

Learning from Africa

Umalusi's research comparing syllabuses and examinations in South Africa with those in Ghana, Kenya, and Zambia

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Chapter One

Introduction

This is the third report in a series of reports emanating from an Umalusi research study aimed at understanding how South Africa compares with three other African countries with regard to senior high school certificates. The research compared South Africa's Matric certificate with the senior secondary school certificates of Ghana, Kenya, and Zambia, exploring various aspects of the curriculum and examinations systems, as well as examining the intended and examined curriculum in four subjects.

The aim of the research was to learn from selected Anglophone counties in different regions of Africa, in order to contribute to improving the intended and examined curricula in the Further Education and Training band in South Africa. Umalusi believes that it is valuable to contextualize our systems against those in other countries, and hopes that this kind of comparative analysis will allow South Africans to stand back and achieve a distance from our internal debates. The report also cautions South Africa not to assume that our education system is superior to those found elsewhere in Africa.

The context of this research is a new curriculum which is in the process of being rolled out in South Africa for the Further Education and Training (FET) phase (senior secondary school). The FET phase, which covers the final three years of secondary schooling (Grades 10 to 12), culminates in the National Senior Certificate, the certificate which will replace the current Senior Certificate. The roll out of the new curriculum began in Grade 10 in January 2006, and the first cohort of Grade 12 learners will receive the new National Senior Certificate in 2008.

The research aimed to understand how South Africa compares with the other countries in terms of both the old curriculum and examinations, which were still in use at the time the research was conducted, and the new curriculum. We attempt to understand what we can learn from the other countries with regard to systemic issues, as well as lessons for our new curricula and examinations on the basis of the subject comparisons.

The study was conducted through meetings and open-ended interviews with officials in all four countries, supplemented by documentary information where necessary. Syllabus and 2004 examination documentation were collected from each country and analyzed by groups of South African experts.

This report provides a synthesis of what was learnt from the comparative study. At a substantive level the report deals mainly with three issues:

- An overview of aspects of the education systems in the four countries. i.e., years in school, examinations, and certification (Chapter 2);

- An overview of the comparisons of the intended and examined curriculum in four subjects at school-exit level, i.e., Biology, Science, English, and Mathematics (Chapter 3);
- Some reflections on the new curriculum in South Africa (Chapter 4).

In the main, the significant differences between South Africa, on the one hand, and the other three countries, on the other, are regulatory. How the examination and curriculum systems are organized and run, the form of the intended curriculum, the nature of assessment at a primary or junior secondary level, and so on, are considerably different, and South Africa may want to consider the strengths of the approach of the other three countries. The intended curricula and examined curricula, as far as they can be compared, are reasonably similar, although there are some noteworthy differences which will be of interest to subject experts. The report contains only a very brief overview of the findings with regard to each subject. Separate booklets for each subject, which provide far more detailed discussion, are also available to be read in conjunction with this report.

The research project was a large one, and has resulted in three research reports. While this current report stands on its own, it connects with the other two reports from the study.

The first report is a lengthy technical report, which contains detailed findings of the subject comparisons as well as examination and curriculum systems from the four countries. This report, *Evaluating syllabuses and examinations: An Umalusi technical report comparing the syllabuses and examinations from Ghana, Kenya, South Africa and Zambia* (Umalusi 2007a), will be of interest primarily to subject experts, and is available on www.umalusi.org.za. Also emanating from this project is a reflective report, entitled *Making Educational Judgements: Reflections on judging standards of intended and examined curricula* (Umalusi 2007b). This report provides an analysis of the methodology used for this as well as other Umalusi research projects, and considers the implications for Umalusi's work in making judgements about intended and examined curricula. The report is published by Umalusi, and is available from Umalusi's offices as well as on www.umalusi.org.za. Finally, the current report provides a synthesis of what was learnt from the comparison and some reflections on South Africa's curriculum and examination systems, as well as approaches to representing the intended curriculum.

The aim of the subject comparisons was to see what we can learn about our new curriculum by comparing it the other three countries as well as our old curriculum. Clearly, the intended curriculum is *always* the subject of contestation, and inevitably, there are different but equally valid ways of selecting and presenting content. However, the fact that there can be considerable variation does not mean that 'anything goes'—curriculum statements or syllabus documents can vary in terms of quality with regard to factors such as how they are presented, how clear they are to end users, whether they are under- or over-specified, or with regards to the selection of content. The judgements in this report are by no means definitive—they represent the views of a small group of (five) experts for each subject. The intention is merely to highlight some issues which have emerged in the analysis and may be of benefit to curriculum designers as they continue to attempt to improve our curricula on an ongoing basis. The comments and observations are tentative and gesture towards potential problems and possibilities rather than to clearly definable successes and failures.

COMPARING EDUCATION SYSTEMS

International comparisons have become increasingly prevalent in a globalizing world. There are many different ways in which education systems can be compared. Achievement tests have captured the imagination of analysts and policy formulators—a number of different international achievement tests have compared learner achievement across different countries. Of course there is much criticism of such tests and the ‘league tables’ that they lead to, which may be counterproductive in improving education systems. Some argue that the design of cross-country assessment instruments favours the most traditional part of the curriculum, and by implication that countries that do the best are those whose systems have progressed least over the years (Robertson 2000). However, such tests do provide hard data for comparison.

Policy-makers and educationalists often look to other countries as a foil and benchmark for comparison—either to highlight the strengths of their own systems, to explore what their system may lack, or to legitimate new policies (Green 2000). Thus, countries are often trying to isolate and import specific features of each other’s systems. For example, the National Institute for Curriculum Development in Japan reports that in the late 1990s countries with a broad range of elective subjects (Australia and Germany) were trying to strengthen a common core while countries with a strong core (Fiji, Japan, and Vietnam) were expanding the choices available to students (National Institute for Educational Research 2003).

International comparisons of any nature should not be read as implying that there is a single best curriculum, or that there is only one way in education: “Looking at other countries may lead us to examine aspects of our own practices that might be improved” (Stevenson, Lee and Nerison-Low 1998, p. 2). Bradburn and Gilford (1990, p. 22) similarly argue that “Since there are no absolute standards of educational achievement or performance, comparative studies are vital to policy makers in setting realistic standards and in monitoring the success of educational systems”.

Of course international comparisons are notoriously difficult. Researchers are likely to be biased towards their own country—even if they aim to be critical of it, they may understand other countries in light of what they know of their own, and thus misunderstand terminology or systems (Noah and Eckstein 1998). However, Noah and Eckstein also point out that comparative studies can deepen our understanding of our own education systems, and can therefore be of assistance to policy makers and administrators. And, they point out that even if studies are ‘merely’ descriptive, a tremendous amount of effort has to be exerted simply to acquire systematic parallel data on different educational systems.

Some years ago the South African Department of Education compared our syllabuses with those of Scotland. Umalusi decided it was time to look closer to home, to see what we could learn from our counterparts in Africa. We also felt that it would be instructive to examine countries that face similar challenges to ours in order to see how the countries are coping with these challenges. Many African countries have expanded their primary and secondary education systems considerably over recent years, and while enrolment numbers have

improved, in some cases this appears to be at the expense of quality¹. On the one hand, recent results from the Southern African Consortium for Monitoring Educational Quality, for example, indicate a drop in performance in numeracy and literacy in all but one of the countries tested. On the other hand, most African countries—countries that are much poorer than South Africa—perform better in international achievement tests.

THE COUNTRIES IN THE STUDY AND THEIR EDUCATION SYSTEMS

Ghana, Kenya, and Zambia were selected in order to ensure one Anglophone country from each region of Africa (excluding central Africa). Very brief information about each country is provided below.

Ghana is one of five Anglophone countries in the West African region. A coastal country, it is home to somewhere between 19 850 800 (World Info Zone 2006) and 21 029 853 people (Population World 2006) making it one of the most populous countries in Sub-Saharan Africa. A former British colony, it was one of the first countries in Africa to obtain independence, in 1957, and is ranked 138th out of 177 in the 2005 United Nation's Development Programme's (UNDP) human development index (United Nation's Development Programme 2006).

The east African country of Kenya obtained independence from Britain in 1963. The population of Kenya is estimated at between 32 and 43 million people (Central Intelligence Agency 2006; Population World 2006). Kenya is ranked 154th out of 177 in the UNDP's human development index (United Nation's Development Programme 2006).

Zambia is a land-locked country in Southern Africa. A former British colony, it obtained independence in 1964. It has a population of approximately 11 million (Population World 2006; World Info Zone 2006). Zambia ranks 166 out of the 177 countries ranked on the UNDP's human development index (United Nation's Development Programme 2006).

South Africa is by far the largest country in the study, with a population of nearly 46 million people (Population World 2006). It became democratic very recently with the overthrow of the infamous apartheid system in 1994. South Africa is ranked 120th in the UNDP's human development index (United Nation's Development Programme 2006).

The education systems of the four countries, all former British colonies, share a lot in common. The British colonial system emphasized a more flexible, decentralized, low cost system, while the French tended to introduce more centrally organized and controlled systems (Quist 2003). Of interest is that France regarded the use and spread of French as of primary importance, while the British system of indirect rule tended to produce smaller elites who could speak English well, but had less impact on the country as a whole (Quist 2003).

Ghana, Kenya, and Zambia, however, have been more recently and formally linked to the British education system through the Cambridge examination system, and still follow aspects

¹ This may be a very salient issue for South Africa today, and a differently designed comparative study focusing on primary education could identify cases in other countries where this has happened, and where it has been avoided.

of the Cambridge system. South Africa on the other hand has, for different reasons, followed a rather different trajectory, developing an independent system much earlier than the other countries.

STANDARDS, CURRICULUM, AND ASSESSMENT: INTERNATIONAL PERSPECTIVES

(Note that this section of the literature review also occurs in the report *Making Educational Judgements: Reflections on judging standards of intended and examined curricula* (Umalusi 2007b).

Internationally there is remarkable consensus on what primary and secondary education should achieve. According to a Japanese study which examined the syllabuses of eighteen countries primarily in Australasia and Europe, the most common goals for the compulsory section of education systems are a basic foundation of knowledge; development of the child's intellectual, emotional, spiritual, and physical potential; and critical thinking and problem solving skills (National Institute for Educational Research 2003). Similarly, Australian research argues that a world class curriculum is characterized by "equity and inclusiveness, the encouragement of innovation and creativity, clarity and focus in content specification and assessment for learning" (Victorian Curriculum and Assessment Authority 2004, p. 3). Even the Japanese, who consistently score highly in most international performance evaluations, are lamenting the need for their children to learn "the ability to identify problem areas for themselves, to learn, think, make judgements and act independently and to be more adept at problem-solving" (Central Council for Education, 1999, p. 18 in Green 2000, p. 425).

Much less resolved, however, is *how* to design a curriculum that achieves these objectives. Curriculum content has always been contested and there is also much debate about the prescription of the intended curriculum: what should be prescribed, by whom, and in what forms. Most countries have curriculum agencies, bureaus, institutes, centres, or branches of education ministries. Most also have formal or informal consultation with stakeholders. China, Fiji, France, Germany (Bavaria), Indonesia, Japan, Korea, Lao People's Democratic Republic, Malaysia, the Philippines, Sri Lanka, Thailand, and Uzbekistan all report highly centralized curriculum development processes (National Institute for Educational Research 2003). In some countries, there is a varying possibility for local authorities, schools, and teachers to influence curriculum development at the implementation level. For example, local content is allowed in Indonesia (20%), Lao People's Democratic Republic (10%), and Vietnam (15%). In other countries such as Australia and New Zealand, teachers develop their own content within centrally developed curriculum frameworks (National Institute for Educational Research 2003). In the United States, the development of the curriculum is totally devolved (although this is more complex than it appears, with some prescriptions at national, state and district levels), while in Germany there is a degree of centralization and a degree of authority at a state (provincial) level (Stevenson and Nerison-Low 2003).

Donnelly (2005) distinguishes between outcomes-based, syllabus-based, and standards-based systems as ways of manifesting the intended curriculum. A syllabus model, he argues, typically provides detail about what students should be taught at the start of the year, based on established disciplines or categories of knowledge. Specific year levels are specified.

Numbers of hours to be spent on topics are often stipulated. A syllabus model is typically associated with summative assessment in the form of high stakes tests.

Outcomes-based models tend to focus on what students should achieve or be able to do by the end of the educational process. They tend to take a multidisciplinary approach, with an emphasis on attitudes, dispositions, and feelings. They suggest stages which incorporate a number of year levels. Numbers of hours to be spent on topics are usually not stipulated. An outcomes-based model tends to take a 'developmental' approach to assessment with a focus on criterion-referenced assessment.

A standards-based model tends to identify what students should know and be able to do at the end of a set time. While this may be based on established disciplines/categories of knowledge (Schmidt, Wang and McKnight 2005) these are often stipulated in a 'laundry-list' style, as opposed to being presented as a coherent whole, with meaningful relationships between topics, and a sense of the overall discipline. Specific year levels are specified, but numbers of hours to be spent on topics are usually not stipulated. A standards-based model tends to expect that essential knowledge, understanding, and skills are mastered at each year level and are tested through summative assessment. However, Schmidt, Wang, and McKnight (2005) argue that the United States curriculum model, usually regarded as the best example of a standards-based model, is more complex than it appears, because of the long tradition of shared responsibility in curriculum decision-making and a complex decentralized arrangement for schooling and curriculum development.

Donnelly argues that both syllabus and standards-based models tend to be taught with a greater use of direct instruction and explicit teaching, with an emphasis on teacher directed whole-class teaching. Outcomes-based education tends to focus on a constructivist approach to learning, with the teacher seen as a facilitator to a student-centred approach to teaching and learning.

