and meta-cognitive skills and strategies. The Singaporean curriculum does two things simultaneously: it builds children's English language knowledge and skills very systematically at the same time as developing their literacy. There is perhaps less breadth in the Singapore syllabus with its strong emphasis on grammar, but greater depth. The South African curriculum with equal emphasis on the four language skills indicates greater breadth, but less depth in its lack of clear specification of content. The Foundations for Learning Campaign documents present the English HL outcomes and assessment standards in a more systematic fashion, here with less breadth and more depth (especially with a clear focus on phonics and reading). The Kenyan curriculum has a modest scope because the children they target have to learn English from scratch, and depth is limited by a relatively minimalist curriculum. None of the curricula recommend or prescribe texts. British Columbia, South Africa, and Singapore do have approved lists of textbooks and resource packs. Otherwise texts are specified at the level of generic text types. The breadth and depth of each of the curricula is given in **Table 8**.

Table 8: Breadth and depth in the English Language curricula

	South Africa	Kenya	Singapore	British Columbia
Breadth	+	-	-	+
Depth	-	-	+	+

7.5 Time allocation/weighting

The time allocation and weighting of English within the curriculum, as presented below, is also likely to impact on the depth to which the subject is taught. There is considerable variation between the different curricula in terms of how much time is allocated to English. Time available is especially impacted in countries where English competes with other languages for curriculum time. South Africa is further complicated by the fact that not all learners learn the same languages, and that the home language in some cases is English (the minority) whereas in other cases English is an additional language. **Table 9** below indicates the percentage of time allocated to languages, and to English specifically, in each of the countries.

Table 9: Percentage of total curriculum time allocated to Languages and to English specifically

	South Africa	British Columbia	Singapore	Kenya
Percentage of total time to Languages	40	Not specified	58	42
Percentage of total time to English	Not specified	Not specified	32	14

In British Columbia English is part of an integrated curriculum and the time allocated to it is not specified; it is left up to teachers' professional judgment. In Singapore, a total of 58% of available time is devoted to literacy, with English being allocated 32% of total curriculum time. In Kenya, 42% of the time available is devoted to Languages but, because three languages are taught, English receives only 14%. South Africa presents a complex case with respect to English. Whilst policy states that English is to be taught alongside the mother tongue from Grade 1, in practice there is confusion as to when English is to be introduced.

Part of this can be attributed to the emphasis on mother tongue instruction (especially in the Language Policy). There is also confusion around how additive bilingualism, the official policy informing the way in which the mother tongue and the language of learning and teaching is managed in instruction, is implemented in practice. But the confusion around the teaching of English from Grade 1 may also have arisen from the lack of clarity around the Foundation Phase Learning Programmes. Whereas the policy says that English should be taught as a subject from Grade 1 to Grade 3 to all learners who will be using English as the Language of Learning from Grade 4, only three Learning Programmes are referred to. This has been interpreted to mean HL, Mathematics, and Life Skills, leaving no space for English as a FAL. We also know from research that many schools are delaying the introduction of English until Grade 3 – the year before learners are expected to learn through the medium of English (Prinsloo, 2009). If this is correct, children are not spending adequate time learning English in Grades R to 3 to prepare them to learn through the medium of English in Grade 4, which is the policy in many schools. Where English is taught as a FAL, it will be allocated a lot less than the 40% allocated to languages in the curriculum.

The Singaporean, British Columbian, and Kenyan curricula do not specify how much time is to be devoted to different aspects of the curriculum (although the British Columbian curriculum does stipulate 15 to 20 minutes' reading per day, and a stronger emphasis on oral language development than on reading, writing, viewing, and representing. In the South African *Foundations for Learning* document there is clear specification on time to be spent on different aspects of literacy for English HL: at least one hour a day should be set aside for reading and writing, of which 15 minutes should be spent on word- and sentence-level work (phonics, spelling, vocabulary, grammar, punctuation). No specifications are given for English as a FAL.

7.6 Pacing

A number of different dimensions of pacing were suggested by the research instrument. Whilst theoretically we are interested in the extent to which the pace is stipulated in the curriculum, and made explicit, researchers were also required to assess whether the curriculum suggested differentiated pacing for different learners and whether the pace was fast or slow.

Given that children are learning English as a second language for half an hour a day, the pacing of the **Kenyan** curriculum can be described as moderate. There is no indication of differentiated teaching, and given the large class sizes in Kenya (see **Table 10** overpage) it seems likely that whole-class teaching will prevail. Content is stipulated for the year, rendering pacing stipulations less explicit.

Pacing in the **South African** FAL curriculum is also moderate. In some aspects, less is expected of learners in the South African curriculum than in the Kenyan curriculum. For example, the Kenyan document is much more specific about what is expected with regard to writing and 'correct' grammar. Pacing for the South African English HL curriculum is much faster. This is not surprising since more time is likely to be allocated to English when offered as a home language in the Foundation Phase. 'Literacy milestones' are provided for English HL in the *Foundations for Learning* documents, and these give a clear framework specifying what should be taught term-by-term in respect of oral language, phonics, reading, handwriting, and writing, making pacing requirements very explicit. Unfortunately, there are no such milestones for English FAL. Differentiated pacing is suggested as a generic principle, but no specific guidance is given with regards to effecting this in the classroom.

Table 10: Teacher: learner ratios

South Africa	British Columbia	Singapore	Kenya
1:35	1:18	1:24	1:47

Pacing in the **Singaporean** curriculum, supported by strong sequencing and progression, is fast. The amount of time devoted to English in the Foundation Phase curriculum, the fact that English is used as the medium of instruction, relatively small class sizes (see **Table 10**) and the widespread use of English in Singaporean society, makes this pace feasible. The curriculum, however, recognises that learners learn at different paces and is, therefore, organized in two phases (Grades 1 to 2, and 3 to 4) to allow learners to work towards achieving outcomes over a two-year period. This makes the stipulation of pacing more weakly specified.

In the **British Columbian** curriculum much is left up to the professional judgment of the teacher, including pacing. But curriculum coverage as suggested by the assessment Indicators, and student achievement as illustrated in the *British Columbia Performance Standards*, lead one to believe that the curriculum is very fast paced. For example, by Grade 3 learners are composing poems and designing brochures. Like the Singapore curriculum, however, the British Columbian curriculum allows for differentiated learning, where children pass through generalized stages "in a variety of ways and at different ages" (CME, 2000: 121). Individualised instruction and differentiated teaching in small classes facilitates differentiated pacing. The curriculum is organized into two phases (Grades K to 1, 2 to 3) to acknowledge the differential nature of children's learning. However, grade-specific learning outcomes strengthen pacing requirements.

The pacing stipulations of the different curricula are summarized in **Table 11** below.

Table 11: Pacing stipulation, rate, and differentiation

	South Africa HL	South Africa FAL	Kenya	Singapore	British Columbia
Framing	F- *	F-	F-	F- -	F-
Differentiated	No	No	No	Yes	Yes
Rate	Moderate	Slow	Moderate	Fast	Fast

* Becomes F++ in the *Foundations for Learning* documents

7.7 Sequencing and progression

Sequencing and progression were considered in the analysis in terms of the type of sequencing and progression (stipulated in terms of content or skill; within or between years), the clarity of the guidance regarding sequencing (expressed in terms of framing), and whether sequencing and progression stipulations were provided for within and between grades. Sequencing is a less useful concept with regard to literacy than progression. This is because similar topics and skills are taught at different levels. The important issue is that they are addressed at different levels of cognitive demand, in other words, that they are progressive. Further, the order in which skills, content, or topics are taught is less important than their becoming increasingly challenging for students. The discussion thus addresses progression, which is defined as a particular ordering of knowledge that shows increasing cognitive challenge.

In the **Kenyan** syllabus, progression is achieved largely in terms of content, i.e., learning more language structures and vocabulary. Language structures are sequenced so that they are progressively more difficult. However, because structures are also linked to themes, this is not entirely consistent. There is also some progression in relation to skills: the alphabet and handwriting are taught at the beginning of Grade 1. Learners develop from writing words, to short sentences, to paragraphs and by Grade 3, to stories. Sequencing and progression is specified both within and between grades.

In the **South African** curricula, progression and sequencing in the curriculum from grade to grade is difficult to read, both in terms of skills development and the increasing complexity of texts read and written. This is because learning outcomes are the same from grade to grade. Further, assessment standards, which are meant to indicate progression, are generally poorly stipulated and provide weak indications of progression. Explicit guidance is provided for English HL teachers in the Literacy Milestones of the *Foundations for Learning* documents, where progression and sequencing is specified very clearly by grade and by term. Here, learning outcomes and assessment standards are abandoned as organizers. This kind of stipulation is not currently available for English as a FAL.

Sequencing and progression are built into the design of the **Singaporean** curriculum. The language outcomes are designed in terms of both language skills and functions. At the end of each phase, text types are specified according to function and grammatical features so that the teacher can select appropriate information texts and know what grammar to teach. There is an increase in the range of text types required. At the end of the syllabus document a sequenced grammatical syllabus is provided so that one can locate the grammatical features to be taught within a developmental framework. This is tabulated to allow for a spiral curriculum, in which grammar is recycled to ensure consolidation. Sequencing is also evident in the skills component of the learning outcomes. With regard to learners' literacy development, learners are expected to move from the beginning reading stage to the independent reading stage by the end of Primary 6.

In the **British Columbian** curriculum, progression is specified in a number of ways. Firstly, learners work towards meeting outcomes over a two-year period. Progression is realized through increasing complexity within the learning outcomes, as well as the increasing challenge of texts to be read and viewed and the range of genres to be produced. An increasing expectation of 'accuracy' in writing as learners move up the grades is also expected. The *British Columbian Performance Standards for Reading* provide a description of the general characteristics of reading material appropriate at each grade level. Progression is most explicit in the samples of learners' work provided in the *Performance Standards*. These show teachers concretely both what is expected to be achieved and the range of achievement at each grade level.

In summary, the degree of increasing difficulty in the shift from one level to another varies between the countries. In the Singapore, British Columbia, and South African HL cases, there is clear progression from one type of content/skill or level to another, and the progression is steep in terms of increasing difficulty. In the case of South Africa FAL there is weaker indication of the sequencing and progression from one type of content/skill to the next, and poor specification of the increase in the difficulty of content/skill over time. Kenya's specification of progression is per grade and sequencing and progression is well specified through clear content stipulations.

Table 12: Progression, framing, and level specification

	South Africa HL	South Africa FAL	Kenya	Singapore	British Columbia
Framing content	F- *	F-	F+	F++-	F+
Framing skills	F- *	F-	F+	F++	F++
Between/within grades	Within and between	Neither	Within and between	Between	Between

* But shifts to F++ in the *Foundations for Learning* documents

7.8 Teaching approach and subject methodology

The interest in teaching approaches centres around the extent to which the different curricula signal **general and subject-specific teaching approaches** or pedagogies. The pedagogic approaches in the different countries are described, along with comments on the suitability of the approaches for the learning area in question. Finally, comment is made on the possible suitability of the pedagogic approaches for the *differing contexts* in which the curricula are implemented, as well as the researchers' views on the possible suitability for South Africa of aspects of the curricula of other countries.

In the **Kenyan** syllabus, the general teaching approach implied is audio-lingual. There is a focus on structure, drill and practice, and accuracy (the word 'correctly' is used several times on almost every page). Audiolingualism is an approach to second language teaching that was dominant from the 1940s until the 1960s. It has gone out of fashion, but it has some merits. It is clear and straightforward and can be put into practice in poorly-resourced contexts. Teachers with little formal educational background can understand it because it often corresponds to the way they were taught English themselves. Apart from a list of learning experiences and a few words in the introduction, no other guidance regarding pedagogy is provided in the documents. In the Kenyan curriculum no guidance is provided to implement pedagogic approaches in different contexts or for specific learners, including those with barriers to learning.

In the Kenyan context, classes are likely to be large and schools under-resourced (see Social Indicators on page 8). Teachers are unlikely to be familiar with the more sophisticated approaches used in Singapore, Canada, and South Africa. The current English syllabus and its implicit audio-lingual pedagogy would probably be familiar to teachers. The approach is in many ways appropriate for the context, for example, it is undemanding in terms of resources and allows for whole-class teaching.

In the **Singaporean** syllabus, very little explicit guidance is provided with regard to pedagogy, though what is there is very clear. General principles of the curriculum are given, such as learner centeredness, process orientation, contextualization, spiral progression, and interaction. These are accurately described as "embodied in the syllabus" (Singapore MoE, 2001: 4), i.e., to follow the curriculum is to adopt these pedagogical tenets. The approach is characterized by a focus on language meaning and use, the use of text-types to integrate language skills and knowledge, and the teaching of language in text and context. The approach implied in the Singapore curriculum can be described as a functional, text-based, developmental approach to the teaching of language and literacy. Their policy of early diagnosis and intervention with regard to reading difficulties is potentially especially useful to the South African context. In the Singaporean curriculum, there is no guidance about how to teach in different contexts or to learners with specific needs.

Singapore is a small country with an urban population literate in both English and their mother tongue (Kennedy et al., 2007: 251). It is a relatively wealthy country (see Social Indicators in **Table 1**) with well-resourced schools, well-trained teachers, and a teacher:learner ratio of 1:24. There is a strong commitment to English in Singapore, and a large portion of curriculum time (32%) is devoted to English. Singapore is therefore well-equipped to deliver its well-structured, relatively sophisticated curriculum and accompanying pedagogy, which require a fair amount of resources and make considerable demands on teachers' knowledge and initiative.

In **South Africa**, some general guidance for pedagogy is provided in the *NCS*, however, this guidance is not consistent across documents. In the *English HL Statement*, a developmental, balanced approach to the teaching of literacy is outlined. In the supporting *Learning Programme Guideline* various approaches are referred to, including a text-based approach and a communicative approach. In the *English FAL Statement*, very little guidance is provided, although a developmental programme to achieve bilingual literacy is outlined, starting with acquisition through listening and oral development of formulaic structures, moving to emergent reading and writing in English, and in Grade 3, the encouragement to read and write extensively in English. Other documents provide limited guidance with regard to pedagogy; there is reference to a text-based approach that explores how texts work; the development of reading strategies; developing reading and writing in an additional language; and communicative language teaching. Thus multiple approaches, never comprehensively described, are suggested across different documents. The documents are largely preoccupied with the organization of learning programmes and assessment (addressed in a procedural rather than a conceptual manner) rather than the discussion of clear pedagogical principles. To summarize, and importantly, there is insufficient information regarding the teaching of English FAL, and there is no advice for teaching English to learners who need to become bilingual and bi-literate by the end of Grade 3. This is a serious deficiency.

In the South African curriculum, general, and at times vague, guidance is given regarding teaching children with barriers to learning. A long list of literacy-related problems is given, but no additional guidance is provided for addressing the problems. The *Teaching Reading in the Early Grades* handbook, however, gives clear and sensible advice on how to support learners with reading difficulties (DoE, 2007: 33–4).

South Africa is a middle income, fairly urbanised country with moderate levels of literacy. 8.2% of South Africans speak English as a home language with most of these speakers being clustered in urban areas. Most schools that follow the English HL curriculum are located in urban areas, they are usually fairly well resourced, their learner intake is from relatively prosperous homes, and teachers are well-qualified. It is likely that the proposed pedagogy – a balanced approach to literacy and a text-based, communicative approach to language teaching – will work in these circumstances.