Donnelly argues that countries which have consistently achieved the best results in international achievement tests (including Japan, the Republic of Korea, Singapore, the Netherlands, and Hong Kong) tend to be those with strong syllabus models:

In countries like Japan and Singapore, syllabus documents leave no doubt about what needs to be taught at each year level, and what children are expected to understand and be able to do. Teachers are free to experiment with sequencing. But, in the main, teachers are expected to devote their energies to improving teaching and hence the quality of student learning. This task is for all teachers in a school - from the newest teacher to the school principal. Mentoring programs are provided for young teachers. Collaborative "lesson study" programs are conducted in each primary school where all teachers work together to refine lessons and to foster high quality learning within and across subject boundaries.
(Donnelly 2005, pp. 8-9)

He goes on to argue that:

One of the acknowledged strengths of a syllabus approach to curriculum development is that each school, and each teacher, does not have to reinvent the wheel by having to design his or her own syllabuses. In Japan, the Republic of Korea and Singapore more time and resources, thus, are spent on strengthening lesson

preparation and classroom teaching techniques.
(Donnelly 2005, pp. 8-9)

However, as Schmidt, Wang, and McKnight (2005) point out—the issue is not only about content—other aspects, such as presentation of the intended curriculum as a coherent whole, are also important. Donnelly (2005) argues, for example, that it is not only a problem if descriptors of curriculum standards lack academic substance and rigour, but it is equally problematic if there are so many and they are presented in such detail, that teachers are in danger of being overwhelmed. He goes on to argue that this is often a feature of outcomes-based education, because outcome statements are illustrated with multiple indicators and examples that simply add to the checklist mentality and bureaucratic workload associated with implementation. Referring particularly to Australia he comments as follows:

Australia's adoption of OBE leads to outcome statements that are generally vague, imprecise and lacking in academic content. Many of the Australian curriculum documents seek to remedy the problem of vague outcome statements by listing examples and indicators. Of concern, when compared to a syllabus approach, is that the practice overloads teachers with a hundreds of curriculum descriptors and there appears little, if any, epistemological justification for the examples given.
(Donnelly 2005, p. 3)

Of course there are criticisms that can be levelled at syllabus models—syllabuses can be badly written, as many were in apartheid South Africa. Even well written syllabuses can be rigid which can cause serious difficulties for children whose development is faster or slower than that predicted by the curriculum. Thus, Green (2000) argues, countries like Japan are looking to the West for models that are more diverse and less prescriptive.

There are clearly different approaches to making judgements about curricula. Some simply rely on the judgement of subject experts. A comparison conducted by the Qualifications and Curriculum Authority in England between A levels and the International Baccalaureate Examinations showed that, while the evaluators expended considerable energy examining the comparability of the two qualifications as a whole, when it came to comparing individual subjects they asked disciplinary experts for their opinions with regards to

- the demands of syllabuses and their assessment instruments (eg question papers, mark schemes); and
- the level of performance required of candidates at key grade boundaries.
(Qualifications and Curriculum Authority 2003).

Experts were drawn from examiners working on the different examinations, as well as from higher education institutions.

Another approach is to provide explicit criteria for evaluating curriculum documents. Donnelly (2005, p. 8) argues, for instance, that the key criterion in evaluating curriculum documents is that they are “clear, succinct, unambiguous, measurable, and based on essential learning as represented by the subject disciplines”. When conducting a comparison between Australian and other curriculum documents he provides the following set of criteria for evaluating curriculum documents:

- identifying key curriculum descriptors, including where first introduced and subsequently dealt with;
- identifying whether the difficulty inherent in the key curriculum descriptors develops across years/levels;
- discussing the depth of coverage of these key curriculum descriptors throughout the documents; including time allocated;
- examining the degree of academic rigour, detail, clarity and ease of measurement of the key curriculum descriptors; and
- noting any significant discrepancies or differences of treatment between the Australian and international curriculum documents.
(Donnelly 2005, p. 4)

These criteria indicate the need for a balance between breadth and depth in any curriculum. A curriculum can attempt to cover too much ground, and as such, fail to deal with any topic in any depth. On the other hand, a curriculum can cover a limited number of topics, each in a lot of depth, and therefore, fail to build a broad base of skills and knowledge. Kerr (2000) says that a good intended curriculum should be focused on what is agreed to be essential (rather than trying to cover everything), specific, and manageable for both teachers and students in the time available. It should be focused on conceptual development (rather than long lists of content), sequenced on the basis of evidence (rather than tradition), and supported by shared teacher understanding of what performance at the expected outcome or standard looks like. Finally, he stipulates that a good intended curriculum should be assessable.

As is clear from this very brief foray into the literature, countries around the world are asking what type and model of secondary education should be adopted, and what their curriculum should look like. It is not Umalusi's job to decide on models or even to propose models, but rather to comment on the standard of the existing models, and decide whether or not Umalusi can issue certificates against them. What is clear from both the international literature and our own previous research is that it is very difficult to comment on the standard of a curriculum in the absence of externally set and marked summative assessment (Umalusi 2006a; Umalusi 2007b).

THINKING ABOUT THE INTENDED CURRICULUM IN SOUTH AFRICA

(Note that this section of the literature review also occurs in the report *Making Educational Judgements: Reflections on judging standards of intended and examined curricula*.)

In South Africa, debates about curriculum prescription are still influenced by the apartheid education system, which was explicitly designed to not only provide separate education for different race groups, but also to indoctrinate children with 'Christian nationalism', and to prepare black children for a role as inferior citizens and as workers (Kallaway 1988). Eighteen separate education departments administered a discriminatory hierarchy of financing, resources, facilities, and quality (Hartshorne 1985). The education provided for black children, referred to as 'Bantu education', has been widely regarded as an attempt to

subjugate black people (Buckland 1981; Kallaway 1988). Syllabuses “stressed obedience, communal loyalty, ethnic and national diversity, the acceptance of allocated social roles, piety, and identification with rural culture” (Lodge 1983, p. 116). Syllabuses for the white minority, who had access to better education, were also authoritarian. An often cited-example is the History syllabus, which was seen as “designed to perpetuate an Afrikaner Nationalist interpretation of South African history” (Lowry 1995, p. 106). But while History was particularly open to manipulation, even the Geography syllabus and textbooks were designed to perpetuate apartheid ideology, giving official recognition to the apartheid landscape and creating particular perspectives about African agriculture as “primitive, irrational, subsistence-oriented and based on low-level technology” (Drummond and Paterson 1991, p. 66).

Syllabuses were developed by the Department of Education with little involvement of any educational stakeholders (National Education Co-ordination Committee 1992). While syllabuses were largely discipline-based, the documents of the intended curriculum were in many instances not clear, rigorous, and concise. There was considerable evidence of syllabus stagnation and neglect, leading to predictability of examinations (Yeld 2005) as well as of syllabuses being in considerable disarray and not well constructed or presented (Umalusi 2006a). Some of these syllabuses were long lists of information with no clear sense of progression or the relationships between content areas.

The ANC-led government which was elected to power in the first democratic elections in 1994 inherited an education system which was “complex and collapsed”, with “high levels of adult and matriculation illiteracy, dysfunctional schools and universities, discredited curricula and illegitimate structures of governance” (Chisholm 2003, p. 269). By denying access to education, by providing poor quality education to most black people, by providing poor training to black teachers and by controlling the content of syllabuses to reflect the interests of the apartheid state, the education system reinforced the social and economic inequalities which underpinned apartheid.

The new government, borrowing the idea of outcomes-based education from New Zealand and Australia, introduced an outcomes-based curriculum into the primary and junior secondary school system in 1996 (Spren 2001; Allais 2007). At the same time, an outcomes-based National Qualifications Framework was developed, which put forward the national prescription of learning outcomes as a mechanism to replace the national prescription of syllabuses (Allais 2007). The version of outcomes-based education initially introduced in South Africa was based on an assumption that the *content* of the intended curriculum should not be centrally prescribed, but should be developed by teachers against centrally prescribed learning outcomes—in what intended to be a reversal of the Bantu education syllabuses:

At the heart of Curriculum 2005 is a set of values linked to social justice, human rights, equity and development as well as a learner-centred approach to learning. The intention of outcomes-based education is to improve the quality of the learning experience through methods that emphasise activity-based rather than rote learning. (Chisholm 2004, no page numbers)

But problems with this curriculum became apparent almost immediately upon its introduction into schools. One of the major criticisms was that the curriculum was excessively complex and that outcomes-based education could only work in well-resourced

schools with highly qualified teachers; poorly-qualified teachers in rural schools, it was argued, would be lost when faced with the demands to create their own curricula and resources (Chisholm 2004). Other critics argued that there were aspects of the curriculum which were problematic even for wealthy schools—such as a lack of emphasis on knowledge of basic Science facts and understanding Science concepts in the Science curriculum (Howie 2001).

A review, commissioned by the Minister of Education, suggested substantial revisions (Curriculum 2005 Review Committee 2000). These recommendations have now been enacted. Because of the problems experienced in the implementation and reviewing of the primary school curriculum, a new curriculum for senior secondary schools was only introduced in 2006. This delay led to a situation which Umalusi has characterized in previous research, using Yeld's (2005) terms, as 'curriculum neglect and stagnation' (Umalusi 2006a). The new curriculum, being phased into secondary schools at the time of writing, contains learning outcomes, but also has specifications of content. Umalusi's recent research (Umalusi 2007a) suggests that there are problems with these curriculum documents: some are long and unwieldy for educators to use, particularly because the curriculum documentation consists of three different documents which sometimes contradict one another; also, at times, the documents do not specify the content to be taught sufficiently clearly, and still rely on learning outcomes.

The history of syllabuses and curriculum statements in South Africa remains a difficult and contested one. Clearly, there is still much disagreement amongst South Africans about what kind of intended curriculum we want, how much and what kind of information should be prescribed, how it should be presented to teachers and what teachers should have autonomy over. (See Umalusi (2006b) for a collection of conference papers reflecting some of this contestation.)

Of course there are many factors which contribute to quality in education, and the intended curriculum is just one of them. But clearly, an intended curriculum can be well or poorly constructed, and can do a good or bad job of indicating to teachers what it is that they should be teaching. As part of its role in monitoring standards, Umalusi must ensure that the intended curricula are as good as possible.

The aim of this comparative report is to glean information by comparing our system with those of selected Anglophone countries in different regions of Africa that can be used to continue to build, improve, and strengthen our own intended and examined curricula, as well as our curriculum and examinations systems.

METHODOLOGY OF THE STUDY

The methodology of this study is described and discussed in detail in the report *Making Educational Judgements: Reflections on judging standards of intended and examined curricula* (Umalusi 2007b). As such only a very brief overview is provided below.

Interviews

Visits were made to Ghana, Kenya, and Zambia, and informal, unstructured interviews took place with various officials in the examinations councils and curriculum institutes. Similar interviews took place in South Africa.

Subject selection

The four subjects selected for scrutiny were English, Mathematics, Biology, and Science. Two factors influenced the choice of subjects. Firstly, these subjects are regarded as being important in South Africa, for higher education and other purposes, and secondly, these subjects have large enrolments in South Africa. This choice of subjects was questioned by colleagues in the other countries. In Ghana, particularly, concern was expressed about a bias towards sciences, and the absence of social sciences. It was also suggested that economics be included, as this is one of the subjects in Ghana with the highest enrolment.

What was not anticipated in the planning of the research is that there are significant differences between subjects across the senior secondary systems of the different countries. These differences make narrow comparisons difficult, if not impossible. The dissimilarities are highlighted in the subject discussions in Chapter Three below.

Data

The data for each subject for each country consisted of the 2004 intended and examined curriculum. **Intended curricula** in all of the countries, apart from the new curriculum in South Africa, were represented by syllabus documents. It must be noted that some countries have both teaching and examination syllabuses and in these instances, both were considered. For the new South African curriculum, the **intended curriculum** for each subject consists of a *curriculum statement*, a *learning programme guidelines* document, and a *subject assessment guideline* document. In the new system these three documents collectively make up the intended curriculum, and in some instances are supplemented by additional documentation. For the new mathematics curriculum in South Africa, evaluators also considered the *National Protocol for Assessment for Schools in the General and Further Education and Training Band (Grades R – 12)* 21 October 2005 and the *Teacher Guide Mathematical Literacy* January 2006.

The **examined curriculum** data was comprised of the 2004 exit-level examination papers and their memoranda. Regrettably, marked scripts were not available.

The evaluators

Groups of subject experts were drawn up for each of the four subjects. These groups included three higher education experts and two experienced teachers or official subject advisors. Because of cost constraints, these evaluators were all South African or resident in South Africa. Five experts per subject conducted comparative evaluations of the syllabuses and examination papers from the four countries. The experts worked according to sets of categories and criteria supplied by Umalusi.

For the analysis of the intended curriculum the categories were:

1. Aims/purpose/vision/outcomes

2. Pedagogy and methodology
3. Content coverage (breadth)
4. Coherence, sequence, progression, and pacing
5. Content coverage by cognitive demand (depth)
6. Assessment specifications
7. Provision and packaging of curriculum documents/syllabus

Elaboration on each was provided to evaluators. Guiding questions focusing on various aspects of sampling and weighting were provided for the analysis of examinations.

In addition to these questions, evaluators also developed grids of types of and levels of difficulty of cognitive operations for the various subjects. The grids were based on the Revised Bloom's Taxonomy (Anderson and Krathwohl 2001), and in the case of English, the original Bloom's Taxonomy, but were customized by the groups of experts. (A detailed discussion of the process and criteria as well as the elaborated criteria is contained in the report *Making Educational Judgements: Reflections on judging standards of intended and examined curricula*, (Umalusi 2007b).

The evaluation process

The expert evaluators initially participated in a workshop on the criteria and guidelines for the evaluation, and then worked together in applying them, in order to build shared interpretations. After this they worked on their own. Individual evaluators produced reports which were then collated by one person in each group into a single subject report.

Limitations

Obviously this research is very limited in many ways. It was difficult to obtain the necessary documents from other the countries and even more difficult to follow up when it became obvious that incorrect or inadequate documents had been collected. South African documentation also proved problematic, primarily because there are different versions of documents available, and at some points it was only realized late in the course of analysis that the document being examined had been superseded by a different document.

No marked student scripts were obtained, and no evaluators from the other three countries in the study participated in the analysis; the South African evaluators obviously did not have contextual information from the three countries, which might have assisted in their judgements.

As discussed above, the subjects offered in the different countries were more different than had been anticipated, which made detailed comparisons impossible in many instances.

Finally, and probably most importantly, expert judgements about subjects are always contested, and curriculum decisions are always political. The judgements made here represent the views of five individuals per subject, and, while we attempted to obtain experts with a range of different experiences, a different group of evaluators may have reached different conclusions.

The conclusions reached in this report are necessarily tentative, and suggest possible issues for consideration by policy formulators as well as questions for further research.

Chapter Two

Overview of aspects of the four education systems

As Noah and Eckstein (1998, p. 279) point out, there are “many ways of organizing, managing, and forming a national examination system, but none serves all necessary purposes to the satisfaction of all involved”. Clearly, there is no perfect system. The comparisons below are not meant to extol the virtues of any one system, but to attempt to better understand our own by looking at it in relation to different ways of doing things.

YEARS IN SCHOOL, EXAMINATIONS, AND CERTIFICATION

Reforms of school systems tend to place a lot of attention on the configuration of years in primary and secondary education. In terms of number of years in school, all four systems in the present study are relatively similar—all currently have twelve years of schooling, culminating in a public examination. There are slight variations in how the years are allocated. Three of the countries in the study (with the exception of Zambia) have been through reforms which have changed their configuration from other variants to what it is now, and Zambia is also considering changing to a 9—3 configuration. The main focus of such reforms has been to increase the years of compulsory education from primary only, to primary and junior secondary (sometimes called basic or general education when combined). Table 1 below shows the current organization of years in primary and secondary school in the four countries.

Table 1: Organization of primary and secondary schooling in the 4 countries

Country	Years in primary	Years in junior secondary	Years in senior secondary
Ghana	6	3, certificate issued	3, certificate issued
Kenya	8, certificate issued		4, certificate issued
Zambia	7, certificate issued	2, certificate issued	3, certificate issued
South Africa	7 (or 9 years GET)	2 (or 0)	3 (3), certificate issued

As shown in Table 1, **Ghana** currently has a 6 + 3 + 3 system. A reform in 1987 in Ghana introduced the longer period of secondary education, changing the configuration of primary or basic education (Quist 2003). After the 1987 reforms, the gross enrolment rate in junior secondary schools increased dramatically—junior secondary schools now automatically

admit all graduates from primary schools. Thus, while officially a 6 + 3 + 3 system, it is in practice 9 + 3. The schools are structured as primary and secondary—the institutional break down of the basic and secondary phase does not fit the configuration of schools. There are plans to increase the number of years in senior secondary education to four, and this was due to be phased in during 2007. A public examination marks the end of Grade 9, or junior secondary school.

Kenya has an 8 + 4 system. There are eight years of compulsory primary schooling, referred to as standards one to eight. A public examination is written at the end of standard eight.

Zambia has a 7 + 2 + 3 system. There are examinations at both Year 7 and Year 9. This makes Zambia the only country in the study to test at primary and junior secondary level, and to issue certificates at both levels.

The **South African** system could be regarded as either a 9 + 3 or a 7 + 2 + 3 system. In South Africa there are seven years of primary schooling, followed by two years of junior secondary, which together make up General Education and Training, the compulsory component of schooling. This is followed by three years of Further Education and Training. Institutionally, like the Ghanaian system, the first seven years of General Education and Training (primary schooling) tend to be in one set of institutions, and the last two years of this band tend to be delivered in High Schools, together with the three years of Further Education and Training. Institutionally, therefore, the configuration is 7 + 5. There is no public examination at the end of Grade 9, and no national certificate is issued; learners are issued with report cards from their schools. The institutional configuration of 7 + 5 does not correspond with the current educational bands.

In all four countries, primary education is, in theory, free. Free education was introduced recently in 2003 in Kenya and resulted in an increased enrolment of almost a million learners overnight (World Bank News and Broadcast 2006). Primary schooling is not compulsory in Kenya. Basic education in Ghana (six years of primary school and three of junior secondary, similar to South Africa) is free and compulsory, although parents may be required to make various contributions, depending on the school and decisions of the parent-teacher body.

In practice, however, in all countries parents who can afford to do so, send their children to fee charging state schools and private schools, which are seen as offering better education. Statistics comparing results from state and private schools in the different countries were not obtained for the purpose of this research. Officials in Ghana and Kenya argued that the selective system seems to have created a large market for private schooling at primary level, whereas at the secondary school level, the private sectors are relatively small, and state schools are the top performers.

In all four countries, senior secondary schooling is non-compulsory. This tends to lead to higher fees at a secondary level. For example, Kivuva (undated) argues that secondary school enrolment in African countries is much higher among richer families in Kenya because it is very costly compared to primary education.

THROUGHPUT

Zambia, Kenya, and Ghana all have highly selective and competitive school systems, with a hierarchy of schools, supplied by a hierarchy of top performing learners in examinations at preceding levels. The primary/junior secondary school examinations are thus very significant for the selection of those learners who are to progress onto the next level.

In **Kenya**, for example, only about half of the learners who complete primary school will obtain places in high schools. National schools enrol approximately one per cent of the cohort. These are the top schools, and select the learners with the highest average grades. Below these are provincial schools, which enrol approximately sixteen per cent of the cohort. They select the top performing students that remain after the national schools have made their selections. Below these two levels are district schools. All of these three levels are state schools, but all are fee charging—secondary school is not free or compulsory. The better schools obtain more funding from the government, and charge higher fees. During the process of gathering data for this research, officials in Kenya argued that this type of elitism is fair because it is based on academic achievement and it creates a better quality education for top performing learners.

In **Ghana**, learners are given a symbol from 1 to 9 in their basic education examinations, with 1 being the best and 9 the worst mark. Learners are awarded a total mark based on their six top subjects: thus, 6 is the best possible top mark. Learners with a total of 30 and more marks (based on a totaling of the symbols attained in each subject) are not considered eligible for secondary schooling, although this is not always rigidly applied. Entrance into secondary schooling is competitive, however, and learners are ranked according to actual marks achieved, and not just the numbers that reflect on their certificates. This ranking is used by schools to select the top students from those who have applied.

Zambia could be seen as the most selective country in the study, with examinations both at the end of primary schooling and junior secondary schooling. In both cases, examinations are multiple-choice and are set and marked by the Zambian Examinations Council. The student selection processes are similar to those described for Kenya and Ghana above.

These selective systems reflect a tendency in African counties, supported by the World Bank and donors, to fund primary and tertiary education. The colonial state in Ghana throughout its 76 years of effective colonial rule only established one secondary institution (Quist 2003). Donors have not wanted to fund secondary education, and creditors have demanded attention to primary education—this could be one reason why in many African countries junior secondary education is now being included as part of basic education (Bregman and Bryner 2003).

In **South Africa** external examinations only take place at Year 12. However, notwithstanding the fact that the South African system does not select for secondary school, the throughput rates look similar to those of the other countries—many students drop out of schooling, for a wide range of reasons, and thus, the number enrolling for Year 12 examinations is far smaller than the enrolments in Grade 1. In other words, the South African system is selective in practice if not in design, although slightly less so than those of the other three countries.

The common trend is that all four countries show a big drop in numbers as learners move through the system, with only 20-30% of the learners who enrolled in primary school completing secondary school. An attempt was made to obtain throughput data for the cohort of learners writing senior secondary examinations in 2004—the year of the examinations in this study. The numbers obtained follow immediately below, and even where the exact numbers for relevant years were not obtained, the broad trends in terms of throughput can be seen.

Table 2: Throughput rates

Country	Population estimate	Enrolment in Year 1/primary school exams	Year 12 examinations	Rough percentage
Ghana	Between 19 and 21 million	233 783 enrolled for primary school exams in 2000 (likely to be considerably fewer than number enrolled in Year 1)	96 687 enrolled	41%
Kenya	Between 32 and 43 million	476 000 wrote primary school exams in 2000 (likely to be considerably fewer than number enrolled in Year 1)	222 677 (2004)	46%
Zambia	11 million	240 961 (1994)	23 756 (passed)	10%
South Africa	46 million	+1 000 000	467 985 enrolled, 330 717 passed (2004)	46%

The numbers in Table 2 above are not strictly comparative. An important difference is that the third column for Zambia and South Africa contains numbers for enrolment in Grade 1, whereas the information for Ghana and Kenya is enrolment for primary school examinations. This means the percentages calculated in the fifth column are not comparable—Zambia and South Africa’s throughput from primary school would actually be larger than given here. Nonetheless, the figures do provide a rough indication of the trends in each country.

In **South Africa** roughly a million learners enrol in Grade 1. In 2004, a bit under 500 000 full time and just over 200 000 part time learners wrote the Senior Certificate examinations. 330 717 passed the examinations, of which 245 600 obtained a Senior Certificate, and 85 117 obtained a Senior Certificate with endorsement (the minimum requirement for entrance to a university, discussed in more detail below).

All the other countries have a far smaller enrolment in formal schooling (in keeping with smaller population numbers).

Enrolment for the basic education examinations were obtained for 2000 for **Ghana**—just under 233 800 learners enrolled in the examinations. Just under 96 700 learners wrote the secondary school exams in 2004. This gives a sense of the selectivity of the system—fewer

learners than the number writing primary school examinations complete high school. Enrolment figures were not obtained for the cohort in question, but it is likely that far more learners enrolled in Grade 1 than the number who wrote the basic education examinations.

In **Kenya** we could also not get the specific enrolment numbers for Year 1 of schooling, but we did establish that in 1992/3 about 85% of the age cohort was enrolled in Grade 1, that this percentage has been growing steadily, and that Kenya is now approaching universal enrolment. The numbers are very roughly in the area of 500 000 in terms of population and 400 000 in terms of enrolment (the respective numbers for 1997/8 are 582 223/474 151, and for 1998/9, 600 621/498 123). 476 000 learners completed the primary school examinations in 2000 (509 072 in 2001), and 222 677 completed the senior secondary examinations in 2004 (and 260 654 in 2005).

In **Zambia** enrolment numbers for 1993 (the cohort in question) could not be obtained. However, the 1994 numbers can give an indication: the total enrolment in Grade 1 was 240 961. In 1999 159 607 learners sat the Grade 7 examination. 79 337 were selected to continue into Grade 8. In 2001 132 283 learners sat the Grade 9 examinations, and 60 144 obtained full certificates ('repeaters' cause the larger number). In 2004 there were 23 756 candidates who obtained the School Certificate, and 14 838 who obtained the General Certificate of Education.

Clearly, the Zambian system is by far the smallest of the four countries in the study, and the South African system is the largest by a large margin; in addition, South Africa has the largest percentage of the cohort writing the senior secondary examinations.

SCHOOL-LEAVING CERTIFICATES (PRIMARY OR BASIC EDUCATION)

Table 3 shows the certificates that are issued at the end of primary school or basic education in the four countries.

Table 3: Primary school/basic education qualifications in the four countries

Countries	Exit qualifications for primary school/basic education
Ghana	Basic Education Certificate Examination (Year 9)
Kenya	Kenyan Certificate of Primary Education (Year 8)
Zambia	Grade 7 Composite Examination (Year 7), Junior Secondary School Leaving Examination (Year 9)
South Africa	No certificate. (A General Education and Training Certificate (Year 9) is available in theory but in practice is only issued to adults)

The key difference between South Africa on the one hand and the other three countries on the other, a difference more significant than that of the configuration of years, is the fact that external examinations are written and certificates issued at lower levels than in South Africa.

In all three countries other than South Africa, certificates are issued based on centrally set and marked multiple-choice examinations. In South Africa, the General Education and Training Certificate is not currently issued, and assessment is school-based.

There is only a small component of assessment which, as discussed below, is centrally set—and even this is marked at school level.

Over the past few years there have been attempts to introduce some form of externally set assessment in the General Education and Training band. This is known as the Common Task for Assessment (often referred to as the CTA), and is externally set but marked at a school level. The Common Task for Assessment counts for 25% of a learners’ final Grade 9 report. While official documents specify that a common task for assessment should be set, they do not offer any specific information about it, and the structure of the tasks has changed over the past few years. The idea of common tasks for assessment was introduced in 2002. There were two sections to the assessment: Section A and Section B, counting 60% and 40% respectively. Section A consisted of a variety of different tasks (described as ‘performance-based assessment’). These tasks could include projects, assignments, group work, and so on, and marking could include self-assessment and group assessment. Section B was a test, administered under controlled conditions. Both sections were set by the national Department of Education and graded by teachers at school level. In 2005 the national Department of Education instructed the provincial education departments to set Section B. In 2006, the national Department of Education set Section B and there was no Section A. In 2007, both sections have been reintroduced.

Umalusi moderates the assessment tasks prescribed, but does not moderate the marking at all, nor does it moderate the results in any way. Umalusi is considering moderating a sample of the marking.

Recently it has been suggested that the Department of Education is going to introduce a General Education Certificate, although only for learners exiting the system. Whether or not South Africa should go down this route is not an issue which this research specifically aimed to investigate. International trends towards greater numbers of learners completing school imply that a Grade 9 certificate is going to be of increasingly little value, thereby questioning whether it is something the country should consider investing resources in. Throughput studies in South Africa show that while there is a dramatic decline in participation in the school system, this is not based on a sharp cut-off after general education: many of the drop outs occur in the last two years of schooling. What the other three countries gain from their system, however, is external assessment of all learners at a lower level of the system—in South Africa we only conduct external assessment at Grade 12 level. External assessment could, however, be introduced without introducing a certificate and this is certainly something that South Africa may want to consider.

SENIOR SECONDARY CERTIFICATES

All four countries issue senior secondary school certificates after twelve years of schooling. Table 4 below provides the names of these certificates for each country.

Table 4: Qualifications for senior secondary school in the four countries

Senior Secondary Certificates	
Ghana	Secondary Senior School Certificate Examination

Kenya	Kenya Secondary School Certificate
Zambia	School Certificate (also General Certificate of Education for subjects passed if School Certificate is not obtained)
South Africa	Senior Certificate and Senior Certificate with endorsement

In Kenya four years of secondary education culminate in the Kenyan Certificate of Secondary Education. The years of schooling are referred to as Form 1 to 4. Form 4 is thus equivalent to Grade 12 in South Africa. In Zambia and Ghana, as in South Africa, there are three years of senior secondary school.