The English FAL curriculum is mainly used in poorly-resourced township and rural schools where an African language is the medium of instruction. These constitute the majority of schools in South Africa. The pedagogy proposed for this curriculum is communicative and text-based, but very little guidance is provided in the curriculum documents with regard to how to put it into practice, focusing as mentioned above on procedural rather than conceptual aspects of teaching, and on planning and assessment rather than pedagogical principles. In township and rural schools, children have little access to English or to literacy outside of the classroom. The teachers' own command of English and levels of literacy may be low and their knowledge of books limited (Hoadley, 2009: 7), and the approach they would

have experienced in their own schooling would have likely approximated an audio-lingual approach. Teachers in township and rural schools may find the approaches described confusing, foreign to their experience, and difficult to implement.

The **British Columbian** curriculum provides extensive, quality guidance with regard to pedagogy. The general teaching approach recommended is holistic, constructivist, and enquiry based. In accordance with this, the approach to literacy is developmental, beginning with emergent literacy in Kindergarten followed by a whole-language approach in Grades 1 to 3. The conceptual rationale for the approach is explained, and clear guidance is provided for teaching in the *Primary Program Framework* document. The same document explains the pedagogy and its conceptual underpinnings, with references to additional sources. The *IRPs* provide guidance about the teaching of language/literacy and what is called 'pedagogical understandings for English Language Arts'. The *British Columbia Performance Standards* illustrate assessment processes, using case studies of real teachers' lessons, the pedagogy employed, and examples of learners' work at different levels of achievement, together with the teacher's observations. In the British Columbian curriculum guidance is provided for implementing the approaches in different contexts. Teaching strategies that support diverse learners and learners with learning difficulties are dealt with in some detail.

British Columbia's is a very sophisticated and ambitious curriculum with a constructivist pedagogy. This pedagogy requires substantial resources and highly educated, autonomous teachers. British Columbia is a wealthy Canadian province with a small, highly urbanized, and literate population, roughly 75% of who are English speaking. Teachers are well-trained, schools are well-resourced and the teacher:learner ratio is 1:18. However, there is a recognition by the authorities that: "in British Columbia, almost 20 percent of children do not succeed in school" (CME, 2000: 92). Some are learners who have special needs, others come from "homes that are culturally different from the norm of the school" (Ibid.: 92). A number of strategies have been put in place to support these learners, including early intervention. The province has "made a commitment to small class sizes in primary so that children may receive the individual attention they need" (Ibid.: 93). This leaves open the question of combinations of the pedagogical approaches suggested in the curriculum, and the possibilities for its realization in classrooms.

To summarize, in the Kenyan and Singaporean contexts there appears to be an alignment between the pedagogical expectations in the curriculum, and what is known about the social context and teacher capabilities. In the South African context there appears to be a vast mismatch between what we know about teachers and the pedagogical expectations of the curriculum. In the British Columbian situation, it is difficult to assess, short of considering the research literature, what the possibilities of the pedagogy suggested by the curriculum are.

7.9 Guidance regarding assessment

In the **Kenyan** syllabus, very little guidance is provided for assessment. There is a mention of assessment methods, and a list of 'assessment activities', e.g., filling in gaps in words and sentences, rearranging mixed words/sentences, etc. Purposes, forms, and principles of assessment are not articulated. The idea of assessment as a process related to learning is absent in the Kenyan curriculum document.

In the **Singapore** syllabus, guidance for assessment is not extensive but it is very clear. A table is provided matching the syllabus requirements in terms of language use, text types, and grammar with their implications for assessment (and what teachers need to do). These linkages make the curriculum's internal coherence clear. There is a clear alignment between the knowledge and skills in the syllabus and the assessment tasks. The guidance provided advocates that assessment of language should be purposeful, placed in a meaningful context, and focused on process as well as product. Assessment should be both formal and informal, and should be 'broad-based and multi-dimensional', including oral presentations, portfolios, classroom observation by teachers, and self-evaluation by learners. Feedback is seen as an important component of informal assessment. Formal assessment is carried out at the end of each semester or year. All the syllabus requirements must be met over a two-year period. There is a formal primary school leaving examination at the end of Primary 6. Formative assessment, including feedback, is also advocated as providing targeted information for both the teacher and the learner and supporting growth in language knowledge and skills.

In the **British Columbian** curriculum, there is clear and comprehensive guidance on assessment. There is a conceptual chapter in the *Primary Program Framework* document dealing with the role of criteria, effective assessment, evaluating children's learning, and communicating children's progress. The *IRPs* explain grade by grade how to assess language/literacy by means of the 'classroom assessment model'. This model consists of an assessment overview table, giving the weighting of each curriculum organizer, an overview describing the context of the assessment case study provided, the criteria for assessment, examples of student work, and assessment tools used by the teacher. The *British Columbia Performance Standards* for reading and writing provide a complete set of assessment case studies (Grades 1 to 7) illustrating the classroom assessment model. They include assessment tasks for different purposes at each grade level in the different language skill domains. They illustrate how, in an integrated curriculum, teachers might choose to assess English language in the context of another subject such as Social Studies. These documents are intended as resources for teachers, decisions about assessment are left up to their professional judgment. The 'how' of assessment is the focus of the documents. 'What' is to be assessed is at times less clear given the broader skills-based specification in the outcomes.

There is extensive information about assessment in the **South African** curriculum documents. However, much of it covers the same ground. It is in the main generic, de-contextualised information about the nature of assessment and principles for recording and reporting. The information in the *NCS* is clearer than that in the *Teacher's Guides*. In Grades R to 3 all assessment takes the form of continuous assessment. The number of formal assessment tasks is specified. Reporting in the Foundation Phase is done in national codes together with their descriptors. Teachers are expected to keep a portfolio containing all documents relating to assessment. Schedules (quarterly records summarizing the progress of all learners in a grade) must be kept. Progression or promotion schedules should be based on these records. Learner profiles should be kept for each learner. Examples of these documents are provided. All this is very procedural, and it is clear that assessment practices are extremely administratively onerous. Because of this strong focus on bureaucratic procedure, the guidance on assessment lacks the conceptual depth of say, the British Columbian curriculum documents. The *Foundations for Learning Assessment Framework* does provide clear tools for assessing literacy, as well as what to assess, but it is only available for English HL. There is no guidance for assessing English as an additional language or for assessing bilingual development. The *Handbook on Teaching Reading in the Early Grades* provides very helpful, practical advice about assessing reading but again this is only available for English HL. Neither the 'what' nor the 'how' of assessment is clear in the South African documents, apart from the *Foundations*

for Learning. **Table 13** below summarizes how explicit the different curriculum documents are in relation to what must be assessed, and how assessment is to take place.

Table 13: Framing of assessment

	South Africa HL	South Africa FAL	Kenya	Singapore	British Columbia
What to assess	F- *	F-	F-	F++	F+
How to assess	F- *	F-	F-	F++	F++

* But shifts to F+ in the *Foundations for Learning* documents

7.10 Integration

Integration in the analysis considers both within-subject integration (i.e., between different topics in a particular subject area, e.g., reading and writing), and between-subject integration (between different subject areas in the curriculum, e.g., numeracy and language). Classification, strong or weak, is used to characterize the nature of integration in the different curricula.

Integration is not referred to explicitly as a key principle in the **Kenyan** curriculum. However, within the English learning area, integration of content (language patterns and vocabulary) and skills is achieved by means of thematic teaching. This is a very common way of organizing syllabuses and textbooks in the teaching of English as a second language. It helps to make the practise of content and skills meaningful, and provides a natural context for recycling vocabulary and structures so that they are practised and retained. There is no integration across the curriculum suggested in the Kenyan curriculum.

The **Singaporean** syllabus states as one of its principles: “The integration of reading, writing and oral communication as well as the integration of language materials and areas of use in a lesson in context contribute to meaningful learning” (Singapore MoE, 2001: 4). Integration is emphasized within the learning area rather than across different learning areas. The syllabus is designed to support integration of skills, grammar, and vocabulary around different text types produced for different audiences in different contexts. The design of the Singaporean syllabus maintains the integrity of language knowledge by providing strong sequencing and allowing for recursion (spiralling). The integration of knowledge and skills can thus take place without loss of depth in language knowledge, which can potentially result from integration.

In **South Africa** integration is also one of the principles of the OBE curriculum (DoE, 2002c: 13). It is emphasized for learning both within and across learning areas. In relation to within-learning area integration, the NCS (Ibid.: 2) points out that: “assessment standards can be integrated within grades as well as across grades”. The curriculum for both English HL and FAL advocate the integration of the six learning outcomes. The use of themes is one way in which this form of integration is encouraged. The South African curriculum, however, lacks the logical design of the British Columbian, Kenyan, and Singaporean curricula, which ensure that the integrity of the subject will not be compromised by integration. The danger is that teachers will place too much emphasis on ‘themes’ and will not be able to sequence the various strands of language and literacy development and ensure progression to greater levels of proficiency in language skills. Lack of guidance on appropriate ways to integrate within the learning area, and an over-emphasis on themes, potentially compromises learning in Languages. The *Foundations for Learning Literacy Milestones* have provided a very strongly-sequenced programme of learning, which may mitigate this over-emphasis on themes.

Integration is also emphasized for teaching across learning areas. In some documents the achievement of an optimal relationship between integration across learning areas (where necessary and educationally sound), and conceptual progression from grade to grade is emphasized. This idea of balance between integration and conceptual progression is reiterated in the *Teacher's Guide*: "The key, however, is the balance to be struck between integration and conceptual progression." (DoE, 2003: 6). This is likely to have come from the review of *Curriculum 2005*, which stressed that the over-emphasis on integration had compromised conceptual progression in subjects. In the learning programme guidelines, however, across subject integration is still stressed, again with little indication of how to do this. The *Foundations for Learning* make no mention of across learning area integration.

Integration is part of the structuring in the **British Columbian** curriculum. In the *Primary Program Framework*, the prescribed learning outcomes for all K to 3 subjects are grouped under Learning Descriptors, which are general statements that summarize the common intention of several prescribed learning outcomes from different subject areas (CME, 2000: 203–231). This demonstrates the potential for integration in the curriculum. The learning outcomes for English Language Arts are also, however, presented separately, grade by grade in the *IRP* documents. This makes it possible to have a clear understanding of the strands of language/literacy as discrete entities, which can then be integrated with outcomes from other subject areas without weakening the integrity of the language/literacy knowledge and skills. In this curriculum, integration is encouraged both across and within subject areas. A number of models of integration are explained in the *Primary Program* (CME, 2000: 70–71), amongst which are: theme-based learning, project-based learning, inquiry-based learning, literature-based learning, and genre-based learning. In the British Columbian curriculum much depends on the quality of the teachers and their ability to execute the sophisticated programme of integration suggested. **Table 14** below summarizes the integration across the curricula of the different countries.

Table 14: Classification of English as a subject (in reference to integration)

	Integration	
	Within	Across
British Columbia	C-	C-
Singapore	C-	C+
South Africa	C-	C-
Kenya	C-	C+

All countries suggest *within-subject* integration, and a weak classification between different language topics and skills. There are various degrees of guidance on how to achieve this, and variable ways in which the integrity of the subject knowledge is protected. *Across-subject* integration is suggested only in British Columbia and South Africa, again with varying levels of guidance regarding how to achieve this. Classification between subjects in the Singaporean and Kenyan syllabi is strong.

7.11 Availability, user-friendliness, and use of the curriculum documents

In the **South African** curriculum, there are a large number of documents (given in **Table 15**) that a teacher must refer to when teaching Languages:

Table 15: Documents for use in teaching English in South Africa

English HL	English FAL
<ul style="list-style-type: none"> • NCS (72 pages) • Teacher's Guide for the Development of Learning Programmes – Foundation Phase (89 pages) • Assessment Guidelines for Foundation Phase (96 pages) • National policy on Assessment and Qualifications (40 pages) • Foundations for Learning Campaign (23 pages) • National Reading Strategy (23 pages) • Foundations for Learning Assessment Framework (54 pages) • Teaching reading in the early grades (57 pages) 	<ul style="list-style-type: none"> • NCS (64 pages) • Teacher's Guide for the Development of Learning Programmes – Foundation Phase (89 pages) • Assessment Guidelines for Foundation Phase (96 pages) • National policy on Assessment and Qualifications (40 pages)
<p>TOTAL: 454 pages</p>	<p>TOTAL: 289 pages</p>

The documents are produced in a variety of ways and do not always share the same design. Some documents are much more accessible than others. The more recent documents, in particular those that are part of the Foundations for Learning Campaign, are more practical and accessible. Overall, however, it is not an easy package to navigate, and the documents vary considerably in terms of reader-friendliness. Some are clear and accessible, whereas others lack coherence and are written in inaccessible, bureaucratic language. Some of the documents contradict one another, and others are repetitious.

In the case of **British Columbia**, researchers were given seven key curriculum documents, a total of 1,085 pages. Teachers are referred to several more documents in the texts. The information is well structured and presented. The *Primary Program: A Framework for Teaching* presents the overall conceptual framework. Grade-by-grade English curriculum statements comprise separate documents, and a further set of documents contains the performance indicators. Once one understands the relationship between the documents, they are easy to navigate and clearly aligned. Much use is made of tables and diagrams to help the reader understand processes and relationships. The British Columbian curriculum documents are very well written and appropriate for a particular type of user: educated, literate, professional teachers with access to the Internet. The documents assume teachers who are theoretically inclined and used to reading long, academic texts.

The **Singaporean English Language Syllabus** for Grades 1 to 4 is part of a single curriculum document, the sections relevant for Grades 1 to 4 occupying 69 pages. This package is well designed and the frequent use of tables, diagrams, headings, and sub-headings makes it easy to navigate. It provides minimal practical guidance about pedagogy and assessment. The documents are well designed and reader-friendly. The language is clear, concise, and accessible. The curriculum relies on an understanding of a functional, text-based approach to language teaching. Less well-educated teachers might struggle with the conceptual manner in which the curriculum is organized. The documents are available electronically.

The *English Syllabus* for the **Kenyan** Foundation Phase also occupies part of single curriculum document, the relevant section being 42 pages in length. It is simply written and easy to understand. There is not much in the way of design: very little use is made of formatting and there are no visual aids such as diagrams or tables. Content is clearly laid out and easy to navigate. Because of its simplicity, it should be understood by most teachers. It is not available electronically.

8. Numeracy

8.1 Aims

The aims for Mathematics learning at the primary school level in **South Africa** are articulated at a broad and general level. The intent is clearly to link the learning of Mathematics to concerns of human rights, social justice, historical awareness, and cultural, social, and economic participation. As such, the aims do not focus specifically on the precise dimensions of the instructional aspects of Mathematics for Foundation Phase numeracy. In addition to aims, purposes are also stated, and these are linked to the overarching Critical and Developmental Outcomes, key organizers of the NCS curriculum. These prioritise problem-solving, critical and creative thinking, group work, ability to analyze information, effective communication, use of science and technology, understanding the world as a set of related systems, reflection on learning strategies, responsible citizenship, cultural awareness, and entrepreneurial opportunities. Again the emphasis is on generic rather than subject-specific purposes. Integration is built into these purposes: "Contexts should be selected in which the learner has to count, estimate and calculate in a way that builds awareness of other Learning Areas, as well as human rights, social, economic, cultural, political and environmental issues." (DoE, 2002d: 8) No specific aims for numeracy are articulated in the *Foundations for Learning* documents.