Secondary certificate: Ghana

Mathematics and English are compulsory for all learners who wish to obtain the Secondary Senior School Certificate Examination. There is an additional Mathematics Elective. Ghanaian indigenous languages are optional.

Learners' results are a combination of an aggregate of the various examinations which contributes 70% to the final grade plus continuous assessment which contributes 30%. Teachers set the tasks and do the marking, and the marks are statistically moderated. The continuous assessment marks are supposed to represent marks obtained for a series of tests, projects, and assignments over the entire senior secondary period (i.e., over a three year period).

Learners are awarded a grade from A to F, with F regarded as a fail.

Table 5 provides an overview of the key features (or 'rules of combination') of the certificate.

Table 5: The Secondary Senior School Certificate Examination, Ghana

Secondary Senior School Certificate Examination, Ghana	
Learners take six or seven subjects.	
Compulsory subjects	English, Mathematics, Integrated Science, Social Studies
Optional subjects (57)	
Learners must select electives organized into one of six broad programme areas (with some variation)	
General (Science)	Includes elective Physics and Chemistry courses, as well as an elective Mathematics course.
General (Arts)	Would be likely to include English Literature, an elective course.
Vocational	Various vocational subjects
Business	Various business subjects
Agricultural	Various agricultural subjects
Technical	Various technical subjects

Secondary certificate: Kenya

To obtain the Kenyan Secondary School Certificate, candidates enrol for a minimum of seven and maximum of nine subjects. They can also enter for individual subjects.

There is no pass mark: all learners who enrol for the examination will obtain a certificate, which specifies the grades obtained by the learner in question. In practice not obtaining a D+, the minimum competency level, is generally regarded as a fail. The certificate will be marked with a Z if the learner does not obtain a D+ in all subjects. It will contain a Y if there was an irregularity. It will contain an X if they were absent. Nonetheless, under all circumstances the learner who enrolls for the examination will obtain a Kenyan Certificate of Secondary Education. Learners are awarded an average, which is used for ranking. An E is regarded as poor, and a D, fair. In order to qualify to apply for a place at a university, a learner must obtain a C+ and above, although in practice it is more like a B+.

There are distinct merits to this system as there is no national obsession and hysteria around 'a pass' and 'the percentage of passes' and so on, and all learners who complete twelve years in school receive a certificate.

Table 6 provides an overview of the key features (or 'rules of combination') of the certificate.

Table 6: The Kenyan Secondary School Certificate

Kenya Secondary School Certificate	
A learner must enrol for seven subjects.	
Compulsory subjects	
Languages	English, Kiswahili
Mathematics	Mathematics
Optional subjects	
A learner must select two Science subjects and one from the humanities	
Sciences	Any two of Physics, Chemistry, and Biology
Humanities	One from History and Government, Geography, Christian Religious Education, Islamic Religious Education, Hindu Religious Education, Social Education, and Ethics.
A learner may then either choose an additional subject from the Sciences or Humanities above (although not more than one religious subject) or they may choose from a series of other subject groups.	
Group 4	Home Science, Art and Design, Agriculture, Woodwork, Metalwork, Building Construction, Power Mechanics, Drawing and Design, Aviation Technology, and Computer Studies
Group 5	French, German, Arabic, Music, Accounting, Commerce, Economics, and Typewriting with Office Practice

Secondary certificate: Zambia

To obtain the School Certificate in Zambia it is compulsory to enrol for Mathematics, but not to pass it. The only subject that must be passed is English Language. For enrolment at higher levels particular groupings are considered.

Learners get an average mark obtained by adding the best six marks. A learner who has obtained 24 marks or below has a distinction overall.

A learner only has one chance to sit for the School Certificate. The General Certificate is awarded to learners who enrol privately, learners who enrol for individual subjects only, learners who are repeating, and so on. However, the General Certificate is worth the same in terms of access to university and so on—depending on the subjects and grades obtained.

Table 7 provides an overview of the key features (or ‘rules of combination’) of the certificate.

Table 7: The School Certificate, Zambia

School Certificate, Zambia	
A learner must enrol for six or seven subjects. Learners must pass six subjects, with at least one at credit level (5 or 6), or five subjects with at least two at credit level, in both instances including English.	
Compulsory subjects	
Languages	English
Mathematics	Mathematics
Optional subjects (32)	
A learner must choose two sciences, and then can select subjects from the other groups, but not more than one subject from a group.	
Sciences	Physical Science, Chemistry, Integrated Science
Mathematics	Additional Mathematics
Local languages	Various local languages
Commercial subjects	Various commercial subjects
Social sciences	Various social science subjects

Secondary certificate: South Africa

South Africa currently has a Senior Certificate and a Senior Certificate with endorsement. The latter is the minimum requirement for application to higher education. In the Senior Certificate, only languages are compulsory. In the Senior Certificate with endorsement, learners hoping to enrol for degree study in Higher Education institutions must spread their choices of subjects across prescribed subject groups, and pass a certain number of these subjects at the Higher Grade level.

The old certificate in South Africa has a system of Standard and Higher Grade within subjects, whereby the same subject can be taken on an easier (Standard Grade) or more difficult (Higher Grade) level. Most subjects must be at Higher Grade for a learner to qualify for higher education. The Standard Grade/Higher Grade distinction is about to be phased out.

The Senior Certificate will be replaced by the National Senior Certificate, phased in from Grade 10 in January 2006. The last Senior Certificate examination will be concluded in 2007 and the first National Senior Certificate examination will be conducted in 2008.

For the new National Senior Certificate, learners must enrol for two languages, one of which must be the medium of instruction. Also compulsory is Life Orientation, and either Mathematics or Mathematical literacy. Learners must then enrol for an additional three subjects. Learners wishing to apply for degree study at higher education institutions must select subjects from a restricted list. Individual higher education institutions also have additional criteria.

Table 8 provides an overview of the key features (or ‘rules of combination’) of the old and new certificates.

Table 8: Old and new certificates in South Africa

Senior Certificate and Senior Certificate with Endorsement (up to 2007)	
Learners must enrol for six subjects and pass at least five, as well as obtaining a minimum aggregate.	
Compulsory subjects	
Languages (Group A)	Any two official languages, one at first and one at second language level, one must be the medium of instruction (in practice, English or Afrikaans).
Optional subjects	Learners must choose any four. In order to qualify to apply for university entrance (endorsement), requirements are stricter—learners must have subjects selected across at least five different subject groups and meet the minimum aggregate (Group A contains official languages and is not repeated below).
Group B	Mathematics
Group C	Sciences (Physical Science/Biology/Physiology)
Group D	Additional languages and third languages (e.g., European languages or South African languages at third language level)
Group E	Economics/Biblical studies/Geography/History/Jewish Studies
Group F	General subjects
New National Senior Certificate (from 2008)	
Learners must enrol for seven subjects and pass at least six.	
Compulsory subjects	
Languages	Any two official languages, one at home language (first) and one at

	first additional (second) language level, one must be the medium of instruction.
Life Orientation	Learners must pass a 10 credit Life Orientation course. This course is to be examined at a school level only.
Mathematics	Learners must enrol for either Mathematics or Mathematical literacy.
Optional subjects	Learners must choose any three. In order to qualify to apply for university entrance, learners must choose from a restricted list of subjects and meet the minimum ratings as prescribed.

SYLLABUS AND EXAMINATIONS SYSTEMS

What all four countries have in common is probably more than what is different among them: they all have syllabus-based exit examination systems as opposed to American-type standards systems, or outcomes-based systems as attempted in the primary and junior secondary phase of the South African system. The new curriculum in South Africa has aspects of an outcomes-based system and aspects of a syllabus-based system.

In some respects, however, Ghana, Kenya, and Zambia have very similar systems and processes, all of which are rather different from their South African equivalents. These differences are elaborated below.

Ghana, Kenya, and Zambia: independent examination, curriculum, and inspectorate institutions

In all three countries, there is an examinations council, a curriculum institution, and an inspectorate or quality assurance institution; all constituted as separate entities under the Ministry of Education. These institutions are all staffed by subject experts who work together with their counterparts in the other institutions. There are minor differences in how this happens across the countries. However, the basic principle of having permanently employed subject officers in different areas of the national system is the same, as well as having specific independent government institutions which are responsible for these three key aspects of the education system. This ensures expert direction of all processes, as well as coordination between different parts of the system: for example, in Kenya, subject officers coordinate marking. As they also work with curriculum development processes, they are able to ensure proper feedback. Subject officers are also in attendance at grade boundary determination meetings, which presumably greatly facilitates the possibility that such meetings are informed by expert opinion within the subject area.

In all three countries, the curriculum institution develops a teaching syllabus, with participation of representatives of the examinations council. Subject experts lead the syllabus development, and constitute the panels (although small subjects may not have a subject expert, and may be dealt with by an expert of a bigger subject).

In **Ghana** the institute responsible for developing the syllabus is the directorate for curriculum (Curriculum Research and Development Division) under the Ghana Education Services (GES), the department under the Ministry responsible for all aspects of pre-tertiary education system. Most subjects have a subject officer in the GES who periodically creates a

panel of five to seven experts, including university lecturers and representatives of the head teachers association, to design the teaching syllabus.

In **Kenya** the Curriculum Institute develops the teaching syllabus, through a process which is expert driven, but has stakeholder development, with consultations taking place with various groupings. Anecdotally, for example, the former subject officer for English mentioned that Shakespeare was initially removed from the curriculum, but brought back by popular request from parents and teachers. Subject panels are created including representatives from universities, teacher training colleges, and secondary school heads, as well as experienced teachers, curriculum development officers, test developers, and inspectors. Panels exist at three levels: subject panels determine the curriculum per subject, course panels determine the overall requirements for qualifications, and an academic board approves the total package. The syllabus is periodically revised, and in fact the syllabus under consideration in the current study has already been revised. The new syllabus contains a significant emphasis on democracy, citizen's rights, integrity education and corruption, HIV/AIDs, and drugs.

In **Zambia** a Curriculum Development Centre operates under the Minister of Education, in the same directorate as the examinations council. The syllabus is revised every three years.

In these three countries the examinations councils and the curriculum institutes have close working relationships. For example, in **Kenya**, the national examiner for a particular subject will be a full time employee of the Kenyan National Examinations Council, and will sit on the panel of the Kenya Institute of Education that develops the syllabus. Similarly, the subject expert from the Institute will sit on the moderation panels of the Examinations Council. Inspectors from the Directorate of Quality Assurance and Standards will sit on the subject panels of both the Institute and the Examinations Council. This ensures cohesion, feedback, and stability within the system. It is also important to note that all of these bodies have subject experts as full time employees.

Similarly, in **Ghana**, the West African Examinations Council (WAEC) is involved in the curriculum development processes, although it may not be through the subject officers, and in **Zambia**, the Examinations Council of Zambia is involved in the work of the Curriculum Development Centre.

In **Ghana** and **Kenya**, after the syllabus has been developed by the curriculum institutes, the examinations council, which also has permanent subject officers for the various subjects, then constitutes another panel of experts. This panel develops an examinations syllabus, which will exclude content that is not testable, and also generally does not sequence and pace content and concepts over the different years of senior secondary schooling, but instead simply states the content and concepts to be tested. In **South Africa** and **Zambia** there is no separate examination syllabus.

One difference between Kenya and Zambia on the one hand, and Ghana on the other, is that Ghana is part of the WAEC, which operates in the five Anglophone countries of West Africa. Ghana currently writes nationally set examinations but participates in the processes of the WAEC for the examinations that it does not write. However, it is poised to join the broader system and phase out its national examinations.

The existence of examinations councils in **Ghana, Kenya, and Zambia** means that the examinations systems are centralized—the councils are responsible for all aspects of the examination system, and have many similar functions and processes. The examinations councils administer the distribution, writing, and marking of examinations, and standardize the results for all school examinations written in the three countries. In general the systems are similar. One interesting difference is that in Ghana marking is not residential—markers can take scripts home with them. However, scripts are never marked in the same region as that which they come from.

In **Ghana, Kenya, and Zambia** certificates are issued directly by the Examinations Councils.

As mentioned above, **Ghana, Kenya, and Zambia** all have inspection directorates located under the respective Ministries of Education. The idea of an inspectorate has been a contested one in South Africa, and various different attempts at systems and structures for monitoring and supporting schools have been attempted, although it seems likely that South Africa may return to the idea of an independent inspectorate in the future.

Another difference worth noting is that the examinations councils of **Ghana, Kenya, and Zambia** all deal with post-secondary qualifications that are below higher education. This may be worth further investigation as South Africa is still struggling with the placing of such qualifications.

Curriculum development, and examination setting and administration in South Africa

Both the old and new **South African** systems are substantially different from those in the other countries. South Africa has never had a separate curriculum institute, and the curriculum has always been designed by the Department of Education. In the past, syllabuses were designed by small groups of senior officials in the department, in what was seen to be a closed and authoritarian system (National Education Co-ordination Committee 1992). Although the syllabus would be sent to universities for comments, according to an official interviewed for this research, the consultation was generally a very short one, with little time for meaningful engagement. The new South African system is fundamentally different in this respect. While there are subject experts within the Department of Education, who have coordinated the process of designing the curriculum, the new *Curriculum Statements* were designed through an extensively consultative process. The term ‘curriculum statement’ was adopted instead of the term ‘syllabus’, because, according to an official interviewed, the word ‘syllabus’ was associated with the authoritarian system of the past, and was seen as contradictory to outcomes-based education.

A Ministerial Committee was created for the purpose of designing a new curriculum, and working groups with about eight members were created for each subject. These working groups were constituted of both experts and stakeholders. A reference group consisting of about 60 organizations was also constituted. Drafts of the *Curriculum Statements* for each subject were reviewed by this reference group. In addition to this, drafts of the *Curriculum Statements* were publicly gazetted and public hearings were held. In addition, the *Curriculum Statements* were benchmarked against other countries’ syllabuses.

Because the curriculum was a new one, the Department of Education decided that, in addition to the statements, they would produce *Learning Programme Guidelines* for each subject. These documents aim to provide detailed guidance to teachers on constructing a learning programme based on the curriculum statements, and also contain advice to teachers on outcomes-based education. These documents were developed by the same groups that developed the curriculum statements. Later, *Assessment Guidelines* were also developed, to provide more information to teachers about how they should assess learners, and what would be externally assessed and how.

There is no single examination body in South Africa; examinations are set by a range of bodies. In the state schooling system, some are set by the national Department of Education—this is in a few selected subjects. In other subjects, examinations are set by the nine provincial Departments of Education. In addition to the state system, there are two independent examinations bodies that set examinations for private schools, the Independent Examinations Board (IEB) which services a large number of private schools and the *Beweging vir Christelik-Volkseie Onderwys* (BCVO), a body that sets examinations for a small number of Afrikaans-medium schools.

There is no direct or formal relationship between the people setting the examinations and the people setting the curriculum. However, South Africa, alone of the four countries in the study, has a separate quality assurance body—Umalusi, a state body constituted under the Minister of Education, which is responsible for monitoring quality in primary and secondary education. For all the examinations bodies in South Africa, Umalusi issues the certificates for all learners and is responsible for monitoring the standards of the curriculum and examinations, but is not directly involved in setting either the curriculum or the question papers. Umalusi provides an external check on the quality of the question papers, the conduct of the examinations, the quality of the marking, and standardizes the final results.

The administration of Year 12 examinations is done by the provincial Departments of Education as well as the IEB and BCVO. Examinations are set by the national Department of Education, as well as the IEB, and some are also set at provincial level.

Standardization of examination results

Standardization of results is done in all four countries to take care of variation in the standard of the question papers and variation in the standard of marking that may occur from year to year. The standardization process in all four countries is based on the principle that when the standards of examinations (from one year to the next, from one subject to another or, in South Africa, from one examining body to another) are equivalent, there are certain statistical mark distributions which should correspond (or be the same apart from chance statistical deviations). Statistical moderation consists of comparisons between the mark distributions of the current examination and the corresponding average distributions over a number of years, to determine the extent to which they correspond. If there is good correspondence then it can be accepted that the examinations were of equivalent standard. If there are significant differences then attempts are made to ascertain the reasons for those differences. On occasion differences may be due to factors such as a marked change in the composition of the group of candidates enrolled for a particular subject, poor preparations for the examinations by candidates because of some disruption in their school programmes,

or, unusually, thorough preparation by candidates because of special initiatives on the part of the educators or support structures.

In the absence of strong indications that there are valid reasons for differences, it is generally accepted that the differences are due to deviations in the standards of the examination or the marking, and the marks are adjusted to compensate for these deviations.

However, standardization is managed rather differently in South Africa than in Ghana, Kenya, and Zambia.

In South Africa, Umalusi adjusts learners' marks based on statistically determined norms and academic considerations provided by provincial Departments of Education and chief examiners' reports. The standardization of the results is done at a meeting between the examinations bodies (national and provincial departments, the IEB, and the BCVO) and Umalusi. The examining body analyses its examination results with a view to identifying any unexpected results, idiosyncrasies, and cases deserving special attention. The results are also examined in the light of interventions that have been implemented in the teaching and learning process, shifts in learner profiles, and so on. The standardization is done by comparing the statistical distribution of raw examination marks with the predetermined expected distribution, looking at the adjustments required to bring the distribution of raw marks onto the expected distribution, and considering the subject-pairs analysis of the average marks obtained for each subject and all other subjects taken by the same candidates. There are prescriptions for how marks are to be adjusted in various instances, which are applied after dialogue with examining bodies. Given that in South Africa there are nine provincial examining bodies and three independent examining bodies, and that the same certificate is issued to all successful candidates, regardless of the examining body or the year in which the examination is written, standardization is a challenging task.

In Ghana, Kenya, and Zambia, the examinations councils adjust grade boundaries, based on statistically determined norms and similar academic considerations. The standardization of results in these countries is based on the Cambridge system, whereby instead of adjusting the scores of learners, what is adjusted is the grade boundaries. Learners' scores remain the same—the raw scores are not altered. The grades that learners are awarded (A to E in Kenya, 1 to 8 in Zambia and Ghana) will differ depending on the boundary set for each particular grade in that year.

The grade boundary system seems to lend itself more to making adjustments per paper as opposed to per subject. It seems likely that adjustments per paper are more likely to focus on professional input such as examiners' analyses of the paper, while adjustments of total grades are likely to be affected by political considerations, especially in a situation like South Africa's where the number of learners passing is a highly politically charged issue.

It also appears to be the case, based on interviews with officials, that more consideration of professional opinions (such as input from Chief Examiners) occurs in Kenya, Ghana, and Zambia than does in South Africa. It could be the case that the dialogue between examinations bodies and Umalusi pushes the process in a direction of politically based negotiations rather than professional considerations. However, it does seem useful to have an independent body responsible for this aspect of the system.

Only in Ghana and South Africa do continuous assessment marks count for the final senior secondary certificate in the subjects under consideration. In Kenya and Zambia, continuous assessment counts in some subjects, but not any of the subjects in the study. In Ghana continuous assessment counts for 30% of the final mark, and is derived from school-based assessment based on a prescribed format over the three year period (although marks are submitted in the second term of Year 3). Results are moderated statistically according to a set formula. In South Africa continuous assessment counts for 25% of learners' final grades. Umalusi moderates internal assessment results statistically, and also evaluates a very small sample of learner portfolios. Internal assessment includes practical, simulated, and work-based assessment and also some tests. Additionally there are practical examinations in some subjects. Umalusi may delegate the moderation of internal assessment to appropriate institutions or bodies.

It is noteworthy that South Africa is the only country in which an independent body is in charge of finalizing the results, albeit in dialogue with the examinations bodies.

Table 9: Overview of institutions/structures for syllabuses, examinations, and certification in the four countries

Country	Development of curriculum	Development of examination syllabus	Examination setting and administration	Standardization of exam results	Certification
Ghana	Curriculum Research and Development Division, an independent structure under the Minister of Education	Examinations syllabus set by the West African Examinations Council, an independent structure which operates under the Minister of Education, but also operates across Anglophone West Africa	West African Examinations Council	West African Examinations Council, Ghana	West African Examinations Council, Ghana
Kenya	Kenya Institute of Education, an independent structure under the Ministry of Education	Kenyan National Examinations Council, an independent structure under the Ministry of Education	Kenyan National Examinations Council	Kenyan National Examinations Council	Kenyan National Examinations Council
Zambia	Curriculum Development Centre, an independent structure under the Ministry of Education	N/A	Examinations Council of Zambia, an independent structure under the Ministry of Education	Examinations Council of Zambia	Examinations Council of Zambia
South	National	N/A	Examinations set	Umalusi, an	Umalusi

Africa	Department of Education through convened panels		by national and provincial Departments of Education, IEB, and BCVO. All examinations are moderated by Umalusi.	independent body under the Minister of Education	
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More detailed descriptions of aspects of the examinations systems in each of the four countries (processes related to setting question papers, administration of examinations, finalization of marking memoranda, appointing and training markers, and administration of marking) can be found in the technical report of the project, which is available at www.umalusi.org.za.

With the exception of Kenya, the syllabuses under consideration in this research span the final three-year period of secondary school. The Kenyan syllabus spans four years. The terminology referring to year of study differs across the countries: ‘Year 3’ in Ghana and ‘Form 4’ in Kenya are ‘Grade 12’ and ‘Standard 10’ in Zambia and South Africa respectively. For ease of reference, the rest of the report uses current South African terminology, referring to ‘grade’ as year of study in all schooling systems, Grade 12 being the final year of school.

SUMMARY OF FINDINGS

Learner numbers and selection

It is worth noting that in terms of numbers of learners, the South African education system has more than twice as many learners as Kenya does, and at least five times as many as either Ghana or Zambia. Clearly, the Zambian system is by far the smallest of the four countries in the study, and the South African system is the largest by a large margin; in addition, South Africa has the largest percentage of the cohort writing the senior secondary examinations.

There is a general trend towards higher levels of compulsory or basic education in all four countries. However, a substantial difference which stands out is that South Africa is the only country in the study *not* to conduct examinations at the end of compulsory or basic education, and not to select for participation in secondary school. In all three countries other than South Africa, certificates are issued based on centrally set and marked multiple-choice examinations.

A common trend is that all four countries show a big drop in numbers as learners move through the school system, with only 20-30% of the learners who enrolled in primary school completing secondary school.

There are strengths and weaknesses to the selective systems of Ghana, Kenya, and Zambia. These countries select after primary or junior secondary school because they simply do not have space in their secondary schools for the entire age cohort. However, in terms of international trends, selecting a large number of the age cohort out of the school system appears not be desirable. In developed countries, the trend is towards more and more of the population achieving higher and higher levels of education. In this sense, South Africa’s

education system, with what appears to be a greater infrastructure at a secondary school level, seems an advance on the other countries in the study. However, what South Africa should consider is other roles that an external examination at the end of primary or junior secondary school could play. **While this would be a costly exercise, the costs may be justified in the information that would be obtained about learner achievement earlier in the system and the information that would be provided to teachers about the required standards.** Such an external assessment could count for a small proportion of the learner's final grade. In addition, while South Africa does not have a highly selective system, clearly, a large proportion of each age cohort does not make it through senior secondary school. Affordable and accessible alternatives for these learners need to be urgently found.

The senior secondary certificates

The senior secondary certificates in Ghana and Kenya are more structured than their South African and Zambian equivalents. In Ghana, Kenya, and Zambia it is compulsory to enrol for (but not necessarily to pass) Mathematics. The new South African certificate, with compulsory Mathematics or Mathematical Literacy, is a step in this direction.

Of particular interest is the **Kenyan** system, whereby all learners who enrol for examinations obtain a certificate, and there is no concept of pass or fail, although there is obviously a clear concept of a good, middling, and weak certificate, and the grades obtained by learners will shape their progression paths. This system arguably has considerable merit. In South Africa, the difference between learners who marginally pass and marginally fail may not be substantial, and overemphasis on a pass mark may direct too much focus to learners who are, at least in the South African system, performing rather poorly anyway (given that pass marks are generally around 33.3%). In other words, in South Africa it is currently seen as a great achievement when more learners obtain the requisite 33.3% in order to pass, and much national debate surrounds how many learners have achieved this cut-off point. **Removing the notion of a pass mark might enable more rational and nuanced discussion on learner achievements, at the same time as ensuring that all learners who complete twelve years in school obtain a school-leaving certificate. The grades on the certificate would indicate whether or not a learner had learnt a lot or a little in this time.**

Structures and systems

The structures and institutions responsible for curriculum and examinations are similar in Ghana, Kenya, and Zambia, and somewhat different in South Africa. A key difference is the existence in the former three countries of curriculum institutes and examinations councils constituted separately from ministries or departments of education. The curriculum and examinations bodies are accompanied by inspectorate directorates, also constituted separately. All three institutes have subject experts permanently employed. A possible advantage of this type of system is greater independence for the work of curriculum, examination, and inspectorate officials, as well as greater and more formalized interaction between them, and more continuity within their systems.

It is perhaps time for South Africa to reconsider this type of approach. While inclusivity and collaboration are clearly highly valued in South Africa, and must add richness and breadth to the intended curriculum, it does seem necessary that more coordination as well as final authority needs to be vested in a small group of experts who are consistently involved in all curriculum processes. The systems of Ghana,

Kenya, and Zambia, where subject experts in government institutions drive such processes, seem to have an advantage over South Africa's systems in this regard.

South Africa is the only country to have a separately constituted quality assurance body to monitor the standards of curricula and examinations. South Africa is therefore the only country in which the examining bodies do not issue certificates directly—Umalusi issues certificates. This appears to be an advantage in the South African system.

Another difference worth noting is that the examinations councils of Ghana, Kenya, and Zambia all deal with post-secondary qualifications that are below higher education. This may be worth further investigation as South Africa is still struggling with the placing of such qualifications.

Standardization of examination results

The processes for standardizing marks in Ghana, Kenya, and Zambia are not dramatically different from the South African system, although in South Africa the focus is on the learner grades, and in the other countries on the grade boundaries. All the systems use a combination of an analysis of learner past performance with examiner reports about learner performance in the examination at hand, and adjust the grades that are awarded to learners accordingly. None of the systems uses anchor items to compare standards. Perhaps all four countries need to consider strengthening their systems in this regard. However, there are aspects of the standardization systems of the other countries which do appear to be an improvement on the South African system—there appears to be more space for professional input and analysis and it appears that in Ghana, Kenya, and Zambia, there is greater input from the Chief Examiner than there is in South Africa. In particular, the approach of determining grade boundaries per question paper, as opposed to for an entire subject, seems more likely to be driven by professional concerns, and less open to political manipulation.

South Africa is the only country in which a body separate from examinations councils is responsible for standardizing results, and this seems to be helpful in terms of independence. What might assist in South Africa is the strengthening of processes and systems of obtaining feedback from examiners. This may be more feasible as the number of examining bodies is reduced.

Chapter Three

Subject comparisons

This chapter provides an overview of the key findings of the subject evaluators, starting with Biology, followed by Science, then English, and finally Mathematics. The focus of this chapter is what South Africa can learn, particularly with regard to the new curricula, through this comparison. More detailed subject descriptions and comparisons can be found in individual booklets published separately for each subject. The report entitled *Evaluating Syllabuses and Examinations: An Umalusi Technical Report comparing the syllabuses and examinations from Ghana, Kenya, South Africa, and Zambia*, (Umalusi 2007a) contains still more detailed descriptions. A more detailed description of the tools used for the comparison can be found in the report entitled *Making Educational Judgements: Reflections on judging standards of intended and examined curricula* (Umalusi 2007b). Both reports are available on www.umalusi.org.za.

BIOLOGY

The courses examined were:

- Ghana Secondary Senior School Certificate: Biology
- Kenya Secondary School Certificate: Biology
- Zambia School Certificate: Biology
- Old South African Senior Certificate: Biology, Higher Grade
Old South African Senior Certificate: Biology, Standard Grade
- New South African National Senior Certificate: Life Sciences

With regards to the old South African syllabuses, the syllabus of the IEB (Independent Examinations Board) is mentioned at times below, where it has significant differences from the old national syllabus². The documents for the new South African curriculum statements were dated 2003. New documents were released after this study was completed—thus, some of the criticisms and recommendations with regard to the new curriculum may already have been addressed in the new documents.