The **Singaporean** curriculum document is much more explicit regarding the aims for the teaching of Mathematics. Singapore states as its main aim: "The development of highly skilled scientifically-and technologically based- manpower requires a strong grounding in mathematics. An emphasis on mathematics education will ensure that we have an increasingly competitive workforce to meet the challenges of the 21st century." (Singapore MoE, 2006a: 5). These aims are linked specifically to practical and economic priorities. In the Singapore syllabus no mention is made of social, political, cultural, or environmental aims. Each aim is expressed in mathematical terms specifically. The Singapore Mathematics syllabus presents a framework for the teaching of Mathematics, based on five dimensions: concepts, skills, processes, attitudes, and meta-cognition. These are described in practical terms. The connections between principles and aims and their implementation are clear in the document.

The **British Columbian** goals of education generally refer to intellectual development, human and social development, and career development. These aims, like the Critical Outcomes in the South African NCS have a strong emphasis on holistic development. As in the Singapore documents, these general goals are linked to specific goals for Mathematics. Again, there is a strong emphasis on holistic development and goals are formulated explicitly and overtly in terms of exhibiting curiosity, communicating mathematically, and being able to use Mathematics to make decisions in the world. The British Columbian documents give extensive advice to teachers on how the aims should be achieved. In line with the philosophy of holistic development, guidance is given regarding the aesthetic, emotional and social, intellectual, and physical development of the child.

The **Kenyan** goals for education include nationalistic, social, economic, technological and industrial, personal development, moral and religious, social equality, cultural, and international consciousness, and health and environmental protection statements.

Nationalism is strongly foregrounded in the aims: "They must be able to live and interact as Kenyans ...in order to make a positive contribution to the life of the Nation." (KME, 2002b: iv) The general aims of the *Primary Education Syllabus for Mathematics* succinctly state the main content and skills to be covered by the syllabus. They focus only on Mathematical content, with no reference to general objectives for education specified in social, political, and cultural terms.

The classification of the subject as read through the curriculum aims is similar to that for language, and represented in **Table 16** below.

Table 16: Classification of the subject Mathematics as read through the specification of aims

	South Africa	Kenya	Singapore	British Columbia
Classification	C-	C+	C+	C+

8.2 Organizing principle

The **South African** NCS document is organized around a set of five learning outcomes and associated assessment standards. The latter specify the minimum requirements for each grade. The learning outcomes are: numbers, operations and relationships; patterns, functions and algebra; space and shape; and measurement and data handling. The NCS documents run a number of curriculum dimensions together in the outcomes and assessment standards: specific outcomes, knowledge, skills, values, and attitudes. The *Foundations for Learning* documents set out the requirements more simply in terms of content alone. 'Milestones' specify content and 'assessment tasks' set out the minimum required standards for each term for each grade.

The **Kenyan** organizing principles consist of general objectives for Primary Mathematics, outlining precisely the content and skills to be covered. Each grade then has a number of topics, under which are listed specific objectives and content. A short explanatory note accompanies some of the topics, for example, under Whole Numbers there is a short note on zero. In Standard 1 there are five strands/topics: numbers, whole numbers, operations, measurement, and geometry; in Standard 2 there are four: numbers, operations, measurement, and geometry; and in Standard 3 there are ten topics (including whole numbers, fractions, operations, measurement, and geometry).

The organizing principles for the **Singapore** syllabus for Mathematics are extremely simple. A 'Content Chart' lists in summary form all the content to be covered in the different grades under the following headings: whole numbers; money, measures and mensuration; statistics; geometry; and fractions. Each content item is then listed in another table with a column for topics/outcomes, and a column for remarks. This second listing elaborates on the content from the content table, providing specific guidance on what content is to be included and excluded, and indicating clearly what the learners are required to be able to do.

The **British Columbian** Mathematics curriculum organizers are more complex than those of the other curricula. A table of key concepts and topics is provided for all grades, under the headings: number; patterns and relations; shape and space; and statistics and probability. These topics are then elaborated on in terms of learning outcomes, providing a high level of specification of what learners are required to be able to do. Each prescribed learning outcome is then matched to suggested achievement indicators. Finally, detailed

specifications for each learning outcome are given for how to assess ('planning for assessment') and what to assess ('assessment strategies', or what to look for).

8.3 Content specification, coverage, breadth, and depth

In this section the content in the curricula is considered in terms of coverage and breadth and depth. Coverage is considered by looking at what content is specified for Grades 1 to 3. Breadth is measured by looking at the number of topics and sub-topics included in the curriculum. Depth is measured by considering the number of skills specified in relation to particular topics.

Table 17 below indicates the topic areas covered by the different curricula for Mathematics in the first three grades of primary school:

Table 17: Mathematics topics in the four curricula

Singapore	South Africa	British Columbia	Kenya
Whole numbers	Numbers, operations, and relationships	Number	Number
Fractions			Fractions
	Patterns, functions, and algebra	Patterns and relations	
Geometry	Space and shape	Shape and space	Geometry
Money, measures, and mensuration	Measurement		Measurement
Statistics	Data handling	Statistics and probability	(Grade 3 only) mass, capacity, money, time

The primary focus in all four curricula is on the concept of *number*, which includes the development of number concept, mental strategies, and word problems involving the four basic operations and fractions. Further, priority in all four curricula is given to counting and calculating. The focus is appropriate at this level as the initial learning of 'number' forms the basis for all subsequent learning in Mathematics.

The countries have different specified *number ranges* (see **Table 18** overpage). Singapore specifies counting up to 100 for Grade 1; 1,000 for Grade 2; and 10,000 for Grade 3. South Africa specifies up to at least 34 at Grade 1; at least 100 in Grade 2; and at least 1,000 for Grade 3. South Africa focuses more on different strategies for counting whereas Singapore focuses on increasing the number range rather than the strategies for counting. The Kenyan syllabus stipulates that Standard 1 learners should operate with numbers up to 99 in Grade 1; 999 in Grade 2; and 9,999 in Grade 3. British Columbia has a number range similar to that of South Africa. The British Columbian curriculum distinguishes between knowledge of the number range in terms of counting, and knowledge of numbers 'in-depth', which would entail how to recognize, read, and write numbers in symbols and words.

Table 18: Number ranges specified for Grades 1 to 3 in the four curricula

Country	Grade 1	Grade 2	Grade 3
South Africa	34	100	1,000
Singapore	100	1,000	10,000
British Columbia	100	100	1,000
Kenya	99	999	9,999

Singapore and Kenya separate **fractions** out from the topic of numbers. They are dealt with in the least depth in the Kenyan syllabus, with a focus on recognition and representation of fractions (but including addition and subtraction), and in the greatest depth in the Singaporean syllabus – including recognition of equivalent fractions, ordering, comparing, and simplification. In the South African curriculum fractions are dealt with contextually as “solutions to problems that involve equal sharing...lead to solutions that also include unitary fractions” (DoE, 2002d: 8). In Grades 2 and 3 references are made to ordering, describing, and comparing fractions. In the British Columbian curriculum the emphasis is on the representation of fractions, as well as ordering and comparing.

After number, the next key area is **geometry** (referred to as Space and Shape in the South African and British Columbian curricula). This is comprehensively covered and specified in the South African and British Columbian curricula, with the focus predominantly on two-dimensional (2D) and three-dimensional (3D) shapes. British Columbia indicates the greatest depth in relation to this topic, addressing a range of skills in relation to shapes. South Africa indicates the greatest breadth – including symmetry and location as well as a range of skills in the broad topic of Space and Shape. In both Singapore and Kenya, geometry forms a minor part of the curriculum. In Kenya the recognition and reproduction of basic 2D shapes is required, as well as pattern recognition and construction using different shapes. In Singapore 2D and 3D shapes are addressed, as well as angles, with the identification of right angles a requirement. Angles are not addressed in any of the other curricula.

Measurement forms a separate topic area in South Africa, Kenya, and Singapore, and is included in Space and Shape in British Columbia. All the curricula cover length, mass, volume, and time. These are covered in the greatest depth in the Singapore curriculum (measured in terms of skills pertaining to the content area), and in the least depth in the Kenyan syllabus. Perimeter and area are addressed in all the curricula except the Kenyan, and are dealt with in the greatest depth in the Singaporean curriculum.

Patterns, functions, and algebra only appear as separate sections in the South African and British Columbian curricula, and form a minor part of the curriculum documents. Pattern identification and pattern construction form part of the other topic areas in all four of the curricula.

Data-handling is dealt with in the most depth in the British Columbian curriculum. It is not covered by Kenya at all. The approaches to data handling, and its introduction vary across the curricula. In South Africa the approach is inductive, moving from the collection of everyday objects to the reading of bar charts. In Singapore a deductive approach is taken with the initial introduction of pictographs and bar charts. In British Columbia a combination of the two approaches – deductive and inductive – is suggested. Data handling as a topic is introduced in Grade 1 in South Africa, Grade 2 in British Columbia, and Grade 3 in Singapore.

The content focus in all of the curricula reviewed prioritizes number and operations, the performance of procedures, and computation skills. Although there is a great deal of similarity in the Mathematics topics introduced, the breadth and depth at which these topics are addressed vary somewhat. This variation is shown in **Table 19** below.

Table 19: Breadth and depth in the Mathematics curricula

	South Africa	Kenya	Singapore	British Columbia
Breadth	+	-	-	+
Depth	-	-	+	+

Table 19 shows that the greatest breadth is found in both the South African and British Columbian curricula, with the highest number of topics and sub-topics included in these curricula. The greatest depth is found in the Singaporean and British Columbian curricula, where particular topics are specified in relation to a wide range of skills. Kenya is the most minimalist curriculum with the least breadth and depth, although not departing radically from the coverage of the other curricula. It is interesting to note, however, that the South African *Foundations for Learning* curriculum narrows the coverage substantially, focusing solely on number and calculations. This is an explicit response to standardized tests showing that the majority of learners have not mastered these basic skills by the end of Grade 3.

Finally, content specification varies somewhat across the different curricula (as seen in **Table 20**). The British Columbian curriculum is the most highly specified, not only in terms of content, but also its transmission and assessment. The South Africa curriculum is the most weakly specified, partly because of the curriculum organizers, which attempt to cover skills, knowledge, values, and attitudes in the assessment standards. There is much stronger specification in the *Foundations for Learning* document, however, this pertains mainly to the topic of number. The Singaporean and Kenyan syllabi are explicit in terms of content to be covered.

Table 20: Content specification in the Mathematics curricula

	South Africa NCS	South Africa FFL	Kenya	Singapore	British Columbia
Framing	F- *	F+	F+	F+	F++

* But shifts to F+ in the *Foundations for Learning* documents in relation to number and calculations

8.4 Content/skill weighting

In the South African curriculum for the Foundation Phase, the topics are time-weighted as follows: numbers, operations, and relationships is allocated 55% of the Numeracy teaching time; patterns, functions, and algebra is allocated 7.5%; space, shape and measurement together are assigned 30%; and data handling, 7.5% of the time.

In comparison, British Columbia suggests the following weightings for each of the curriculum organizers: 50 - 60% for number; 15 - 25% for patterns and relations; 15 - 25% for space and shape; and 5 - 10% for statistics and probability. Kenya and Singapore have no such quantitative guidelines and the weightings must be deduced from the amount of emphasis the topics receive in the curriculum documents.

The four operations are given similar weighting across all four curricula. In Kenya, calculations are heavily weighted in the curriculum; more than 50% of the number topic is devoted to calculation. In Singapore calculations comprise 80% of the topic Number. These are systematically unpacked one operation at a time. Word problems are not given prominence in the Singaporean and Kenyan syllabi, are mentioned frequently but not explained in the South African curriculum, and are seen as an integral part of the development of understanding of the four basic operations and elaborated on in the 'Number sense' section in the British Columbian curriculum.

After number and operations, shape and space, or geometry, receives the most weighting in all the curricula. Data handling receives the least emphasis in the curricula.

8.5 Pacing

The **South African** *Foundations for Learning* document is the most helpful in specifying the pacing of content and skills. It presents milestones per term for each grade. Milestones per assessment task for each grade are also listed for each term. This is in contrast to the NCS documents, which emphasise that learners should work at their own pace and that their individual needs should be taken into account, encouraging reasoning, negotiating meaning, and discussing their understanding of concepts with each other and their teacher. Group work is also emphasised in the NCS, but is not a focus of the *Foundations for Learning*.

The **Kenyan** document also sets out content by quarter for each grade, but there is little elaboration or detail in terms of the content or development of concepts within these topics or of what should be covered in what time. Similarly, there is no evidence of pacing in the Singaporean documents other than the content to be covered over the course of the year. The **British Columbia** resource document suggests clear achievement indicators that guide teachers with regard to time, emphasis, and planning. The pace implicit in the curriculum is moderate.

Table 21: Pacing in the Mathematics curricula

	South Africa NCS	Kenya	Singapore	British Columbia
Framing	F--	F-	F-	F-

* But shifts to F++ in the *Foundations for Learning* documents in relation to number and calculations

Table 21 shows that framing over pacing is weak across the curricula, and that this is largely left to the discretion of the teacher. The exception is the South African Foundations For Learning documents, which indicate very strong framing over pacing.

8.6 Sequencing and progression

The most comprehensive curriculum in relation to sequencing and progression is the set of **British Columbia** documents, in which sequencing within a topic is clear, towards increasing conceptual demand. The documents provide clear frameworks for teachers to follow through learning outcomes and suggested achievement indicators. Key concepts are presented in summary form across grades and show development across topics. Elaboration of the content is presented within the prescribed learning outcomes.

The **South African** documents set out the skills and content for each grade in terms of learning outcomes and assessment standards. These are broad statements of what is expected at the end of each grade (as a minimum achievement). Grade content is set out according to the same content topic across all three grades. The progression of content and development of concepts and skills is, however, insufficiently developed across grades. For example the topic 'fractions' is underspecified and detail of what is to be learnt in and across previous and successive grades is not well developed throughout the documentation. The content of the *Foundations for Learning* document prioritizes the learning of counting and calculation skills. In relation to these, both sequencing and progression are much clearer, largely due to the greater content stipulation and its specific ordering per term. In these documents, the same learning outcomes for different grades are dispensed with in favour of specific knowledge stipulation per grade.

Although the **Singaporean** documents are brief, the content is clear and there is evidence of how the topics lead towards greater conceptual development across grades. Primary 1 to 4 topics are set out in a content chart that shows progression across the grades, with each topic/outcome listed opposite a content remark that gives clarity and guidance to the teaching and task selection, as well as the level expected.

The **Kenyan** document focuses on clear content specification, and this specification indicates progression in terms of conceptual demand of topics over time. It is not presented in a way that makes it easy to read the progression, but it is clearly there. Sequencing is clear in the syllabus, and within each main topic specific objectives and content are specified in terms of increasing difficulty or complexity of the content.

Table 22: Progression in the Mathematics curricula

	South Africa	Kenya	Singapore	British Columbia
Framing	F- *	F+	F+	F++

* But shifts to F+ in the *Foundations for Learning* documents in relation to number and calculations

Table 22 indicates that all of the curricula provide a clear indication of progression, with British Columbia's being the most explicit. Weaknesses in the stipulation of progression in the South African *NCS* have been remedied in the *Foundations for Learning*, but only in relation to the topic Number.

8.7 Teaching approach and subject methodology

The **Kenyan** document provides no general comments on teaching and learning. The curriculum states that the objectives for teaching Mathematics will guide the teacher in the development of lesson objectives and in the selection of content. The only suggestions about classroom practice are that concepts and skills should be developed practically, that the syllabus determines the order in which the content is to be presented, and that the knowledge and skills to be acquired at one level become the prerequisites for the next level. No other guidelines are provided. The only resources for teachers consist of the time allocation and a list of content. No examples of lesson plans are given.

The **Singapore** pedagogical approach is premised on the idea that mathematical problem solving is central to Mathematics learning, and that problem solving ability is dependent

on concepts, skills, processes, attitudes, and meta-cognition. How students can develop each of these aspects is briefly stated. Teachers are encouraged to exercise flexibility and creativity and use a wide variety of strategies and resources when using the syllabus. Very few guidelines for implementation are given. Resources for teachers are provided as a list of content. No lesson plans are made available.

The **South African** curriculum asserts a learner-centred approach, focusing on the role of the child as learner (her/his needs and age-related characteristics). All teaching and learning is supposed to foster the critical and developmental outcomes linked to the learning area outcomes. For Mathematics in particular, teachers are reminded that learners develop at different rates, that understanding develops over time, that learners must see the value of what they do, and that they should negotiate meaning and solve problems, as well as learn to reason and communicate. These are all relatively generic statements. The teaching and learning approaches suggested across the numerous and lengthy documents in work schedules and lesson plans are not always presented coherently nor are the approaches consistent.

The **British Columbian** programme is based on three principles of learning: 1. learning requires the active participation of the student; 2. people learn in a variety of ways and at different rates; and 3. learning is both an individual and a group process. The curriculum argues that children must be recognised as individuals and the development of the whole child should be emphasized. Further, the children's own construction of understanding and making meaning should be emphasized. For Mathematics, the teaching approach emphasizes the children's intuitive and constructive early mathematical thinking, and recognizes clear thinking, creative solutions, reflective thinking, and meaningful reasoning. Clear guidance is given for implementation, linked to the teaching principles. Extensive stipulation on 'how' to teach is provided throughout the documents. Well-illustrated classroom episodes and teaching strategies are also provided. The approach is coherent and consistent across all the documents.

8.8 Guidance regarding assessment

Although extensive, as indicated in English and Life Skills (below), the assessment guidance in the **South African** NCS is largely generic. A crucial difficulty that teachers are likely to face with the NCS is that the possible levels of achievement are not clarified using examples (e.g., what does 'partial achievement' look like?). In comparison, the British Columbian documents unpack the levels and provide examples of students' responses. Further, guidance in the NCS is not logically organised and accessible and is at times contradictory. The *Foundations for Learning* documents do, however, provide content-specific assessment activities and examples, with less emphasis on approach and more on content to be covered and assessed. The *Foundations for Learning* documents describe quarterly Milestones for each grade together with three assessment tasks per quarter, followed by rubrics and checklists for the assessment tasks. Only the South African curriculum documents give an indication of number and type of assessment tasks, specifying twelve assessment tasks per grade per year.

The **British Columbian** guidance for assessment is extremely clear, detailed, and well-organised. The key concepts of assessment and evaluation, their role in the teaching/learning process, and implementation are carefully explained. Booklets for each grade list prescribed learning outcomes, followed by achievement indicators for each prescribed learning outcome. There is a high level of detail provided. For example, a quick scale and a rating

scale are supplied for each grade, together with four levels of achievement for each aspect mentioned in the scale, followed by a number of suitable tasks together with examples of students' responses at each level of achievement. The British Columbian documents' guidance on assessment is aligned with the teaching and learning approach, and the guidance for assessment tasks is clearly and logically developed, coherent, and practical. Assessment and evaluation are clearly situated inside the teaching/learning process, emphasizing that information obtained through assessment should be used to direct teaching and learning

The only mention of assessment in the **Singapore** documents describes an examination to be taken at the end of primary education. No guidance regarding assessment is provided for Mathematics. What is to be assessed is to be derived from the specification of content knowledge to be learnt.

The **Kenyan** guidance regarding assessment is extremely brief. The aims of assessment are stated as determining whether the objectives of the course are achieved and identifying pupils requiring further guidance and extension work. Three methods for assessment are given: written and oral exercises and observation. Only one external examination at the end of primary school is prescribed. No other specifications regarding assessment are given. No examples of assessment tasks, recording, rating, or frequency are provided. Clear content specification in the curriculum is likely to contribute to knowing what to assess, but not how.

Table 23: Evaluation in the Mathematics curricula

	South Africa	Kenya	Singapore	British Columbia
What to evaluate	F- *	F-	F+	F+
How to evaluate	F-	F-	F-	F+

* But shifts to F+ in the *Foundations for Learning* documents in relation to number and calculations

Given the generally explicit statement of content in the curricula, it is clear across all four curricula what is to be evaluated. Only the British Columbian curriculum provides details on how to assess.

8.9 Integration

No reference is made to integration in **Kenya**, neither in relation to within-subject area integration (between topics), nor between different subject areas.

In **Singapore**, apart from the general aim that Mathematics enables students to recognize and use connections between Mathematics and other disciplines, cross-curricular integration is not mentioned or stipulated. Within-subject integration is suggested by one of the aims of Mathematics education, which is to recognize and use connections among mathematical ideas. The *Mathematics Framework*, showing problem-solving at the centre surrounded by five inter-related components that cut across all Mathematics topics, carries an implicit but strong message of integration within the subject. In the content specification, the focus is solely on mathematical knowledge, with no suggestions given for the integration of school and everyday knowledge.

British Columbia places a strong emphasis on integration in general, providing extensive descriptions of how cross-curriculum integration may be achieved. It explicitly asserts that effective curriculum plans frequently integrate across traditional subject areas. The general framework offers cross-curricular organizers (areas of development) to help teachers address children's development and the curriculum in an integrated way. Five areas of development are given and teachers are encouraged to incorporate and make explicit mathematical concepts that naturally occur across the subject areas. Extensive examples of these concepts are given for each subject in the Mathematics *IRPs* for each grade. A list of models for curriculum integration is also given with references for teachers to consult. In British Columbia within-subject integration is also encouraged through the suggestion that mathematical ideas should be connected to other mathematical ideas. Further, weak classification between mathematical knowledge and the everyday knowledge of learners is suggested in the specification of content. References to students' personal knowledge and experience are made. This is seen particularly in the specified ways to assess.

As with British Columbia, the **South African** policy documents argue strongly for cross-curricular integration, but also assert that there should be a balance between integration and conceptual progression. The documents give examples of Mathematics integration with Arts and Culture and Social Science. Examples of integrated planning and assessment, including work schedules and lesson plans demonstrate how integration can be achieved. However, these suggestions for integration are extremely difficult to unpack. This is because integration is indicated in reference to the numbers of the (briefly stated) assessment standards rather than to conceptual connections between topics or ideas in Mathematics and those in other subject areas. It is thus questionable whether teachers will comprehend the reasons for integration as well as understand the amount and quality of integration required. Potentially, the use of numbered assessment standards will result in a technical and bureaucratic compliance to integration rather than one that makes sense to teachers and leads to an enhanced learning experience for students. Within-subject integration is not explicitly demonstrated. References to everyday knowledge are made, and inductive approaches to learning, beginning with students' personal knowledge and experience, are suggested. **Table 24** shows the levels of integration in the different curricula.

Table 24: Integration in the Mathematics curricula

	Integration		
	Within-subject	Across-subject	Everyday/school knowledge
British Columbia	C-	C-	C-
Singapore	C-	C+	C+
South Africa	C-	C-	C-
Kenya	C-	C+	C+

8.10 Availability, user-friendliness, and use of the curriculum documents

In **South Africa**, as in the case of Languages and Life Orientation (below), a large number of different documents need to be consulted for Mathematics. The documents comprise 390 pages in total. Teachers need to consult a number of these documents regarding a single topic. For example, assessment guidelines are found in seven different documents. The documents are often unclear and repetitious. There is no clear overarching structure from

which successive levels of refinement are developed in further documents. The *Foundations for Learning* provides little orientation to teachers regarding the existing documents.

The **British Columbian** documents are designed expressly to cross-reference one another. Each expands logically on previous documents. The comprehensive *Framework for Teaching in the Primary School* gives a general and detailed overview of all aspects of teaching, from goals and principles, to learning, curriculum, teaching, diversity, and assessment. The document is accessible and very practical. Additionally, there are *IRPs* for each grade that describe the prescribed learning outcomes, achievement indicators, and assessment guidelines for Mathematics. Each of these booklets, in turn, is supported by a booklet that describes the performance standards for the grade, together with examples of assessment activities and learners' responses to the activities, rated according to the achievement indicators. There are 717 pages in total.

The **Singapore Mathematics Syllabus Primary** gives a brief but clear and coherent description of the nature of Mathematics (11 pages) followed by the relevant syllabi (8 pages). There are some suggestions about general classroom processes, but no specific examples. The syllabus is clear and concise with some explanatory notes. The information provided is useful, but teachers would have to be either very well trained or have received in-service training to implement the suggested processes in the classroom. For example, the documents assume that teachers will know how to develop thinking skills and heuristics, application, and modelling.

Only one **Kenyan** document describes the Mathematics curriculum. Seven pages offer a very brief description of the goals of education, the objectives of primary education, and Mathematics objectives. 11 pages are allocated to a list of Standard 1 to 3 Mathematics content to be covered. There is one page on assessment strategies. The descriptions are clear, factual and provide almost no guidance to teachers except for the content to be covered. There are 19 pages in total.

It is clear from the number of pages that the Kenyan document provides little guidance aside from content, and the Singapore document, although well written, is also brief. The British Columbian documents may seem to be of excessive length (717 pages), but they contain many practical, detailed suggestions on every aspect of classroom life, as well as detailed examples of students' work. The South African documents do provide guidance, but it is scattered over a number of documents and lacks coherence.

9. Life Orientation

9.1 Introduction

In South Africa, Life Orientation forms part of a broader programme of learning called Life Skills, which incorporates learning outcomes from subjects that form part of the curriculum in later school phases (such as Social Sciences, Natural Sciences, etc.). The focus of the analysis here is on the Life Orientation component of the Life Skills learning programme in the South African NCS.

Life Orientation at the Foundation Phase level incorporates four areas of learning: health promotion, social development, personal development, and physical development and movement. The curricula from British Columbia, Singapore, and Kenya are differently structured, with the comparative content residing in different subjects. Thus, subjects that approximated the areas of learning from the South African Life Orientation curriculum were selected in order to create a comparable sample of curricula. For British Columbia, Social Studies, Physical Education, and Personal Planning were selected. The Singaporean subjects that were selected were Health Education, Social Studies, Physical Education, and Civics and Moral Education, which closely approximated the content covered in the South African curriculum. In Kenya the subjects Social Studies, Religious Education, Physical Education, and Pastoral Programmes were selected. **Table 25** summarizes the curriculum subjects consulted in each country:

Table 25: Subjects selected for comparison with the South African Life Orientation outcomes

South African Life Orientation outcomes	British Columbia subjects	Singapore subjects	Kenya subjects
Social development	Social Studies	Social Studies	Social Studies
Physical development and movement	Physical Education	Physical Education	Physical Education
Health promotion	Personal Planning	Health Education	Pastoral Programmes
Personal development		Civics and Moral Education	Religious Education

9.2 Aims

The **South African** curriculum has broad aims (developmental and critical outcomes) that are meant to infuse the rest of the curriculum, and are linked to the values of the Constitution. The broad aims related to the Life Orientation learning area statement are to equip learners for meaningful and successful living in a rapidly changing and transforming society, and to create critical citizens in an internationally competitive, peaceful country. By repeating the aims in each learning area document the curriculum attempts to link the overarching educational goals with specific learning area outcomes. As in Languages and Numeracy, the emphasis on human rights and social justice result in aims specified at a broad and general level, rather than those specific to the subject area in question.

In the *Primary Program Framework* the **British Columbian** curriculum identifies three goals of education, namely intellectual development, human and social development, and career development. In addition, the aim of each area of study is defined in its *IRP*. The goals are described by the prescribed learning outcomes as set out in the *IRPs*. For example, the aims of the Physical Education curriculum are to provide opportunities for all students to develop knowledge, movement skills, and positive attitudes and behaviours that contribute to a healthy, active lifestyle.

Each subject syllabus in **Singapore** outlines the aims and principles for that subject. The aims outlined in Physical Education and Social Studies are to “develop students’ motor and games skills and equip them with the knowledge, skills and attitudes to pursue and enjoy a physically active and healthy lifestyle” (Singapore MoE, 2006b), and to provide the learners with knowledge, skills, and desired attitudes and values that are necessary in preparing them to live as informed, knowledgeable, and participating members in the physical and social environments.

In **Kenya** the goals provide a broad outline of the role of education in promoting national development. The objectives outline the kinds of opportunities that learners should be provided with in order to achieve those goals. In the Social Studies syllabus the introduction outlines the broad aims of the subject, within the context of learners as citizens. The aims in Physical Education and Social Studies are stated in specific terms.

Table 26: Classification of the Life Orientation subjects as read through the specification of aims

	South Africa	Kenya	Singapore	British Columbia
Classification	C-	C+	C+	C+

From **Table 26** we can see that the aims as specified in the curriculum documents from the different countries produce a clear identity for the Life Orientation subjects, specific to the subject area, in Kenya, Singapore, and British Columbia. In South Africa the classification of Life Orientation is weaker, with general, social aims specified.

9.3 Organizing principle

The four countries share three recognizable principles shaping the subjects that make up Life Orientation. The first is the notion of ‘child in society’, a child who needs to understand him/herself in relation to others while at the same time make meaning and gain control of his/her immediate environment. The second, which is most explicit in the British Columbian curriculum, is a principle that recognizes children’s needs and developmental levels (emotional, social, personal, and physical). The third is an emphasis on physical development as an important area of development for the learners.

In **South Africa**, Life Orientation is one of the eight learning areas of the curriculum, and part of the Life Skills learning programme. It is organized around developmental areas for children, namely health, social, personal, and physical development. A central principle of the curriculum, particularly in the Foundation Phase, is integrated learning and teaching. In the Foundation Phase the intention is that mathematics, languages, and life orientation are foci, with all other learning areas integrated into that focus. In South Africa the curriculum

emphasizes skills, with content, attitudes, and values embedded in these. Content and method are not prescribed, although suggested content foci are given in exemplar learning programmes. Learners are expected to cover a wide range of physical and intellectual skills, from perceptual motor skills to decision-making. Learning outcomes give teachers a generic outline of what needs to be covered, and are specified in a general and often vague manner. It is the task of the teacher to interpret and design programmes for learning and materials that address the specified outcomes. This, together with the strong emphasis on integration from other learning areas, leaves open the extent to which there is a balance between different subject areas and outcomes. Further, teachers are required to design back to the developmental and critical outcomes of the curriculum – broad social aims and principles around democracy, economy, and social justice.

Implementation assumes a well-trained teacher who not only understands the organizing principles, but who is capable of deconstructing and reconstructing a contextually and developmentally relevant and integrated programme. Guidance in this regard is disparate and inaccessible, especially to poorly-trained teachers many of whom speak English (the language in which the documents are written) as a second language.