Of all the courses examined in this project, the Biology courses are the most similar, and thus lend themselves to the most careful comparison. The only significant difference is that South Africa has the Higher and Standard Grade courses, and the other three countries all

² Syllabuses and examinations of the BCVO were not considered at all for this research, as the syllabuses are identical to those of the national Department of Education, and the learner numbers writing the examinations are extremely small.

have one Biology course. In terms of exit level examinations, South Africa is the only country to examine only the final year of work: all the other countries examine the entire final phase of schooling. South Africa is also the only country that does not have an authentic Practical examination.

The numbers of learners who enrol for Biology in most countries are relatively high. In Zambia, it is compulsory for learners to enrol for a Science subject, and most choose Biology. Similarly in Kenya, where two Science subjects are compulsory, Biology is a popular choice (along with Physics). In South Africa, Biology is not compulsory, but still has very high learner enrolments. It is not clear why it should be the case that Biology should be such a popular subject, and this was not a matter which this research attempted to understand. It is interesting that the numbers in Ghana are relatively much lower—about 10% of the cohort, whereas in the other three countries Biology is taken by most learners. However, nothing specific from the subject comparison in this study sheds light on why this should be the case.

All six Biology courses studied here contain similar elements, but with some important differences.

Aims and organizing principle

The old South African syllabus is the only one in the study to not discuss explicit reasons for the study of Biology. None of the intended curricula have explicit organizing principles, although careful analysis does reveal some underlying principles.

Views of Science

In the Kenyan, Ghanaian, and old South African curricula, traditional views of Science predominate, while more contemporary views prevail in the Zambian and new South African curricula.

Content

The curricula in the study generally cover similar topics—a traditional ensemble of topics, but with local examples, and with some variation in depth. All start with cell structure and function, and cover ecology early in the course. All cover genetics towards the end of the course, diversity in the middle, and the form and function of living organisms throughout. There is little in the core curricula illustrating biological functions using the African environment, and little on the contributions of Africa to Science.

There are some differences in content: evolution is taught in all courses barring the old South African and Zambian ones. The topic of form and function is taught in different ways—in some instances thematically, and in others, according to taxonomic divisions. There are different emphases in different curricula. The ideas of social and economic applications of Biology differ: prominence is given in the Ghanaian curriculum to community health and economically important insects; the old South African curriculum does not explicate such applications of Biology, whereas the new South African curriculum privileges human Biology, diseases, and environmental studies.

Recommended pedagogies

In all of the curricula in the study, the importance of the active learner and investigative approach is acknowledged.

Examinations

South Africa is the only country that assesses only the final year of schooling in the final examination; in all three other countries the last whole of the senior secondary school syllabus is examined.

The South African papers contain far more questions than any of the other countries' papers, and evaluators felt that South Africa would do better to have shorter papers, more in line with the others in the study. The South African papers require a higher level of visual literacy than the other countries' papers.

All the countries include multiple-choice and/or other one-word answer questions in their summative assessments. They also include free response questions that require longer answers, although the form of these questions differs considerably. The IEB includes a 60-mark essay, whereas all the other examining bodies award far fewer marks for 'essay' questions.

The practical examinations in Ghana, Kenya, and Zambia require learners to examine specimens and/or carry out experiments in the laboratory. South Africa does not have a separate practical examination, but several questions in the theory papers are built around standard demonstrations of biological processes. Evaluators understood the difficulties around organizing practical examinations for the large numbers writing examinations in South Africa, but argued that incorporating questions relating to experiments that the majority of learners may never have carried out, using equipment that they have never seen, (as is likely the case in most South African schools) is no substitute for assessing learners' ability to handle apparatus, set up authentic investigations, collect and interpret results, or to observe and draw real specimens.

The examination papers were of equivalent standard in terms of reproduction, clarity, and layout. Evaluators queried the wording of a few questions, and, in particular, the wording of some questions in the South African Higher Grade paper. Marking memoranda were sufficiently detailed to facilitate equivalence in marking across markers.

In all examinations procedural knowledge was accorded the lowest percentage of marks of the knowledge dimension, and very few marks were awarded in cognitive categories above 'apply'. No questions tested metacognitive knowledge.

South Africa's Higher Grade examination, similarly to the Kenyan and Zambian examinations, allocated about half of the marks to conceptual knowledge, approximately one-third to factual knowledge, and the remainder to procedural knowledge. The IEB examination allocated 60% to conceptual knowledge, while in the South African Standard Grade and Ghanaian examinations, there was more factual than conceptual knowledge. Nonetheless, evaluators found the Ghanaian papers more challenging than the South African Higher Grade papers.

The matter of the difficulty levels of the papers is not straightforward. The IEB had the greatest number of difficult questions, followed by South Africa Higher Grade, South Africa Standard Grade, and then Ghana, Zambia, and Kenya which were on the same level. But, when considering the general difficulty level of the papers as a whole, countries were ranked in the following order: Kenya and IEB, Ghana, South Africa Higher Grade, South Africa Standard Grade, and Zambia. Both of these rankings were highly tentative, as South African

evaluators were not able to make judgements about predictability for the other three countries, and they pointed out that the fact that the other three countries tested the whole of the senior secondary school syllabus could also be seen as making the papers more difficult.

SCIENCE

Table 10 below shows the Science courses offered for each of the four senior secondary school certificates in the study, the requirements for learners with regards to these subjects, and which of them are included in the analysis of the Science courses in this study. The table is followed by further explanation and elaboration.

Table 10: Science courses in the four countries

Certificates	Courses in the study	Science subjects excluded from this study	Rules of combination for science subjects
Ghana Secondary Senior School Certificate	Physics Chemistry	Integrated Science	Integrated Science is compulsory for all learners, Physics and Chemistry are elective
Kenya Secondary School Certificate	Physics Chemistry	Biology (addressed in Biology section)	Learners must select two Science courses.
Zambia School Certificate	Science Chemistry	Physics	Learners must select one Science course.
South Africa Senior Certificate (old)	Physical Science, Higher Grade Physical Science, Standard Grade		Elective
South Africa National Senior Certificate (new)	Physical Science		Elective

Ghana and **Zambia** both have an integrated Science course. In **Ghana**, the subject is called Integrated Science and covers a broad range of topics which are not readily comparable to those studied in physical science-related courses, and evaluators felt that it was not appropriate to compare this course to the Physical Science, Physics, or Chemistry courses of other countries. For completeness a table of the content of this course is available on Umalusi's website (www.umalusi.org.za). This course is compulsory for *all* learners in Ghana, but in addition they can choose to enrol for elective Physics and/or Chemistry as final examination subjects. In **Zambia**, the system offers learners three options, one of which learners are obliged to choose for matriculation. The Chemistry and Physics courses are taken by relatively small numbers of learners. The combined course, simply called Science, is taken by far the majority of Zambian learners. The curriculum documentation supplied by the Zambian education authorities on their Physics course was incomplete and Umalusi was

unable to obtain complete documentation. For this reason, this course has been excluded from the analysis.

In **Kenya**, learners must enrol for two Science subjects, choosing from Physics, Chemistry, and Biology. There was originally a Kenyan Secondary School Certificate subject that combined the three. Biology was then made into a separate subject, and about ten years ago, Physics and Chemistry were split because higher education institutions complained that learners were not sufficiently exposed to the necessary content in the subjects. The current belief in Kenya is that the new system is more appropriate.

In the **old South African** system (still in use at the time of writing) there are two science courses, one at Higher and one at Standard Grade, both of which included Physics and Chemistry. Neither course is compulsory, so learners may matriculate without a science subject in their certificate. Biology is a separate subject, and is not included in the South African Physical Science curriculum. The Physical Science course is taught over three years, and consists of a Physics and a Chemistry component, each of these being given an equal weighting. The same topics are taught in both Higher and Standard Grades, but the depth at which they are taught differs slightly.

The **new South African** curriculum currently being phased in consists of a Physical Science and a Chemistry component, each of which is given an equal weighting. In contrast to the old system where the course was offered at two levels, namely Higher Grade and Standard Grade, the new course is only offered at one level.

While **South Africa** had 161 214 candidates write the Science examination in 2004, 34% of the total cohort, and 40% more candidates than **Ghana**, and 48% more than **Zambia**, these absolute numbers do not tell the whole story. **Ghana's** figure represents 100% of all the learners writing their matriculation examination in that year, while **Zambia's** 76 904 represents 91% of the high school leaving candidates for that year. The remaining 9% (barring the absentees) also wrote a science subject, but this time a specialized elective in either Physics or Chemistry. In **Kenya** as well, 100% of the cohort wrote two Science subjects—in the main, Physics and Biology. These figures suggest that all school leavers in **Kenya, Ghana** and **Zambia** will have had exposure to some form of Science as a subject right up to their last year in school, this is not the case in the **South African** education system. While it is clear that the majority of learners are exposed to a more general, integrated Science curriculum, learners in the countries north of South Africa also have the opportunity to choose to study Physics and/or Chemistry in greater detail while still at school. This is not the case in South Africa, where not even the general Science curriculum is compulsory in the last years of school.

Even this very brief overview of the four sets of courses suggests that there are significant differences in terms of:

- Whether some form of Science course is compulsory or not;
- Whether the compulsory course has options from which the learners themselves select;
- Whether additional elective Science subjects are available as alternatives to the integrated Science subject;

- Whether, as is the case in South Africa, there are different levels at which the subject can be taken, and different boards which examine the same curriculum;
- The proportion of the total senior high school-leaving population which has one or more Science subjects as a part of the senior high school certificate.

The four sets of Science courses are not easily comparable, since some incorporate the natural Sciences while the others do not. Some of the courses are compulsory, but may retain an element of choice. Others, as in the South African case, are entirely optional. These and other variations prevent a simple, direct comparison of the courses. The Physical Science component of this research consists of an analysis of nine sets of curriculum documents of very different courses, and as a result did not achieve the depth of comment that could otherwise be achieved if a fewer number of courses were to be studied.

Nevertheless, the analysis of the different courses raises issues which are both pertinent and interesting.

Aims, coherence, sequencing, and progression

There is a general similarity in the structure of the science curriculum documents studied. In all of these curricula, the approach with respect to aims, coherence, sequencing, and progression, is fairly traditional.

Curriculum aims, which are always clearly and explicitly outlined in the curricula, are realized in differing degrees. The emphases within the different curricula range from creating strong links between Science and society, industry, and the environment on one hand, to focusing on scientific literacy and skills, scientific method, and further education, on the other.

It was not always easy to identify the organizing principles underlying curricula. In many cases, it was not possible to identify any organizing principle. In other cases the organizing principle was clear: examples include: emphasis on the applications of Physics; focus on the concepts of energy and the nature of matter; and the link between Science, society, and the environment.

The degree to which sequencing and progression was made explicit ranged from encouraging teachers to re-sequence content for teaching effectiveness in particular contexts to tight specification of the level of difficulty with which topics were to be dealt over the years of senior secondary school. The sequencing of the topics themselves was not stipulated in any of the curricula.

Specification of pacing ranged from being radically under-specified to being very explicit. When it was explicit, the total number of contact hours and content for the year or across the years of senior school was given, but there were very few instances where the amount of time for specific topics was given.

Content coverage and cognitive demand

Content coverage which, although including coverage of all the major Science topics in all the curricula studied, differs with respect to the extent of topics covered: some curricula have more content than others.

The Science evaluators argued strongly that there was too much content specified in the new South African curriculum and were concerned that this would compromise learners' ability

to master the subject area, particularly given that the course incorporated both Physics and Chemistry. However, they also suggested an additional topic to be added to the curriculum statement for this course.

Attempts were made to spell out the level of cognitive demand in all of the Science curricula studied. The range of levels of cognitive challenge required by curricula varied from predominantly low levels (requiring knowledge and understanding), to high levels (requiring skills such as problem-solving, interpretation, and ability to formulate experimental design).

The presence of practical tasks, which in some instances constituted enrichment, and in others a substantial part of the curriculum, varied from course to course. The specificity of requirements for practical tasks also varied from being vague, to being very clear. In some cases the decision whether or not to carry out practical tasks was left to individual teachers.

Assessment specifications

Assessment specification was generally poorly thought-through with lists of examinable content inconsistent with associated curricula, lack of weighting of topics, and lack of specification around the structuring of examinations. In many instances examinable content was clearly specified, but there was lack of clarity around weighting and examination structure. In other instances, however, examinable content was clearly outlined and weighted according to difficulty level; there were specific mark allocations for the different parts of the curriculum.

Examinations

Examinations varied according to the level of cognitive demand of their questions; whether the work of the whole senior secondary school phase, or just the final year was examined; the degree to which the whole syllabus was examined; the extent to which choice of questions was permitted; and the degree to which marking memoranda allowed for alternative problem-solving methods, gave clear mark allocations, accurately considered the time needed for questions, and considered the marking of part-skills.

The analysis of both South African Higher Grade papers (state and IEB) indicated that they were the most challenging. The South African Standard Grade examinations are considerably less challenging, with very few questions set at difficulty level 3. However, a combination of Higher Grade and Standard Grade results gives a similar spread in terms of difficulty level to the Kenyan Physics and Chemistry examinations. There is, however, greater breadth of content coverage in the Kenyan Physics examination as it covers four years of schooling. As a result, the examinations questions are not able to assess a great depth of conceptual knowledge of each area since there is a broad range of content areas to be assessed.

The Ghanaian and Zambian examinations appear to be less demanding, with a much greater emphasis on questions set at level 1 in both of these sets of examinations. The Zambian examinations contain the highest proportion of factual recall questions, particularly in the Chemistry course.

Ghana, Kenya, and Zambia all have practical examinations. In South Africa practical reports contribute 50% of the continuous assessment mark (which is derived from learners' portfolios).

ENGLISH

The English courses under consideration are not narrowly equivalent, and are shown in Table 12 below, as well as discussed further in the text which follows.