The **British Columbian** curriculum is a highly-specified curriculum organized around learning outcomes and achievement indicators. Concept overviews are also provided, which summarize the main topics covered across different grades. Extensive lists of examples of specific activities are given for Physical Education.

The content in the **Kenyan** curriculum is organized around general objectives with a list of specific objectives addressing each general objective. Content, briefly stated, is provided for each of the specific objectives. For Religious Education, along with the general and specific objectives, themes (representing the major idea), sub-themes, objectives, attitudes, values, and content are specified. Social Studies is organized according to themes, specific objectives, and associated content. The themes largely pertain to the life contexts of the students: the home, school, community, and district. Physical Education is organized according to subject domains, specific objectives, content, and resources.

In **Singapore**, the syllabus is organized slightly differently for the subjects that make up Life Orientation. Health Education is organized in terms of content topics to be covered, presented in a particular sequence. A particular theme with learning objectives and scope of content for different levels is then specified. The themes are content-based, addressing particular issues within Health Education, e.g., 'Knowing what food does for me' and 'Visual and oral care'. The Civics and Moral Education syllabus is specified in terms of a topic and related learning objectives, scope and concepts, and related values and messages. Finally Physical Education is specified in terms of learning outcomes, content, and fundamental skills.

It is clear from the Singaporean syllabus that the organizing principle varies across different subjects. So does the Kenyan syllabus, though to a lesser extent. In British Columbia and South Africa the same organizing principles are used for all subjects, however, the British Columbian curriculum has additional sections relevant to particular subjects.

9.4 Content/skill specification and coverage

The *Primary Program* in **British Columbia** is organized around five areas of child development: physical development and wellbeing, development of social responsibility, emotional and

social development, aesthetic and artistic development, and intellectual development. Foundation statements within three of those areas, namely physical development and wellbeing, development of social responsibility, and emotional and social development correspond broadly to various outcomes in the South African Life Orientation curriculum. Omissions in the British Columbian curriculum are found in the area of environmental health and the celebration of diverse cultures. There is no clear indication of dealing with environmental health issues, especially the issue of pollution.

In the **Singaporean** curriculum there is a balance between content/knowledge, skills, and attitudes. This is illustrated in the conceptual model outlined in the Social Studies syllabus. The curriculum of Singapore covers most of the content covered in the South African curriculum. The most obvious omissions in this curriculum at the primary level are in the area of leadership and democracy teaching and learning.

The content in the **Kenyan** curriculum is organized around general objectives with a few specific objectives addressing each general objective. The content is then even more specific in the form of topics addressing each specific objective. Omissions in the Kenya curriculum at the primary level are in the areas of pollution, substance abuse, nutrition, and diversity. The focus in the curriculum is the unification of Kenya as a country. There is an emphasis on rights and responsibilities, games and physical activities, creative arts, and religious education. Whilst it is indicated that the Kenyan Primary curriculum has incorporated vital emerging issues such as environmental education, health issues like drug abuse and HIV/AIDS, gender issues, human rights and social responsibilities, these topics are not clearly visible in the lower primary level curriculum.

There are some issues or topics that are considered core content in other countries but are not part of the **South African** Life Orientation curriculum, such as people and places, past and present, and community health. Some of these, however, such as people and places, are covered in other learning areas like Social Sciences.

The identified themes and proposed content encompass aspects imperative for young children's development (social, emotional, spiritual, physical, and the ability to make appropriate, contextualized choices). There appears to be general agreement across the curricula that Health and Physical education are important for young children. This is appropriate at one level because young children are still growing and developing physically, and because it is also at this age that learners need to develop perceptual skills that will assist them in the future learning of subjects like literacy and numeracy. There is also an emphasis across the documents on learning through play. There is broad agreement about important developmental areas for children, and themes and topics, though these are organized differently.

9.5 Content/skill weighting

The **South African** Life Skills programme is allocated 25% of the total teaching time in the Foundation Phase. Weighting in terms of the four Life Orientation outcomes is not specified. Clearly numeracy and literacy are prioritized in the Foundation Phase. South African teachers are expected to make judgments regarding both content and weighting of the various learning areas within the Life Skills programme and exposure to the different areas of learning entailed in this learning programme is likely to be uneven. The teacher is expected to arrive at the weightings of the learning outcomes depending on the school and the context in which

they operate, however, there are no practical examples to illustrate how this might be done. Especially in Life Skills there is an assumption that teachers can and will give appropriate weighting to the knowledge, skills, and values children ought to master across a range of different subjects and topics, and that teachers have sophisticated skills of planning and integration, and the subject content knowledge needed to unpack the outcomes and assessments standards.

In general in the **British Columbia** curricula weighting is not specified. Schools are encouraged to be flexible and respond to contextual needs. Guidelines and recommended statutory percentages for physical education and health education are, however, provided:

- Physical Education (10%)
- Health Education (5%)
- Social Studies (not stipulated).

In British Columbia integration across subjects is also encouraged not only as a time-saving device but also for meaning-making purposes. The framework provided in the *British Columbian Primary Program* illustrates how the learning outcomes in all areas of study should be integrated across the five areas of student development, also informing decisions around the weighting of the different areas of study.

Periods in the **Singaporean** curriculum are usually 30 minutes long. Civic and Moral Education and Physical Education are allocated an hour per week, and Health Education and Social Studies 30 minutes each per week. The Singaporean curriculum is weighted in favour of Civics and Moral Education and Physical Education from a perspective of time allocation.

In **Kenya**, of the ten subjects, the majority of time is allocated to English, Kiswahili, Mathematics, and the mother tongue. Arts follows these, with three 30-minute lessons out of 35. Science is allocated two lessons out of 35. The 'Life Orientation' subjects – Social Studies, Physical Education and Religious Education – are allocated two lessons each, and Pastoral Programmes, one lesson.

Overall, Life Orientation, as configured in different ways in different countries, is allocated approximately the same amount of time. However, there is variation in the weighting of different aspects – with Physical Education given more weight. In South Africa no weighting is stipulated at all. In addition, in the South African curriculum, there is no clear differentiation between different areas of study and content is weakly stipulated. In all curricula there is an emphasis on breadth and exposure to a range of topics, rather than depth of learning in a particular area.

Table 27: Breadth and depth in the Life Orientation curriculum

	South Africa	Kenya	Singapore	British Columbia
Breadth	+	+	+	+
Depth	-	-	-	-

9.6 Pacing

The **South African** curriculum suggests learner-paced teaching and learning. The emphasis is on the realization of the outcomes/competencies that learners have to develop, stated

as minimum standards. The scope of achievement is not specified. Pacing is weakly framed and the generic nature of the outcomes offers little guidance for pacing or sequencing. The *Foundations for Learning*, which offers greater specification and pacing guidance for literacy and numeracy does not extend to Life Skills. The assessment documentation for this learning area only includes loosely defined, formative tasks; pacing and coverage are not driven by assessment either.

In **British Columbia** the emphasis on child development as the core of teaching and learning suggests individual pacing. In addition the curriculum is clustered into two grade clusters (K to Grade 1, and Grade 2 to Grade 3); children are expected to meet the outcomes for each cluster over a two-year period (in other words, more or less at their own pace). Individual and group processes are encouraged, in part through the assessment criteria. We can deduce from this that the pace used in lessons will be controlled to some extent by the responses from pupils, resulting in moderate or slow pacing.

On the one hand pacing in **Singapore** appears to be set by the time allocations and coverage of content/skills. On the other hand, the assessment approaches emphasize learner-led, developmental pacing. There is an emphasis in all the syllabus documents on teaching strategies that encourage co-operative, and experience- and problem-based learning, which imply learner-led, slower pacing. In addition, in Physical Education for example, the emphasis is on attainment of outcomes at key stages over two years. There is clear encouragement for discussions amongst small groups of pupils to arouse interest and facilitate self-directed and independent learning. Nonetheless, the breadth of content is likely to encourage fast pacing and possibly limit the time for pupil engagement with the content as a group.

In **Kenya**, teachers are encouraged to promote the development of each individual learner, suggesting that learners set the pace. However, there is little guidance on weighting and there is an apparent expectation that all the content per grade be addressed. Pacing in the Kenyan curriculum is regulated by strong grade-level demarcation, de-emphasizing individual pacing. The suggested whole-class teaching approach suggests group as opposed to individual pacing. Emphasis ultimately then falls on covering prescribed content within set time periods.

The specification of unambiguous content/skill as well as the form of assessment has a direct effect on pacing despite the pedagogical approach. Strong specification of both content and assessment are provided in the British Columbian curriculum. Vagueness in both in the South African curriculum renders it weak in terms of guiding pacing and coverage. **Table 28** below shows the four countries' pacing in the 'Life Orientation' curricula.

Table 28: Pacing in Life Orientation

	South Africa	Kenya	Singapore	British Columbia
Framing	F-	F+	F+/-	F+
Individualised/ communalized	Individualised	Communalised	Individualised	Individualised

9.7 Sequencing and progression

The **South African** Foundation Phase Life Orientation curriculum comprises four learning outcomes (generic across all grades in the GET). In theory, the South African curriculum sets out conceptual progression in each learning area for each grade, through the assessment standards. This is reflected in the language used in the assessment standards. This often takes the form of a shift in verb or adjective, for example, the verb 'identify' in Grade 1 becomes 'describe' in Grade 2 which becomes 'compare' in Grade 3. The assessment standards in Life Orientation are, however, vague and general, leaving room for multiple interpretations. Because there is no specification of content or outcomes per term, and sequencing is not stipulated, sequencing and progression across the year is implicit. Further, verbs and adjectives (often synonyms) are used interchangeably within and between assessment standards and between grades with little change in either the level of complexity in competency or content. In other words, the shifts in language reflect a change, but not necessarily a progression, and the logic for the shift in language is rarely explicit. Using underspecified outcomes, teachers are expected to make judgments about progression with little guidance. Where many of these problems have been addressed in the *Foundations for Learning* documents for literacy and numeracy, these have not been developed for Life Orientation.

In the **Singaporean** syllabus sequencing of topics is clearly stipulated, especially in Health Education. Topics are specified in terms of key developmental stages. However, sequencing and progression are also driven by the 'spiral' nature of the design. Across the different levels the same kinds of themes are dealt with to increase the depth and breadth of knowledge. Thus pupils have opportunities to deal with the same content recursively. Progression in the Social Studies curriculum is driven by themes, starting with what is familiar to the children and broadening their horizons as the children grow older. There is no other explicit guidance on sequencing and progression in this subject.

The **British Columbian** curriculum clearly shows how the developmental levels of learners in terms of age, grade, and skills acquisition is taken into consideration. When planning, teachers are expected to consider the psychomotor, cognitive, and affective developmental levels of the learners. Progression is from simple to more complex skills. There is progression of content across the grades. Whilst the learning outcomes are the same for all the grades, the statements in each grade are different from the other grades, and become more complex as one moves to the higher grades. In British Columbia sequencing and progression are set out in two-year periods, and it is assumed that most of the sequencing and pacing decisions are made by the teacher. The curriculum provides an opportunity for teachers to work and consult with their students concerning the choice of topics they would explore to meet certain learning outcomes, in other words there is a weaker framing over sequencing.

In **Kenya** progression in the curriculum is described systematically, with content taught from the simple to the more complex. For example, in Physical Education there is a shift from simple body movement activities to more complex skills in sports and games. Likewise the sequencing of content is incremental (from simple to more complex and demanding). In the Social Studies curriculum, learners begin with content on family (that they are likely to know) and progress towards the school and the district (which entails less familiar, more demanding content). Sequencing and progression are stipulated by year and are driven by the organization of topics in the syllabus document and the listing of content, which is to guide teachers in structuring their teaching. **Table 29** overpage shows the degrees of sequencing and progression in the different curricula.

Table 29: Sequencing in Life Orientation subjects

	South Africa	Kenya	Singapore	British Columbia
Sequencing	F-	F+	F+	F-
Progression	F-	F+	F+	F+

9.8 Teaching approach and subject methodology

The **South African** curriculum emphasizes participatory, learner-centred, and activity-based teaching and learning, principles it aligns with the more generalized outcomes-based approach. There is little guidance provided on how to implement these pedagogic approaches. The documents stress the importance of taking into account different contexts and learner needs, and there is broad guidance on pedagogic approaches in differing social contexts, e.g., consideration for the language of learning of the pupil, providing early intervention with respect to barriers to learning, and providing multiple learning opportunities to cater for different learning styles and backgrounds. However, there is little directive on how these might be planned and executed. The South African curriculum assumes that teachers are able to translate aims and identify appropriate teaching approaches.

In **British Columbia** there is clear reference and guidance for teaching approaches and strategies, including guidance for teaching in different contexts. 'Action and intervention' strategies for inclusion, strategies that support diverse learners, working with groups for teaching and learning, and working with specific populations all receive attention. The *Primary Program Framework* outlines principles and practices that are directly linked to the aims of child development, through developmental teaching. British Columbia provides detailed guidance on how these approaches are to be implemented. This guidance includes theme-based learning, project-based learning, a learning styles approach, inquiry-based learning, multiple intelligences, knowledge frameworks, literature-based learning, and genre-based learning. British Columbia provides a general overview of learning (how children learn, opportunities that promote learning, diversity in learning, learning styles, and so on), thus encouraging the use of learning theory as the basis for any pedagogical decisions. In short, the discussion and guidance regarding pedagogy is comprehensive and detailed.

In **Singapore** a child-centred, developmental approach to teaching is suggested for the Life Orientation subjects. Practical strategies for implementing this are suggested. The documents do also, however, emphasize that teachers are decision-makers in the classroom and therefore need to have an understanding of learning theories and their own philosophy in making instructional decisions. Singapore explicitly provides subject-specific pedagogic approaches (principles of teaching and learning) and provides guidance as to how these approaches are to be implemented. As in the organizing principles, these approaches vary across subject areas.

The approaches listed in the **Kenyan** curriculum include demonstration, participation, explanation, guided discovery, exploration, and question and answer. The curriculum of Kenya provides no guidance on teaching approaches either in general to achieve the overall goals and objectives, or in particular subject areas. There are broad statements about national goals and fostering the full development of individuals through knowledge, skills, and attitudes, but no detail on how to achieve those aims.

9.9 Guidance regarding assessment

Three of the four countries place assessment at the heart of the curriculum, with South Africa and British Columbia making this a more prominent feature than Singapore. Kenya merely provides a list of possible ways in which learners may be assessed but gives no guidance on the form, scope, or format that assessment should take.

In **British Columbia** there are clear, lengthy explanations of assessment including the role of assessment in planning and in teaching and learning, appropriate developmental assessment theories, types of assessment, and achievement indicators. Achievement indicators give a clear sense of what should be assessed and how the assessment links back to the prescribed learning outcomes. The document differentiates between assessment *for* learning, assessment *as* learning and assessment *of* learning. Teachers are also provided with clear examples of assessment instruments and rubrics, and guidelines for making judgments and reporting to parents. British Columbia aligns its assessment policies with explicit child development and learning theories, explicated in the subject specific guidelines. Assessment is intended to be formative and summative, using a range of methods and strategies, which are clearly described. In the classroom assessment model there are suggestions within each subject area for the weighting, grading, and time allocation for each of the sub-organizers. Assessment is central to the curriculum and is presented as a complex but logical system.

The **Singaporean** documents explicitly state that knowledge, skills, and values need to be assessed but do not always provide guidance to this effect. Assessment is intended to be both formative and summative. No clear instructions are given on how this is planned, managed, or achieved. Once again, however, there is variation in the assessment guidance across different subjects. For the Civics and Moral Education syllabus and the Social Studies syllabus a general overview of the nature and purpose of assessment is provided. Slightly more detail is given in the Physical Education syllabus. In Health Education more detailed guidance is provided, including rubrics and modes of assessment. Recording of learner progress and level descriptors are explained. In Singapore there is no indication in any of the subjects about the number of assessment tasks required. In each subject area there are suggestions for the type of assessment tasks relevant to that subject, but these are mostly provided in the form of lists, with little explanation of how they might be implemented. Teachers are advised to use broad and multiple forms of assessment, and formal and informal strategies of assessing.

In **South Africa** there is a whole document on assessment in the Foundation Phase, and guidelines for assessment in a number of other documents. The documents outline the principles and purpose of assessment in the Foundation Phase, planning for assessment, and recording and reporting on assessment. The principles of assessment include continuous, integrated assessment for teaching and learning, in line with the developmental needs of children. South Africa requires teachers to use formative and summative modes of assessment. Subject-specific guidelines are not provided for Life Orientation. Although there are some guidelines on how to plan for assessment there are no exemplars of the form, nature, or content/skills needing to be assessed in the subject. It is expected that the assessment standards will frame and guide teachers in planning what to assess, but a lack of content specification is likely to result in uncertainty on what and how to assess. This is not helped by the generic rather than subject-specific assessment guidance provided.

In **Kenya** the curriculum documents give little information about assessment. Teachers are given general suggestions on methods of assessment in the form of a list of suggested

assessment methods and techniques. There is no guidance on whether the assessment activities are intended to be diagnostic, formative, or summative or on how the assessment activities should be conducted. Emphasis is on content to be covered.

Table 30 below indicates the clarity regarding what should be assessed (measured in terms of explicitness of evaluative criteria, or framing over evaluative criteria) and how assessment should take place, also in terms of framing, ranging from an explicit and specific instructional theory underlying assessment (F+) to an implicit or generic one (F-).

Table 30: Assessment in the Life Orientation subjects

	South Africa	Kenya	Singapore	British Columbia
What to evaluate	F-	F+	F+	F+
How to evaluate	F-	F-	F-	F+

British Columbia and South Africa provide the most comprehensive accounts of assessment, however the South African documents are largely generic. The focus here is on *why* assess, rather than on what to assess and how to assess it. British Columbia addresses both what and how; the documentation is specific, explicit, and comprehensive. Singapore is clear on what to assess, leaving how to assess open to the teacher. Similarly, Kenya through explicit content specification at least suggests what should be assessed but provides no guidance on how.

9.10 Integration

The idea behind integration in **South Africa** is that learners experience the learning areas as linked and related. In this way, integration is meant to expand and support the learners' opportunities to attain skills, acquire knowledge, and develop attitudes and values across the curriculum, in other words to develop and learn holistically. A key integrating device is that of learning programmes. A learning programme is a structured and systematic arrangement of activities that promote the attainment of learning outcomes and assessment standards from all the other learning areas, including numeracy and literacy, in a specific phase. In the Foundation Phase Life Skills is one of three learning programmes (the others being Literacy and Numeracy). Teachers are expected to integrate teaching and assessment of knowledge, skills, and values across all the learning areas. The Life Orientation learning outcomes and assessment standards form the backbone for the Life Skills learning programme. The Life Skills learning programme therefore focuses on aspects of health promotion (health, safety, nutrition), social development (culture, relationships, rules, rights, and values), personal development (self-esteem, emotions, self-expression), and physical development and movement (physical movement, games, sports, dance). It is expected that these, in turn, are integrated with other learning areas, including literacy and numeracy. There is, however, little guidance on how to plan and implement integration. Although teachers are cautioned to use integration in conceptually sound ways, they are not given guidance on how to do this. The complex and time-consuming task of integration, coupled with a lack of content specification potentially compromises the knowledge made available to students.

In **British Columbia** the concept of integration is central to the curriculum. The main purpose is to enhance students' learning and enable them to make thoughtful connections. Therefore, at any given time, teachers may choose to integrate two, more, or all of the subject areas

at a time, depending on the purpose and context. Another level of integration links the prescribed learning outcomes of each of the areas of study to the organizing framework of child development. Thus child development is the integrating idea for all the Life Orientation subjects. This integration is illustrated for teachers in the curriculum *Framework* document. Teachers are also given the choice to use other models of integration, and references to these are provided.

Whilst integration between subjects is not central to the **Singaporean** curriculum, it is suggested that aspects of the Life Orientation subjects be integrated into other subject areas where appropriate. No clear guidance or practical examples are provided. The spiral, theme-based approach in Social Studies is intended to provide a mechanism for integration of components of related subjects into the curriculum framework for that subject. There is a general description of the desirability of integration of other subjects into Health Education, and some factors to consider when integrating, but no clear examples or practical guidance on how accomplish this.

In **Kenya** there is no guidance on integration. However, the rationalization of the primary curriculum and the creation of some new learning areas does suggest integration of previously separate knowledge areas, e.g., Geography, History, and Civics have been combined and are taught as Social Studies, which includes environmental education, civic education and aspects of business education. Music, Arts, and Craft have also been integrated into one study area called Creative Arts.

Table 31 shows the levels of integration for the four countries' curricula.

Table 31: Integration in the Life Orientation subjects

	Integration	
	Within	Across
British Columbia	C-	C-
Singapore	C-	C+
South Africa	C-	C-
Kenya	C-	C+

9.11 Availability, user-friendliness, and use of the curriculum documents

All four countries use more than one document to put together the Life Orientation programme or the equivalent thereof.

In **South Africa** for Life Orientation, again there are a number of documents that a teacher needs to use. These include an overview of the curriculum, a teacher's guide to the development of learning programmes, assessment guidelines for the Foundation Phase and the outcome statements for Life Orientation. In practice the Foundation Phase teacher is supposed to use to all the other learning areas too (and the associated documents) for the development of an integrated Life Skills Learning Programme. That means more than 27 individual documents need to be used for the implementation of the Life Orientation curriculum. The accessibility of the language varies across the documents. All the South African material is available on the government website.

In **British Columbia** there is an overall framework document that describes the organizing principles; principles of teaching, learning, and assessment; learning in the context of social responsibility; numeracy and literacy; and the role of parents, families, and communities. It provides teachers with general principles that guide the curriculum and also serves to anchor the curriculum by providing theoretical and empirical research evidence to ground pedagogical approaches. In addition there is an *IRP* per grade per area of study that outlines the prescribed learning outcomes, curriculum organizers, timeframes, programme delivery, assessment, and resources. Finally there are *Performance Standards* documents for each area of study and grade cluster (e.g., K to 3) outlining a rubric for all the learning outcomes in that area of study. In addition, the *Performance Standards* documents give actual classroom examples of assessment tasks. The documents are easy to navigate. An important design feature in British Columbia is the introduction to each subject, which includes subject-specific curriculum features as well as an overview of the subject across grades, showing progression. This overview, in tabular form, summarizes the key knowledge to be covered. The layout of documents is accessible and logical.

In **Singapore** teachers are provided with a curriculum framework document per subject area. For this analysis of Life Orientation five documents were used: Civics and Moral Education (Primary School and Primary 2007); Social Studies (Primary); Health Education (Primary); and Physical Education (Primary, Secondary, Pre-University). The language in the documents is simple, direct, and unambiguous. The documents are easy to navigate because they give teachers a clear indication of the nature and scope of work to be covered. For each topic concepts, content, learning outcomes, and their nature and scope are clearly stipulated. The language of the Singaporean curriculum is accessible and uncomplicated. The documents are easy to navigate because the sections are short and clearly marked in contents pages.

In **Kenya** the entire primary curriculum comprises two documents, called the Primary Education Syllabus Volume One and Volume Two. These contain a description of the national goals and objectives, and specific objectives for each subject. There are also suggestions for content and themes. The arrangement of subject content in the two volumes provides a clear view of the syllabus for each subject, per grade. The language used in the documents is simple and direct.

10. Conclusions: trends across the curricula of the four countries

Table 32 below provides a summary of the analysis of the three subjects presented above. In this section of the report, general trends across the curricula and across the countries are identified. Some of the implications of these findings are discussed in the following section.

Table 32: Summary of analysis

	British Columbia	Singapore	South Africa	Kenya
Aims	C+	C+	C-	C+
Organizing principle	F+	F+	F-	F+
Breadth	+	-	+	-
Depth	+	+	-	-
Knowledge Specification	+	+	- to +	+
Pacing	F+/- Fast	F+/- Fast	F- Med	F- Slow
Sequence and progression	F+	F+	F-	F-
Assessment – what	F+	F-	F-	F-
Assessment – how	F+	F-/+	F-	F-
Integration – between	C--	C+	C-	C+
Integration – within	C--	C-	C-	C-

Aims

The aims and purposes of the subjects in the different curricula reflect different approaches. In South Africa there is a strong emphasis on issues of social justice and human rights as encapsulated in the critical and developmental outcomes. The general aims of the British Columbian curriculum focus on the holistic development of the child, located within a constructivist theory of learning. In Singapore there is an emphasis on economic participation and technological development in the general broad aims. In Kenya the overall curriculum emphasis as stated in the broad goals is on civic participation and the development of national identity.

There is also variation in terms of the specificity of aims for particular subjects. As **Table 32** shows, the classification of subjects as read through the aims and how they articulate the 'what' of the subject is strong in Kenya, Singapore, and British Columbia, and weaker in South Africa.

Organizing principle

The analysis shows that the design of the curricula in the four countries is very different, with different central organizers, different levels of complexity of design, and differences in the levels of detail provided with respect to different aspects of teaching and learning particular subjects. British Columbia and South Africa both deploy an outcomes-based framework. They do this in very different ways, however. Whereas the South African curriculum emphasizes skills, and generic learning skills, the British Columbian curriculum specifies

skills but provides detailed content specification as well through concept overview maps, assessment indicators, and performance standards. The British Columbian curriculum is the most complex in terms of design and the most comprehensive in terms of offering guidance and specification to teachers. The least specification and guidance is provided in the Kenyan curriculum, although their focus on content makes their knowledge specification more detailed than that of South Africa. Singapore is also strongly content-led with a range of different organizers used across different subjects.

Whereas the South African and the British Columbian curricula use uniform organizers across subjects, the Kenyan and Singaporean curricula vary in the organizers used across different subjects. These organizers would appear to be judged appropriate to the subject matter being taught.

Table 32 also indicates framing over the regulative discourse – that which informs the way in which the curriculum is structured. We saw in the analysis of English in particular, very different theories underlying the development of the curriculum, and varying degrees of explicitness of the theory informing the design. British Columbia explicitly (F+) is based on a theory of constructivism. Singapore takes systemic functional linguistics as its basis for curriculum organization, and this is clear (F+). The Kenyan syllabus has an implicit theory of audio-lingualism underlying its curriculum (F+), and the South African curriculum is informed by multiple theories from whole language to a balanced approach. The hybrid model, with different theories informing different documents, makes the regulative discourse of the South African curriculum less visible (F-).

Breadth and depth

Evaluations of the breadth and depth of curricula were derived in different ways in the different subjects, including a consideration of the number of topics and sub-topics; number of skills in relation to topics; the weighting of subjects; and content specification. Breadth and depth is generally similar across different subjects within countries. In English and Mathematics, British Columbia has the greatest breadth and depth, and Singapore greater depth but less breadth. Kenya's is the most minimalist curriculum with both less depth and less breadth than the other countries. South Africa has greater breadth and less depth (largely as a result of its weaker content specification). The patterns remain the same for Life Orientation, with the exception that Singapore and British Columbia both offer these subjects at greater breadth and less depth.

Specification

Specification can pertain to knowledge (content, concepts, and skills); to assessment; and to expected or recommended methodology. The table below provides a summary version of the curriculum specification for the four countries.

Table 33: Content specification in the four countries' curricula

	South Africa	Kenya	Singapore	British Columbia
Knowledge	Medium	Medium	High	High
Assessment	Medium	Low	Medium	High
Pedagogy	Medium	Low	Low	High

In South Africa, despite attempts to introduce more content in the NCS, there are still a number of aspects that are generic, especially those pertaining to assessment. In terms of the explicitness of the specification of knowledge, all the countries' curricula are strongly framed with respect to knowledge specifications, with South Africa's being the least explicit (especially in Life Orientation). This is remedied for English and Mathematics by the higher levels of specification in the *Foundations for Learning* documents.

Pacing

The analysis evaluated whether pacing was individualised and differentiated or based on the group; whether it was fast or slow; and whether it was explicit in the curriculum (strongly framed) or implicit (F-). British Columbia suggests highly individualized, differentiated pacing. In Kenya's large classes no suggestions are made for individual or differentiated pacing. Some individualization is suggested in South Africa, with an emphasis on learner-paced teaching and learning, and Singapore suggests individualized pacing.

Pacing is weakly framed in all the curricula, apart from the South African *Foundations for Learning* documents, which provide a very strong stipulation of the pacing requirements. Both the Singaporean and British Columbian curricula are structured in two-year phases with assessment targets at the end of each phase. This allows for a more flexible, learner-driven pace. However, it requires teachers who are very knowledgeable about their subject and who have small enough classes to be able to monitor each child's development closely. Pacing appears moderate in the South African and Kenyan curricula, and fast in the Singaporean and British Columbian curricula.

Sequencing and progression

In the South African curricula, progression and sequencing in the curriculum from grade to grade are difficult to read, both in terms of skills development and the increasing complexity of content. This is because learning outcomes are the same from grade to grade. Further, assessment standards, which are meant to indicate progression, are often poorly stipulated (though less so in Mathematics) and provide weak indications of progression. The *Foundations for Learning* go a long way in addressing the weak indication of progression in English HL and Mathematics, but this remains problematic for Life Orientation and English FAL.

Sequencing and progression are strongly framed in the Kenyan syllabus, and achieved largely through clear content specification that indicates increasingly complex levels of knowledge and skill. In Singapore progression is built into the structure of the curriculum; recursion is emphasized in the 'spiral curriculum' that involves returning to topics at the same and higher levels of complexity. Progression is explicit. Similarly progression is made very clear in the British Columbian curriculum.

Teaching approach and subject methodology

The curricula vary in the amount of guidance they offer teachers on subject methodology and teaching, and the nature of this guidance. Guidance is most extensive, coherent, and explicit in the British Columbian curriculum, which is based on constructivist notions of learning. The South African curriculum emphasizes participatory, learner-centred, and activity-based teaching and learning, principles it aligns with the more generalized outcomes-based approach. There is little guidance provided on how to implement these pedagogic approaches. The suggestions in the Singaporean curriculum vary in different subjects and are brief. No pedagogic approaches are suggested in the Kenyan syllabus, although an audio-lingual approach is arguably suggested in the English curriculum.

Assessment

The analysis considered how explicit the curricula were in terms of both 'what' to assess, and 'how' to assess. British Columbia was the only country with strong framing over both these dimensions. Very clear and specific directions on what and how to assess are provided. Clear content specifications in the Kenyan and Singaporean documents are likely to contribute to clarity over what to assess, although this is not specified separately. How to assess is weakly framed in both, apart from English in the Singaporean document where clear are provided. In the South African curriculum what to assess is clearly specified in the *Foundations for Learning* documents, but not in the NCS. The latter focus on generic and procedural aspects of assessment, making clear the highly bureaucratic nature of the assessment requirements.