Table 12: English courses in the four countries

Certificates	Courses in the study	Rules of combination for English courses
Ghana Secondary Senior School Certificate	English (compulsory) Literature in English (elective)	Learners must enrol for English, but can additionally enrol for Literature in English.
Kenya Secondary School Certificate	English	All learners must enrol for English.
Zambia School Certificate	English Language Literature in English	Learners must enrol for English Language, but can additionally enrol for Literature in English.
South Africa Senior Certificate (old)	English First Language Higher Grade English First Language Standard Grade English Second Language Higher Grade English Second Language Standard Grade	Learners must enrol for two languages, one of which must be at First Language level, and the second at either First or Second language level. One of these languages must be the medium of instruction, which for most learners is English, and for a minority is Afrikaans. No indigenous languages are media of instruction in senior secondary school.
South Africa National Senior Certificate (new)	English Home Language English First Additional Language English Second Additional Language	Learners must enrol for two languages, one of which must be at Home Language level, and the second at either Home Language or First Additional Language level. One of these languages must be the medium of instruction, which for most learners is English, and for a minority is Afrikaans. No indigenous languages are media of instruction in senior secondary school.

Ghana offers two English courses: a compulsory course in English which includes some literature, and a separate *Literature in English* course, which is offered as an elective. Kenya offers a single compulsory course in English which covers both language and literature. Zambia offers two English courses, an English Language course, which is compulsory and does not include a literature component, and a separate *Literature in English* course offered as an elective. South Africa is the only one of the four countries in the study to have different courses for English First and Second Language, as well as, in the old curriculum, to differentiate between levels of difficulty (Higher and Standard Grade). In the new curriculum, there is no Higher and Standard Grade differentiation, and the courses are referred to as Home Language and First Additional Language. There is also a Second Additional Language (third language) course. All of these courses contain both language and literature components; there is no separate literature course.

Thus, of the nine courses under analysis in this research, seven are general English courses which are compulsory (or, in the case of South Africa, virtually compulsory); and two are specialist literature courses which are optional. The most obvious points of comparison in the discussion which follows are among the general English courses. These courses comprise what are considered to be essential language skills for all students and a comparative analysis of these syllabuses provides interesting insights into how English and English literacy skills are perceived in each of these contexts.

The situation is different with the specialist literature courses. In Ghana and Zambia, the countries in which these elective courses are offered, approximately 10% of the students take these courses. These courses therefore cater for the top English students who have a specific interest in literature. What is of particular interest is that despite the fact that it offers a specialist literature course, Ghana includes a literature component in its general language course; whereas Zambia does not include literature in its general language course.

What follows is a brief discussion of the different English courses.

Sequencing, progression, and pacing

Kenyan and Ghanaian curricula give clear guidelines for sequencing and progression—but the fact that these are in the form of lists atomizes content. In the new South African curricula there is no explicit sequencing and progression: these aspects are embedded in the assessment standards.

All of the curricula indicate how much time is to be allocated for the study of English, but none indicate the pace of work to be covered within a year of study.

Content

All the courses, barring the specialist literature elective courses offered in Zambia and Ghana, take reading, writing, speaking, listening, and language structures as the basic components around which they organize their programmes. While evaluators commented favourably on the skills-based approach of the various English curricula, they also criticized all the courses in the study for not providing sufficient information about which texts should be studied.

It is the specialist literature courses that get to the core of literary study, especially that in Ghana. Zambia has fewer genres, and does not build up the broad set of literary concepts that is covered in the Ghanaian course. Ghana's specialist Literature in English papers require the most extensive content knowledge of literature; Zambia's Literature in English paper requires the least extensive of literature knowledge (inclusive of the literature components of the general English core syllabuses).

While literature is clearly the most important component in each syllabus for the teaching of reading, few of the syllabuses give adequate guidance on how many texts and of what kind to read each year, nor do they provide guidance on how many texts and of what kind to write each year. In South Africa assessment specifications provide an indication in this regard, particularly at Grade 12 level, but more information to teachers would be helpful in the curriculum statements.

South African curriculum designers should also consider greater specification about the nature and number of writing tasks learners should be engaging with. Ghana's Literature in

English paper requires the most extensive writing; with the exception of the Ghanaian multiple-choice papers, Zambia's core Language papers require the least writing.

The South African and Ghanaian curricula include a mix of texts by African and non-African writers; Kenya and Zambia have prescribed the least Eurocentric literary set works—the focus in these curricula is on African literature.

Cognitive challenge

This is the least elaborated aspect in all of the curricula—and evaluators suggested that perhaps judgements about cognitive challenge should be reserved for examinations. The Ghanaian curriculum is the only curriculum to explicitly differentiate levels of cognitive demand, but does not provide guidelines to translate this differentiation into practice. In the new South African curriculum, differentiation of levels of cognitive demand is embedded in the assessment standards: different levels can only be pinpointed in the examination.

Assessment specifications

The Kenyan, Ghanaian, and old South African curricula provide some guidance for assessment; there is no detailed guidance on assessment in the Zambian curricula. Assessment is integral to and foregrounded in the new South African curricula: teaching and learning is framed in terms of assessment standards; there is a clearly defined Programme of Assessment which includes tasks to be carried out as well as exams; mark allocations and assessment criteria are elaborated. Whether or not these criteria assist in standardizing markers' interpretations of learners' achievements remains to be seen.

Pedagogy and methodology

The Zambian curricula provide explicit guidelines for pedagogy, foregrounding communicative and text-based approaches. Ghana provides guidance in the form of examples. The new South African curricula have structured and useful information on pedagogy; use a communicative, multi-literacies approach, but lack differentiation between cognitive levels, both across school years within a course, and between courses at Home Language, and First and Second Additional Language levels.

None of the courses explicitly acknowledge the bi/multilingual nature of the learners.

Provision of curriculum documents

Curricula often comprise a number of key documents and they evolve, gathering various addenda and amendments over time. Since curriculum changes are usually the result of top-down decisions (even when these may be made in response to input from educators in the field), it is important that teachers are kept abreast of such changes, timeously and efficiently. All of the curricula under analysis would benefit from having a regularly updated core document which outlines all the various component documents, circulars, and addenda which comprise the full curriculum, and outlines the relationships between these various documents.

Examinations

In terms of the highest level of cognitive challenge in the literature papers, the Ghanaian 'Appreciation and Essay' paper scores highly for the level of demand and number of essays; and the IEB Literature paper scores highly for blending creative, innovative questions with a

high level of cognitive demand. In the IEB papers, particularly the Language paper, the mark allocation does not always accurately reflect the level of cognitive demand of the question.

Examination formats, numbers of papers, and the degree to which extended writing is required in exams, differs across the countries. Ghana makes use of multiple-choice questions in two of three Language papers, and one of two Literature papers.

Countries differ in their choices of non-literary texts in the exams: in Kenya, Zambia, and Ghana, non-literary texts are taken from textbooks; in the new South African exams, non-literary texts include everyday texts from contemporary culture such as newspaper and magazine articles, cartoons, advertisements, etc.

There are differences in the way language is assessed, and these relate to the aims of the curricula. In the old South African First Language paper, language is assessed in authentic texts, in keeping with the course aim of readying learners for education and the world beyond school. In Ghana, multiple-choice questions are used: correctness of form is tested in a decontextualized way, in line with the aim of teaching communicative competence. In Kenya and Zambia, a mix of these approaches is used.

The IEB papers require the most reading, and the Language paper works with the broadest range of media and visuals; the Zambian core Language paper requires the least reading.

The South African system is the only one which includes oral work in its summative assessment; while, apart from a small listening component among the oral work in the South African system, the Ghanaian syllabus is the only one which summatively assesses listening.

Level of cognitive demand on language and comprehension questions is often significantly lower than that of literature questions, but the IEB has demonstrated that language/comprehension questions can be spread across all levels of cognitive demand. Essay-type questions are generally harder than multiple-choice questions.

There is inadequate attention paid to critical thinking skills across all the question papers, although there are a few questions in certain papers, particularly in relation to literature, that could be said to test critical thinking.

MATHEMATICS

What type of mathematics is appropriate at a secondary level, how much of it should be applied, how greater numbers of learners can be attracted to mathematics and enabled to master mathematics, and how much and what sort of mathematics should be compulsory for all learners are questions that have dogged policy makers in South Africa and elsewhere for some time. This research offers some insights on some of these matters.

The mathematics courses offered in Ghana, Kenya, South Africa, and Zambia are not narrowly equivalent. Table 13 below provides an overview of the Mathematics courses on offer in the different countries.

Table 13: Mathematics courses in the four countries

Certificates	Courses in the study	Mathematics courses not considered in the study	Status of mathematics courses in certificates
Ghana Secondary Senior School Certificate	Mathematics (Core) Mathematics (Elective)		Compulsory Elective
Kenya Secondary School Certificate	Mathematics		Compulsory
Zambia School Certificate	Mathematics Additional Mathematics		Compulsory Elective
South Africa Senior Certificate (old)	Mathematics, Higher Grade Mathematics, Standard Grade		Both elective
South Africa National Senior Certificate (new)	Mathematics Mathematical Literacy	Additional mathematics	Elective Compulsory

Ghana and Zambia have compulsory Mathematics courses as well as additional, more difficult optional courses. Kenya has one compulsory Mathematics course. For the old Senior Certificate in South Africa there are two non-compulsory Mathematics courses, Higher and Standard Grade Mathematics. There is also an Additional Mathematics curriculum which is offered at a limited number of schools, but whilst the content and cognitive demands of this curriculum are considered more challenging than those in the Higher Grade syllabus, students are not required or even encouraged to take this course to gain admission to tertiary education courses. The Elective Mathematics course from Ghana and the Additional Mathematics course from Zambia were included in the analysis, but the Additional Mathematics course from South Africa was not. This is because the Ghanaian and Zambian courses have more in common with South African Mathematics courses, given the fact that the other Mathematics courses on offer in these three countries are compulsory.

The Mathematics courses in Ghana, Zambia, and South Africa span the three years of senior secondary school, while the Kenyan course is taught over four years. These differences, and other variables, made a direct comparison of the courses a very complex activity. Nonetheless, the research did raise some interesting points for policy makers.

Aims

There are six aims common to all of the mathematics curricula studied. This commonality is of interest, as it is not there to the same degree in the other subjects studied. The evaluators claimed however, that the aims would not be realized unless they were made explicit in the body of the curriculum.

Syllabus coherence

None of the mathematics courses appeared to have any overall principle holding them together, but Mathematics curricula worldwide include 1: numerical work, 2: functions and algebra, 3: geometry and trigonometry and 4: data handling (i.e., statistics and probability). The old South African curriculum which will have been phased out by 2008 was strong in the first three categories, but data handling was done only in junior grades and more often than not was omitted altogether as it was not examined at Grade 12 level.

Sequence, progression, and pacing

Sequence and progression appears to be very similar across the different mathematics courses. But the order in which the topics are listed in a syllabus for a particular grade does not necessarily have particular significance. Some teachers devote one or more periods every week to each of the strands: algebra, geometry etc., whereas others complete a topic from algebra, say, before progressing to a different topic in geometry or trigonometry. Evaluators argued that very few teachers follow the curriculum for a grade in the order in which it is set out, completing all the algebra before starting with some geometry, for example.

Regarding pacing, only the Kenyan and Zambian curricula indicated teaching periods for each topic, but evaluators believed these to be similar in Ghana and South Africa. Regarding progression, in the South African curricula there is an emphasis on developing reasoning in geometry, which makes the work difficult. Evaluators felt that there is a sense of cohesion within and between grades in the new South African curriculum.

Content coverage

Some topics are covered in all of the mathematics courses studied apart from the old South African curriculum. There are also some topics in the old South African curriculum that are not found in any of the other courses. All the countries except South Africa include Statistics and Probability in their core curricula. This omission has been addressed in the new South African National Curriculum Statement. This topic has been included in both the Mathematics and the Mathematical Literacy curricula. They are currently not part of the compulsory section of the curricula and will be examined only in an optional question paper until about 2010. It is understood that this is to give teachers time to develop their own competence in these content areas. One evaluator suggested that the Kenyan geometry syllabus be followed in South Africa as it is more practical: the abstraction of South African geometry may be linked to the high failure rate. One evaluator strongly argued for a greater Arithmetic component to be included in Mathematics in South Africa, learning from the example of Kenya.

Examinations

The curricula studied vary widely in their specifications for assessment. In the Kenyan curriculum, assessment is highly specified: there are indications for specific numbers of questions in specific content areas, with stipulations for cognitive levels and time to be spent on particular content. In the Ghanaian curriculum, content to be assessed is tabled together with types of thinking. In Zambia there is no specification of content to be examined, nor is there a ratio of questions at different cognitive levels. In the old South African curriculum examinable content, skill levels, and ratios of types of questions are given; in the new curriculum there are detailed specifications for assessment in terms of content, cognitive levels, types of tasks, and weightings.

South Africa's examinations stand up well in comparison to the other countries' examinations in terms of types of knowledge and cognitive operations tested, as well as in terms of levels of depth and difficulty. However, it must be borne in mind that both the Higher and Standard Grade courses are optional, whereas all the other countries have Mathematics courses that all learners write.

SUMMARY OF CURRICULUM COMPARISON

All four countries probably have more in common than not: they all have syllabus-based exit examination systems as opposed to American-type standards systems, or outcomes-based systems, as was attempted in the primary and junior secondary phase of the South African system. The new curriculum in South Africa does have aspects of an outcomes-based system, but also has prescribed content and external examinations.

The comparison of the examined curriculum of necessity looked only at the old curriculum in South Africa. As the intention is for our new examinations to be of a similar standard to the old ones, we believe that this comparison is a useful one, although obviously there will be differences when the new curriculum is examined.

Some general points are listed below:

Compulsory versus elective subjects

Biology is elective in all four countries, although in Kenya it is compulsory for all learners to enrol for two Science subjects, and most choose Biology.