Integration

The final dimension of the curricula that was considered was that of integration. There are three aspects to integration: first is within-subject integration, which refers to the relating of topics within a subject; secondly, across-curriculum integration refers to the integration of different subjects in the curriculum; and finally, integration of school knowledge and everyday knowledge is also considered. Kenya and Singapore represent more traditional subject-based curricula, with no emphasis on across-curriculum integration. Both British Columbia and South Africa emphasize integration, and this is built into the structuring of their curricula. In the South African case, learning programmes as well as the learning outcomes and assessment standards are meant to facilitate integration across different subjects.

All of the curricula stress within-subject integration, but make this explicit to different degrees. It is most strongly emphasized in the Singaporean curriculum. There is also variation in the level of guidance offered to teachers for achieving within-subject integration. Integration between school knowledge and everyday knowledge is not a feature of the Kenyan and Singaporean curricula, but is emphasized in the British Columbian and South African ones. Both curricula contain references to everyday knowledge, and inductive approaches to learning, beginning with students' personal knowledge and experience, are suggested.

In short, the Kenyan and Singaporean curricula are more strongly classified curricula, with clear boundaries established and maintained between different subjects. The South African and British Columbian curricula are more weakly classified, emphasizing integration. Different levels of guidance are provided for achieving this integration in the two countries' curricula.

User-friendliness of curriculum

The most comprehensive documents are those of British Columbia. They assume a high level of literacy on the part of teachers. They are lengthy, logically developed, well aligned, and detailed with exemplars. The Singaporean curriculum takes a more economical approach. Documents are terse, clear, easy to use, and assume a high level of training on the part of teachers. The South African documents are dispersed, involving many different documents with unclear relationships between them. The documents are at times repetitious and in some cases contradictory. The Kenyan documents are the most minimalist, and are very sparse and focused on content specification and some general and specific goals.

11. Implications of the curriculum comparison

It is fair to say that the actual content of the South African curriculum does not digress radically from that of other countries. However, there are differences with the other countries in the way in which this knowledge is packaged in the curriculum, its specification, and the underlying principles for its transmission. Although the curriculum has been substantially changed (and largely been improved) in the development of the *Foundations for Learning* documents, these do not pertain to Life Orientation or to English FAL. In addition, the *NCS* remains the official statement of the curriculum for South Africa, and there are a number of problems with this curriculum that were identified in the analysis. There is a lack of sufficient specification of knowledge, and an inadequate indication of progression across grades in terms of the knowledge and cognitive requirements of learners. The organizing principles of learning outcomes and assessment standards are rigid and in many instances militate against clearer expressions of the content to be learnt and progression. The South African curriculum has greater breadth, but less depth than those of the other countries and its assessment procedures focus on generic and bureaucratic aspects of assessment, rather than a subject-specific explanation of what to assess and suggestions for how assessment should take place in a particular subject. A sustained emphasis on integration, especially in Life Orientation, is inadequately modelled, and requires a great deal of knowledge and effort on the part of teachers in realizing it. Finally, there is a proliferation of documentation for the curriculum, resulting in lengthy, contradictory, and inconsistent accounts of what teachers are supposed to teach and how they are supposed to teach it.

What the analysis also reveals is that the South African curriculum as it is currently configured in the *NCS* lacks a sufficiently coherent and systematic theory of curriculum (in other words, how knowledge should be organized for learning), which is related to a suggested pedagogical approach or set of pedagogical principles that are likely to be recognized, and realized by teachers within our particular social and historical context. This issue was addressed in the analysis of English especially, but we elaborate here. What emerges clearly from the analysis is that a number of high performing countries have very different kinds of curriculum. Although stated before that a direct link between student performance and curriculum is not claimed, the findings do alert us to the fact that the suitability of a particular curriculum design cannot be considered independent of its context of implementation, as well as a historical and social view of pedagogy as it occurs in schools. In other words a curriculum cannot and should not eclipse pedagogy, but should be underpinned by a notion of the average teacher and school addressed by the curriculum, and what classroom practices and understandings of knowledge and its transmission prevail.

If we consider **Table 1** and **Table 2**, which provide the social and educational indicators for the countries, alongside the curriculum offered, then questions arise around the appropriateness of the South African curriculum for our context. The pedagogic approach in the Kenyan curriculum provides a lesson in thinking through pedagogic approaches that are familiar and understandable to teachers and that provide better chances of accurate interpretation, coherence and confidence for teachers. The Singaporean curriculum and its accompanying pedagogy has a very clear structure, and is sufficiently flexible for teachers to be able to plan learning programmes to suit their learners' interests and capacities. It is clearly designed for a context that has a strong teacher training system,

and well-educated teachers. A fully-fledged constructivist pedagogy of the kind proposed in the British Columbian curriculum suggests extensive teacher education, small class sizes and high resource levels. We saw the failure of an attempt to implement such a curriculum (based on radical constructivism) in South Africa in *Curriculum 2005*. In South Africa, the NCS requires sophisticated work on the part of teachers in developing learning programmes, integrating subject areas, and discerning appropriate assessments. This is with a curriculum that, as indicated above, is underspecified. It is also in a context of large classes and low resource levels, particularly low cognitive resources as these pertain to teacher knowledge (Taylor, 2008). One of the central arguments arising out of the study, therefore, is a need to consider the South African curriculum with real teaching contexts in mind, and to not expect curriculum to eclipse pedagogy, but rather support and attempt to shift it by addressing the realities of teaching and learning as it exists in our schools.

12. Recommendations

This section of the report presents a number of recommendations derived from the analysis. The focus is on improvement of the South African NCS, in reference to the curricula of the other countries analyzed in this report.

Content specification

The content, skills, and concepts to be acquired need greater specification in the curriculum, and learning outcomes and assessment standards as they are currently used inhibit this specification. Specification in the British Columbian and Singaporean curricula offer good examples for high specification. Kenya's simple format, which is easy to read and understandable to all teachers, is also exemplary in this regard.

Breadth and depth

The breadth and depth of the curriculum should be considered, with a view to achieving a balance between these dimensions. Greater depth in the key content, skills, and concepts should be sought at this level of schooling, whilst breadth in Life Skills subjects should be retained without thinning out learning to the extent that currently occurs.

Coherent theoretical approach to languages

A coherent theory of curriculum and pedagogy as an approach that underlies the development of the curriculum needs to be carefully considered and made explicit. If a balanced approach is advocated, it should be clear what this entails, and it should be consistently applied throughout the development of the curriculum. Crucially, English HL needs to be distinguished from English FAL, and the approaches most suitable to the teaching of each need to be addressed. We could learn much from the Singaporean curriculum, which takes an explicitly text-based approach, integrating skills and knowledge and providing a strong, well-sequenced, and well-paced programme for the development of vocabulary, grammar, and text types. A team of experts should be appointed to review the way in which text types/genres are listed in the current curriculum and they should ensure good coverage of information texts (this should also apply to the Foundations for Learning documents).

Progression

The assessment standards in the current NCS inhibit rather than facilitate progression. Teachers need to be provided with overviews that depict progression within and between grades and phases. Greater content specification as well as assessment specifications would also enhance progression stipulations.

Curriculum and pedagogy

A curriculum should be developed with a particular teacher in mind, and this should be the 'average' teacher of a particular country. We have a relatively good grasp through research on what the capabilities and inclinations of teachers in South Africa are. We need to develop a curriculum for them, one that they can understand, access, and relate to, while at the same time protecting the need for students to learn internationally-recognized content in a way that is optimal for their development.

Integration

As advised in the 2000 review of Curriculum 2005 (DOE, 2000), this report recommends that the focus remain on within-subject integration (or what was termed vertical integration), rather than across-subject integration (weak classification between subjects or horizontal integration). Integrating knowledge from different subjects is an extremely sophisticated activity. Where appropriate, this should be provided for teachers, made explicit, and demonstrated. The levels of integration required in the Life Skills learning programme in South Africa in particular are excessive. Here teachers are required to integrate from eight learning areas with very little guidance and in many cases with underspecified content. Reduced integration in this subject is recommended. The subject content needs to be reorganized and key learning and concepts from different subjects need to be selected and made clear for teachers.

Within-subject integration is a key principle for language in the Singapore, South African, and British Columbian curricula. In South Africa this form of integration is largely meant to be achieved through Assessment Standards. Where these are vague or underspecified the practice is likely to lead to bureaucratic or nonsensical integration that does not involve a consideration of the conceptual basis for integration. The Singapore English curriculum, with its spiral design and emphasis on recursion, provides an excellent example of how strong vertical integration may be achieved.

The integration between school and everyday knowledge in the curriculum needs to be revisited. Although relevant to pedagogy and inducting students into school knowledge, everyday knowledge does not belong in the formal curriculum. What results is confusion between curriculum and pedagogy, and a weakening of knowledge stipulations to guide teachers in their teaching.

User-friendliness of the curriculum

The number of separate documents (many of which are contradictory) needs to be reduced. There are too many South African curriculum documents with many conflicting statements. In addition, in an attempt to assist teachers, many provincial documents have been generated (not reviewed here). Standardized documents based on current research and theory in the field of early conceptual development, designed by experts, and supporting the content of the curriculum need to be produced. These should be presented in accessible, plain, clear, and unambiguous language with a minimum number of appropriate design features.

English FAL

Further research, and possibly a national survey, needs to be carried out to establish:

- What language(s) are used as the medium of instruction (language of learning and teaching) in the Foundation Phase;
- In how many schools and what kind of schools is English the language of learning and teaching and taught as a HL; in these contexts what proportion of children speak English as a first or home language;
- In what grade is English introduced as a FAL in schools where English is not the language of learning and teaching; and
- In all contexts, how much of the available curriculum time is devoted to English.

The DoE should advise schools where English becomes the medium of instruction in Grade 4 to introduce English as a FAL as a subject in Grade R. Appropriate time should be set

aside every day for this. Attention needs to be paid to the teaching of English as a FAL. The curriculum should thus clearly indicate:

- What must be achieved in each grade (R to 3) for the home language and for English as a FAL;
- How literacy in the FAL builds on literacy in the home language, i.e., how to provide a 'bridge' from the home language to English.

A team of experts should be appointed to review the vocabulary targets in the English FAL Area Statement. Lists of high frequency words to be covered grade by grade should be drawn up and given to teachers and publishers. Curriculum specification on a par with that of HL in the *Foundations for Learning* documents needs to be developed for English FAL.

Assessment

The current assessment guidelines should be rewritten so that they are less bureaucratic and procedural and more conceptual, with practical illustrations and examples of student productions. The *British Columbian Performance Standards* provide a very good model, though they would need to be adapted for the South African context. The assessment guidelines provided in the *Foundations for Learning* documents are an excellent model as well. Clear guidance should be given with regard to early intervention for struggling readers/writers or those struggling with Mathematics.

It would be of great use to teachers to provide achievement indicators for at least some assessment standards, as well as suggestions of how to rate performance on a 4-scale rubric for the achievement indicators. Providing learners' responses to selected assessment tasks would also be of immense value (as exemplified in the British Columbian documents).

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Department of Education (DoE), 2007. *Teaching Reading in the Early Grades. A Teacher's Handbook*. [Online]. Available at: http://curriculum.pgwc.gov.za/resource_files/38161222_20080519_teach_read.pdf. [Accessed on: 20 February 2009].

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Ministry of Education, Province of British Columbia (MOEBC), 2006b. *English Language Arts Grade 2. Integrated Resource Package 2006*. [Online]. Available at: http://www.bced.gov.bc.ca/irp/ela_2_irp.pdf. [Accessed on: 20 January 2009].

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12. Appendices

Appendix 1: Numeracy documents used

Title	Code	Country
Department of Education (1997) <i>Language In Education Policy</i> . Retrieved 12 March 2009 from http://www.education.gov.za/Documents/policies/LanguageEducationPolicy1997.pdf	1	SA
Department of Education (2008) <i>Foundations for Learning Assessment Framework Foundation Phase</i> . Retrieved 12 March 2009 from http://www.thutong.org.za/ResourceFiles/37436/34828/34802/DoE%20Assessment%20Framework%20Foundation%20phase.pdf	2	SA
Department of Education (2008) <i>Government Gazette- Foundations for Learning Campaign</i> . Retrieved 12 March 2009 from http://www.greengazette.co.za/docs/2008/03/Gazettes/National/20080314%20-%20National%20Gazette%20No%2030880%20of%2014-Mar-2008,%20Volume%20513.pdf	3	SA
Department of Education (2002) <i>Revised National Curriculum Statement for Grades R-9 (Schools) Mathematics</i> . Pretoria, South Africa. Retrieved on 03 Feb 2009 from http://www.thutong.org.za/PolicyDocumentFiles/GET%20Curriculum%20Policy/Revised%20National%20Curriculum%20Statements/Mathematics/maths.pdf http://www.education.gov.za/Curriculum/GET/doc/maths.pdf	4	SA
Department of Education (No Date) <i>National Curriculum Statement General Education and Training Assessment Guidelines for Foundation Phase Grades R-3</i> . Retrieved on 03 Feb 2008 from http://www.education.gov.za/Curriculum/GET/doc/assessment%20guidelines%20-%20foundation%20phase%20grey.pdf	5	SA
Ministry of Education (2006) <i>Mathematics Syllabus Primary</i> . Retrieved on 02 Feb 2009 from http://www.moe.gov.sg/education/syllabuses/sciences/files/maths-primary-2007.pdf	6	S/PORE
Ministry of Education (2001) <i>Primary Mathematics Syllabus</i> . Retrieved on 02 Feb 2008 from http://www.moe.gov.sg/education/syllabuses/sciences/files/maths-primary-2001.pdf	7	S/PORE
Ministry of Education (2007) <i>Mathematics Kindergarten. Integrated Resource Package 2007</i> , Province of British Columbia. Retrieved on 20 Jan 2009 from http://www.bced.gov.bc.ca/irp/math-k.pdf	8	BC
Ministry of Education (2007) <i>Mathematics Grade 1. Integrated Resource Package 2007</i> , Province of British Columbia. Retrieved on 20 Jan 2009 from http://www.bced.gov.bc.ca/irp/math-1.pdf	9	BC
Ministry of Education (2007) <i>Mathematics Grade 2. Integrated Resource Package 2007</i> , Province of British Columbia. Retrieved on 20 Jan from http://www.bced.gov.bc.ca/irp/math-2.pdf	10	BC
Ministry of Education (2007) <i>Mathematics Grade 3. Integrated Resource Package 2007</i> , Province of British Columbia Retrieved on 20Jan from http://www.bced.gov.bc.ca/irp/math-3.pdf	11	BC
Ministry of Education (2002) <i>BC Performance Standards Numeracy</i> . Retrieved on 20 Jan 2009 from http://www.bced.gov.bc.ca/perf_stands/nintro.pdf	12	BC
Ministry of Education (No Date) <i>BC Performance Standards Numeracy Grade 1</i> . Retrieved on 20 Jan from http://www.bced.gov.bc.ca/perf_stands/numerg1.pdf	13	BC
Ministry of Education (No Date) <i>BC Performance Standards Numeracy Grade 2</i> . Retrieved on 20 Jan from http://www.bced.gov.bc.ca/perf_stands/numerg2.pdf	14	BC
Department of Education (2000) <i>Report of the Review Committee on Curriculum 2005. A South African Curriculum for the Twenty First Century</i> . Pretoria, South Africa. Retrieved on 03 Feb 2008 from http://www.polity.org.za/polity/govdocs/reports/education/curric2005/curric2005a.html	15	SA

Department of Education (No Date) <i>Progression and Promotion Requirements For Grades 1 to 9</i>	16	SA
Department of Education (2008) <i>Grade R Practical Ideas, Support For Creating Stimulating Indoor Learning Environment. Support For Managing The Learning Programme. Responsive Interaction</i>	17	SA
Department of Education (No Date) <i>National Curriculum Statement National Policy on Assessment and Qualifications For Schools in the General Education And Training Band</i> . Pretoria, South Africa. Retrieved on 03 Feb 2009 from http://www.education.gov.za/Curriculum/GET/doc/ANatioanalPolicy.pdf	18	SA
Department of Education (2003) <i>Revised National Curriculum Statement Grades R-9 (Schools): Teacher's Guide for the Development of Learning Programmes: Mathematics</i> . Pretoria, South Africa. Retrieved on 03 Feb 2009 from http://www.thutong.org.za/PolicyDocumentFiles/GET%20Curriculum%20Policy/Learning%20Programme%20Guidelines/GETmathematics.pdf	19	SA
Department of Education (2002) <i>Policy Revised National Curriculum Statement Grade R-9 (Schools): Overview</i> . Retrieved on 03 Feb 2008 from http://lnw.creamermedia.co.za/articles/attachments/00208_curriculum.pdf	20	SA
Republic of Kenya Ministry of Education (2002) <i>Primary Education Syllabus Volume One</i>	22	KENYA
Republic of Kenya Ministry of Education (2002) <i>Primary Education Syllabus Volume Two</i>	23	KENYA
Singapore Examinations and Assessment Board (No Date) <i>PSLE Foundation Mathematics</i> . Retrieved on 02 Feb 2009 from http://www.seab.gov.sg/SEAB/psle/2009_PSLE_Subject_Info/0038_2009.pdf	25	S/PORE
Singapore Examinations and Assessment Board (No Date) <i>PSLE Mathematics</i> . Retrieved on 02 Feb 2008 from http://www.seab.gov.sg/SEAB/psle/2009_PSLE_Subject_Info/0008_2009.pdf	26	S/PORE
Ministry of Education (2000) <i>The Primary Program. A Framework for Teaching. Overview Guide</i> . Province of British Columbia. Retrieved on 20 Jan 2009 from http://www.bced.gov.bc.ca/primary_program/primary_prog.pdf	27	BC

Appendix 2: English documents used

Title	Code	Country
Progression and Promotion Requirements for Grades 1 to 9	1	SA
Department Of Education (1997) <i>Language In Education Policy</i> . Retrieved 12 March 2009 from http://www.education.gov.za/Documents/policies/LanguageEducationPolicy1997.pdf	2	SA
Department of Education (2008) <i>Government Gazette: Foundations for Learning Campaign</i> . Retrieved 12 March 2008 from http://www.greengazette.co.za/docs/2008/03/Gazettes/National/20080314%20-%20National%20Gazette%20No%2030880%20of%2014-Mar-2008,%20Volume%20513.pdf	3	SA
Department of Education (2008) <i>Foundations for Learning Assessment Framework: Foundation Phase</i> . Retrieved 12 March 2009 from http://www.thutong.org.za/ResourceFiles/37436/34828/34802/DoE%20Assessment%20Framework%20Foundation%20phase.pdf	4	SA
Department of Education (2008) <i>National Reading Strategy</i> . Retrieved 12 March 2009 from http://www.info.gov.za/view/DownloadFileAction?id=78955	5	SA
Department of Education (2007) <i>Teaching Reading in the Early Grades. A Teacher's Handbook</i> January 2008. Retrieved on 20 February 2009 from http://curriculum.pgwc.gov.za/resource_files/38161222_20080519_teach_read.pdf	6	SA
Department of Education (2008) <i>Grade R Practical Ideas, Support For Creating Stimulating Indoor Learning Environment. Support For Managing The Learning Programme. Responsive Interaction</i>	7	SA

Department of Education (2002) <i>Policy Revised National Curriculum Statement Grade R-9 (Schools): Overview</i> . Retrieved on 03 Feb 2009 from http://llnw.creamermedia.co.za/articles/attachments/00208_curriculum.pdf	8	SA
Department of Education (2002) <i>Revised National Curriculum Statement for Grade R-9 (Schools): Languages: English Home Language</i> . Pretoria, South Africa. Retrieved on 03 Feb 2009 from http://www.education.gov.za/Curriculum/GET/doc/home.pdf	9	SA
Department of Education (No Date) <i>National Curriculum Statement General Education and Training Assessment Guidelines for Foundation Phase Grades R-3</i> . Retrieved on 03 Feb 2009 from http://www.education.gov.za/Curriculum/GET/doc/assessment%20guidlines%20-%20foundation%20phase%20grey.pdf	10	SA
Department of Education (No Date) <i>National Curriculum Statement National Policy on Assessment and Qualifications For Schools in the General Education And Training Band</i> . Pretoria, South Africa. Retrieved on 03 Feb 2008 from http://www.education.gov.za/Curriculum/GET/doc/ANatioanalPolicy.pdf	11	SA
Department of Education (2000) <i>Report of the Review Committee on Curriculum 2005. A South African Curriculum for the Twenty First Century</i> . Pretoria, South Africa. Retrieved on 03 Feb 2009 from http://www.polity.org.za/polity/govdocs/reports/education/curric2005/curric2005a.html	12	SA
Ministry of Education (No Date) <i>Framework for Co-Curricular Activities</i> . Retrieved on 03 Feb 2009 from http://www3.moe.edu.sg/ccab/branch/LEAPS%20Guidelines_2006.pdf	13	S/PORE
Ministry of Education (2001) <i>English Language Syllabus 2001</i> . Retrieved on 02 Feb 2009 from http://www.moe.gov.sg/education/syllabuses/languages-and-literature/files/english-primary-secondary.pdf	14	S/PORE
Ministry of Education (2005) <i>PSLE Foundation English (for EM3 stream)</i> http://www.seab.gov.sg/SEAB/psle/2009_PSLE_Subject_Info/0031_2009.pdf	15	S/PORE
Republic of Kenya Ministry of Education (2002) <i>Primary Education Syllabus Volume 1</i>	16	KENYA
Republic of Kenya Ministry of Education (2002) <i>Primary Education Syllabus Volume 2</i>	17	KENYA
Republic of Kenya Ministry of Education (2009) <i>Primary Education Social Studies Syllabus</i>	18	KENYA
Ministry of Education (2000) <i>The Primary Program. A Framework for Teaching. Overview Guide</i> , Province of British Columbia. Retrieved on 20 Jan. 2009 from http://www.bced.gov.bc.ca/primary_program/primary_prog.pdf	19	BC
Ministry of Education (2006) <i>English Language Arts Kindergarten. Integrated Resource Package 2006</i> , Province of British Columbia. Retrieved on 20 January 2009 from http://www.bced.gov.bc.ca/irp/ela_k_irp.pdf	20	BC
Ministry of Education. Province of the British Columbia (2006) <i>English Language Arts Grade 1. Integrated Resource Package 2006</i> . Retrieved on 20 January 2009 from http://www.bced.gov.bc.ca/irp/ela_1_irp.pdf	21	BC
Ministry of Education. Province of the British Columbia (2006) <i>English Language Arts Grade 2. Integrated Resource Package 2006</i> . Retrieved 20 January 2009 from http://www.bced.gov.bc.ca/irp/ela_2_irp.pdf	22	BC
Ministry of Education. Province of the British Columbia (2006) <i>English Language Arts Grade 3. Integrated Resource Package 2006</i> . Retrieved 20 January 2009 from http://www.bced.gov.bc.ca/irp/ela_3_irp.pdf	23	CAN
Ministry of Education (2002) <i>BC Performance Standards Reading</i> . Retrieved on 20 Jan 2009 from http://www.bced.gov.bc.ca/perf_stands/rintro.pdf	24	BC
Ministry of Education (2002) <i>BC Performance Standards Writing</i> . Retrieved on 20 Jan 2009 from http://www.bced.gov.bc.ca/perf_stands/wintro.pdf	25	BC
Department of Education (2003) <i>Revised National Curriculum Statement Grades R-9 (Schools: Teacher's Guide for the Development of Learning Programmes: Mathematics</i> . Pretoria, South Africa. Retrieved on 03 Feb 2009 from http://www.thutong.org.za/PolicyDocumentFiles/GET%20Curriculum%20Policy/Learning%20Programme%20Guidelines/GETmathematics.pdf	26	SA

Department of Education (2003) <i>Revised National Curriculum Statement Grades R-9 (Schools) Teacher's Guide for the Development of Learning Programmes: Foundation Phase</i> . Pretoria	27	SA
Department of Education (2002) <i>Revised National Curriculum Statement Grades R-9 (Schools) Policy: Languages: English First Additional Language</i> . Pretoria: Government Printer.	29	SA
Department of Education (2002) <i>Revised National Curriculum Statement Grades R-9 (Schools) Policy: Languages: English Second Additional Language</i> . Pretoria: Government Printer.	30	SA
Department of Education (2002) <i>Revised National Curriculum Statement Grades R-9 (Schools) Policy: Mathematics</i> . Pretoria: Government Printer.	31	SA
Department of Education (2002) <i>Revised National Curriculum Statement Grades R-9 (Schools) Policy: Life Orientation</i> . Pretoria: Government Printer.	32	SA
Department of Education (2002) <i>Revised National Curriculum Statement Grades R-9 (Schools) Policy: Technology</i> . Pretoria: Government Printer.	33	SA
Department of Education (2002) <i>Revised National Curriculum Statement Grades R-9 (Schools) Policy: Natural Sciences</i> . Pretoria: Government Printer.	34	SA
Department of Education (2002) <i>Revised National Curriculum Statement Grades R-9 (Schools) Policy: Social Sciences</i> . Pretoria: Government Printer.	35	SA
Department of Education (2002) <i>Revised National Curriculum Statement Grades R-9 (Schools) Policy: Arts and Culture</i> . Pretoria: Government Printer.	36	SA
Department of Education (2002) <i>Revised National Curriculum Statement Grades R-9 (Schools) Policy: Economic and Management Sciences</i> . Pretoria: Government Printer.	37	SA

Appendix 3: Life Orientation documentation

Title	Code	Country
Ministry of Education (2005) <i>Science Kindergarten. From Integrated resource package 2005</i> , Province of British Columbia. Retrieved on 20 January from http://www.bced.gov.bc.ca/irp/sci_K.pdf	1	BC
Ministry of Education (2005) <i>Science Grade 1. From Integrated resource package 2005</i> , Province of British Columbia. Retrieved on 20 January from http://www.bced.gov.bc.ca/irp/sci_1.pdf	2	BC
Ministry of Education (2005) <i>Science Grade 2. From Integrated resource package 2005</i> , Province of British Columbia. Retrieved on 20 January from http://www.bced.gov.bc.ca/irp/sci_2.pdf	3	BC
Ministry of Education (2005) <i>Science Grade 3. From Integrated resource package 2005</i> , Province of British Columbia. Retrieved on 20 January from http://www.bced.gov.bc.ca/irp/sci_3.pdf	4	BC
Ministry of Education (2006) <i>Physical Education Kindergarten. Integrated Resource Package 2006</i> , Province of British Columbia. Retrieved on 20 Jan from http://www.bced.gov.bc.ca/irp/pek.pdf	5	BC
Ministry of Education (2006) <i>Physical Education Grade 1. Integrated Resource Package 2006</i> , Province of British Columbia. Retrieved on 20 January from http://www.bced.gov.bc.ca/irp/pe1.pdf	6	BC
Ministry of Education (2006) <i>Physical Education Grade 2. Integrated Resource Package 2006</i> , Province of British Columbia. Retrieved on 20 January from http://www.bced.gov.bc.ca/irp/pe2.pdf	7	BC
Ministry of Education (2006) <i>Physical Education Grade 3. Integrated Resource Package 2006</i> , Province of British Columbia. Retrieved on 20 January from http://www.bced.gov.bc.ca/irp/pe3.pdf	8	BC
Ministry of Education (2006) <i>Social Studies Kindergarten. Integrated Resource Package 2006</i> , Province of British Columbia. Retrieved on 20Jan from http://www.bced.gov.bc.ca/irp/ss_k.pdf	9	BC

Ministry of Education (2006) <i>Social Studies Grade 1. Integrated Resource Package 2006</i> , Province of British Columbia. Retrieved on 20 January from http://www.bced.gov.bc.ca/irp/ss_1.pdf	10	BC
Ministry of Education (2006) <i>Social Studies Grade 2. Integrated Resource Package 2006</i> , Province of British Columbia. Retrieved on 20 January from http://www.bced.gov.bc.ca/irp/ss_2.pdf	11	BC
Ministry of Education (2006) <i>Social Studies Grade 3. Integrated Resource Package 2006</i> , Province of British Columbia. Retrieved on 20 January from http://www.bced.gov.bc.ca/irp/ss_3.pdf	12	BC
Ministry of Education (2006) <i>Health And Career Education K to 7. Integrated Resource Package 2006</i> , Province of British Columbia. Retrieved on 20 Jan from http://www.bced.gov.bc.ca/irp/hcek7.pdf	13	BC
Ministry of Education (No Date) <i>BC Performance Standards Social Responsibility Grades K to 3</i> . Retrieved on 20 Jan from http://www.bced.gov.bc.ca/perf_stands/skto3.pdf	14	BC
Ministry of Education (2000) <i>Civics and Moral Education Syllabus Primary School</i> . Retrieved on 20 January from http://www.moe.gov.sg/education/syllabuses/humanities-and-aesthetics/files/civics-and-moral-education-primary-english-2000.pdf	15	S/PORE
Ministry of Education (2006) <i>Civics and Moral Education Syllabus 2007</i> . Retrieved on 02 Feb 2008 from http://www.moe.gov.sg/education/syllabuses/humanities-and-aesthetics/files/civics-and-moral-education-primary-english-2007.pdf	16	S/PORE
Ministry of Education (2008) <i>2008 Syllabus General Music Programme Primary/ Secondary</i> . Retrieved on 02 Feb 2008 from http://www.moe.gov.sg/education/syllabuses/humanities-and-aesthetics/files/general-music-programme.pdf	17	S/PORE
Ministry of Education (2008) <i>Art Syllabus Primary and Lower Secondary</i> . Retrieved on 02 Feb 2008 from http://www.moe.gov.sg/education/syllabuses/humanities-and-aesthetics/files/art-primary-and-lower-secondary-2009.pdf	18	S/PORE
Ministry of Education (2005) <i>Social Studies Syllabus Primary</i> . Retrieved on 02 Feb 2008 from http://www.moe.gov.sg/education/syllabuses/humanities-and-aesthetics/files/social-studies-primary-2006.pdf	19	S/PORE
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Ministry of Education (2006) <i>Physical Education Syllabus (Primary, Secondary, Pre-University 2006)</i> . Retrieved on 02 Feb 2008 from http://www.moe.gov.sg/education/syllabuses/humanities-and-aesthetics/files/physical-education.pdf	21	S/PORE
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ISBN 062047880-2



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