In Ghana, Kenya, and Zambia, all learners must enrol for at least one Science subject. In Ghana, all learners must enrol for Integrated Science, while Physics and Chemistry are optional. In Kenya, learners must select any two courses from Physics, Chemistry, and Biology. In Zambia, learners must select any one Science course from Science, Physics, and Chemistry. **Only in South Africa is Science completely optional.**

South Africa is the only country in which English is not compulsory, however, the requirement that learners enrol for a language which is the medium of instruction makes English virtually compulsory.

In Ghana, Kenya, and Zambia, all learners must enrol for a Mathematics course. In Ghana and Zambia there is the option of an additional Mathematics course. In the old South African certificate Mathematics was entirely optional. In the new curriculum, South Africa is now more in line with the requirements of the other three countries, as all learners must enrol for either Mathematics or Mathematical Literacy. However, the compulsory Mathematics courses of the other three countries are general Mathematics courses, and South Africa's new Mathematical Literacy course has a very different focus, with far more emphasis on application. South Africa has clearly chosen an ambitious and challenging route in this regard.

Rules of combination

In general the new South African curriculum appears to be more flexible and less prescriptive than the senior secondary certificates in the other three countries, and than the old South African certificate (certainly in relation to the exemption requirements). This

research was not able to comment on whether more or less prescription is desirable, although the Ghanaian system of compulsory social and natural sciences for all learners may be worth considering, as such subjects may form an important component of cognitive development, general knowledge, and life skills, in addition to languages and mathematics. Providing a broad general education may prove to be more advantageous to learners than attempts at isolating and teaching ‘core’, ‘generic’, ‘fundamental’, or ‘transferable’ skills. The Kenyan system also seems to be well structured in terms of ensuring that learners obtain a broad education, with the stipulation of compulsory science and humanities subjects, as well as compulsory mathematics.

The effects of compulsory subject requirements were seen in the curricula and examinations of some subjects.

Cognitive levels within subjects

The old South African certificate was the only one in the study to have courses in the same subject which were supposed to differ with regard to levels of cognitive challenge. In moving away from this system, South Africa appears to be moving more into line with the practice of other countries (certainly with those in the study), although officials in Ghana indicated that there was some exploratory thinking in that country about introducing more differentiation. However, clearly other mechanisms for differentiating between different levels of ability do exist. The additional Mathematics courses, Literature in Language courses, and different combinations of Science courses all seem to be attempts to balance the needs of teaching highly cognitively demanding curricula to some learners, but also having curricula which cater for groups of less able learners.

Types of documents expressing the intended curriculum

- In Ghana and Kenya there is a teaching syllabus as well as an examination syllabus.
- In Zambia there is one syllabus for teaching and examination purposes.
- In the past in South Africa there was one syllabus for teaching and examination purposes.

It is likely that all of these syllabus documents are augmented by additional documentation from time to time.

- The new curriculum in South Africa is expressed through a set of three documents for each subject (with additional documents in some subjects): curriculum statements, learning programme guidelines, and assessment guidelines.

The documentation from Ghana, Kenya, and Zambia seemed to be clear, although evaluators were not always clear on whether or not additional documents existed which supplemented the syllabuses. This is not necessarily a shortcoming of the systems of the three countries, but a product of the data collection processes for this research.

There were aspects of the nature of the old South African syllabuses which evaluators criticized—it was not always clear to evaluators (who were subject experts working within the South African system) what the status of various documents was, and how they related to each other.

For the new curriculum in South Africa, evaluators were particularly concerned about the number and length of the documents which comprise the intended curriculum, as well as the fact that at times there appeared to be poor articulation between them. Even when this was not the case, the existence of three documents which together comprise the intended curriculum creates difficulties for teachers who have to be very familiar with all three documents. Evaluators recommended that in future single documents should be produced which contain all necessary information.

Further, evaluators were concerned that there were many different versions of the documentation—and in fact, in some instances the documents used in this evaluation were not the most recent versions produced but the latest versions that Umalusi could obtain.

It is perhaps the case that these problems with the nature of the documentation for the new curriculum in South Africa are the inevitable result of any process of curriculum reform. However, the fact that the documentation from the other three countries seems to be clearer and better organized than both the old and new South African curriculum documentation perhaps reinforces the idea that South Africa should therefore consider separating out the functions of curriculum and examinations more formally in independent structures that exist under the Minister of Education.

General comments on the intended curriculum

In all four subjects in this study the evaluators found many improvements in the new South African curriculum statements, as compared to the old. In addition, the new curriculum statements appear to address some of the areas where the other countries in this study appeared to be better than South Africa. **In particular, the evaluators were impressed with the stated aims of the curriculum statements, which they saw as highly contemporary and improvements on the old syllabuses.**

All the evaluators argued that it is difficult to make judgements about cognitive complexity within syllabuses in the absence of examinations. Even though certain topics are inherently more complex, the inclusion of such topics in a syllabus is misleading as they could be examined in a very superficial manner.

In some syllabus documents errors were found which detracted considerably from the documents.

In all the systems there are some differences between the intended and examined curriculum.

Chapter Four

Reflections on the new curriculum in South Africa

This research poses some questions for South Africans working in education to think about in relation to the new curriculum which is currently being introduced.

The aims of the new curriculum

Clearly, the aims of the new curriculum in South Africa are comprehensive, sweeping, and ambitious. The curriculum is based on the aims of the Constitution and at redressing the imbalances of the past. The curriculum aims to develop the individual learner's full potential to fulfill an active role in a democratic society. Political and socio-economic aims are more explicitly stated than in the former curriculum and issues like inclusivity, equity, gender issues, sexual orientation, and social, environmental, ethical, and human rights issues are firmly entrenched in the policy documents for all subjects. In addition, the first chapter of each curriculum statement discusses what kind of learner and what kind of teacher is envisaged. It is clear that the ideal learner constructed here is "one who will be imbued with the values and act in the interests of a society based on respect for democracy, equality, human dignity and social justice as promoted in the Constitution" (National Department of Education 2003, p. 5).

Evaluators felt that the aims of any curriculum should reflect high ideals which then drive the curriculum by shaping educators' approaches to how they think about their subject and their learners. However, it was repeatedly mentioned by evaluators that the curriculum as a whole *must* work towards enabling such aims to be achieved so as not to leave them merely functioning as pleasing philosophical statements. The way in which educators are visualized was argued by some of the evaluators in this research to be rather idealistic, given the many teachers who received very poor, if any training at all. Some evaluators also argued that while the aims and principles are admirable, it might be preferable for curriculum documentation to contain less of this sort of generic information, and more information which is directly pertinent to the teaching of the subject at hand.

The use of outcomes in the new curriculum

The curriculum describes itself as outcomes-based. Outcomes-based education is defined as a curriculum which is organized according to the outcomes that learners are to achieve by the end of their education process. This outcomes-based approach is further described in the curriculum documents as encouraging a learner-centred and activity-based approach to education which is designed to enable all learners to reach their maximum learning potential. There are seven 'critical outcomes' and five 'developmental outcomes' which are common to all subjects.

The literature review conducted for this research suggested problems with outcomes-based approaches to education. While the specification of content in the new curriculum

statements may have solved some of these problems, clearly this point will be one which remains of ongoing concern to Umalusi as the body required to monitor standards. There were problems which emerged in many of the subject evaluations in relation to the notion of outcomes and the role that such outcomes are expected to play in the curriculum.

For example, while the evaluators were in most instances happy with the content stipulation, at times it seemed that the content was not clearly or explicitly stated. The Biology evaluators, for example, read into the topics stated in the curriculum, and made suppositions about the specification of content in these topics. Teachers who are not higher education experts may well not be able to read into the curriculum statement in this manner. The Science evaluators similarly argued that some of the content was possibly too generic, and that some important scientific skills are not explicitly mentioned where they merit individual mention. This implicitly raises a question for Umalusi in terms of the use of experts only in evaluating curricula. While experts are obviously essential, if they are able to 'read into' a curriculum statement in ways that the average teacher will not be able to, they may produce misleading evaluations. It may be necessary, therefore, for teachers' opinions about curriculum statements to be sought.

Outcomes were seen by some evaluators as the organizing framework for curriculum statements—this could undermine the necessary knowledge structure of a discipline. In addition, progression and sequencing appeared to be a problem. This is possibly more apparent in subjects like English and Biology which have less rigid intrinsic hierarchies of knowledge. This could relate to how outcomes and topics are used in the new curriculum statements, and possibly points to a need for greater discipline-based coherence.

The reliance on outcomes as the driving mechanism of the curriculum appears to manifest itself differently in different subjects. In Mathematics it appears to be least problematic, in Science slightly problematic, and it seems to cause considerable problems in Biology and English.

In English the focus on outcomes seems to lead to a lack of differentiation between the Home Language and First and Second Additional Language curricula. There also seems to be a lack of differentiation across grades. Differentiation is mainly achieved through shifts in meaning embedded in the assessment standards. However, evaluators pointed out that nothing in the curriculum statement explicitly prepares the reader to pay attention to nuances of meaning in the phrasing of the assessment standards. Only a very close reading of these assessment standards will reveal the key differences and enable the implications for teaching to be inferred. In addition, many assessment standards do not demonstrate discernible shifts in phrasing and therefore do not provide differentiation across the grades. Further, even though the language distinctions may accurately reflect what curriculum designers require of learners, the shift from, for example 'obvious emotive language' to 'fairly subtle' to 'subtle' may not be a distinction that all teachers are able to make.

The outcomes focus seems to drive the curriculum strongly into a skills orientation. While the English evaluators felt that a skills orientation is appropriate in English, they also argued clearly that it is the stipulation of content, for example, in terms of types and number of texts to be studied, types and number of writing genres to be mastered, and types of metacognitive language tools to be mastered, that will determine the standard of the English course.

Evaluators argued that in the new curriculum, the focus is on skills almost to the exclusion of specification of content. These skills are exercised both in relation to various communicative situations (listening and speaking) and in relation to the reception and production of texts (reading and writing). The assessment standards and their sub-points break these skills down, describing them in ways that are intended to assist teachers in determining whether or not the outcomes are being achieved. The learning programme guidelines state that the learning outcomes and the assessment standards need to be unpacked in order to “find” the content (National Department of Education 2006, p. 28). The implication is that any content that can be made to serve one or more of these outcomes is deemed suitable. Therefore, although some content specification exists in the assessment standards, any content knowledge is secondary to “applied competence” (National Department of Education 2006, p. 11), i.e., the skill used to deploy it.

Further, the English evaluators argued that reliance on the assessment standards for sequencing and progression has resulted in a lack of sequencing and progression in the new South African curricula. Beyond the idea that learners should be mastering skills at increasing levels of competence, there is little explicit sequencing of skills or content across the grades, and little indication of how far along the curriculum teachers should be by the end of each year of study. Because of the overwhelming similarity of the assessment standards for each consecutive grade, there is likely to be a strong tendency to repeat very similar work from grade to grade, even if the texts being used differ.

While this study is by no means definitive, clearly a lot more research and thought needs to go into the appropriateness of this type of curriculum specification, and what improvements can be made to it. This is a particularly important point given the importance of mastering English to learners’ ability to master their other subjects.

Assessment specifications

For all subjects, the new curricula in South Africa contain by far the most detailed discussion of assessment of any in this study. Information about both school-based and external assessment is provided. This includes explanations of types, purposes, and methods of assessment, as well as guidance on recording and reporting on assessment (including rating scales and rubrics). However, much of this information is not subject-specific and the same chapter on assessment is found in the curriculum statement for all subjects.

Presentation of curriculum documentation

The new curricula in South Africa have clearly evolved through a series of processes, and are currently contained in three main documents for each subject—each subject has a curriculum statement, a learning programme guideline, and an assessment guideline. The analysis of this research suggests that it would be preferable for the Department of Education to produce one single curriculum statement containing everything that teachers need to know about the intended curriculum. Evaluators found that it is not possible to fully understand any aspect of the curriculum without scrutinizing all three documents thoroughly and synthesizing their content. This is a difficult task, and one that many teachers are likely to get wrong. In addition, there were at times poor articulation and even contradictions found across the documents.

The other three countries in the study appear to have much simpler, and arguably clearer documentation. However, in all the countries there appear to be supplementary circulars and

additional information which add to the intended curriculum. Evaluators in this study argued that such documentation should be kept to a minimum for the sake of clarity and ease of use by teachers, and that all important information should be contained in one curriculum document or syllabus.

An additional problem pointed out by many of the evaluators is the amount of documentation contained in the new curriculum statements and their accompanying documents—dramatically more documentation than any of the other five syllabuses which were examined. While all the evaluators felt that it is useful to give guidance to teachers, it was pointed out that a balance must be maintained between giving guidance and ensuring that documents remain workable and user-friendly. What appears to aggravate the situation is that in some subjects there seemed to be a lack of coordination between the three main documents which make up the intended curriculum—the curriculum statement, the learning programme guidelines, and the assessment guidelines. In addition, in some instances evaluators were unclear about the status of different versions of documents. If evaluators, as subject experts involved in various ways in the implementation of the new curriculum, experienced problems deciphering which versions of the various documents were current, it is likely that teachers will as well.

Finally, but perhaps most importantly, some of the evaluators pointed out that the curriculum documents are not easy to read. The English evaluators argued that the documents are couched in a discourse that is likely to be unfamiliar to many teachers, and unless teachers are able to read the curriculum with in-depth understanding, there is little hope of it becoming meaningful to them. Many of the key concepts are embedded in language that may appear deceptively simple but where slight shifts in terminology evoke nuances of meaning that are critical to the effective implementation of the curriculum.

There are many features of each subject's curriculum statement which are the same, and a few of these are mentioned below. In general, however, the subject evaluators did not comment much on them. This is probably because the evaluators wanted to focus on the actual subject as it was manifest in the curriculum statement. It does suggest, however, that Umalusi still needs to conduct an analysis which looks at the curriculum documentation as a whole, and evaluates how useful it is to teachers, particularly in light of the comments about lengthy documentation discussed above. What must be stressed in this regard is that while teachers need sufficient guidance and information, the shorter documents are the easier they are to work with. Thus, all non-essential information should be cut out.

Further questions to think about

The research raises interesting questions for further research and consideration by South African policy formulators. Some such questions include:

- Should all students have a basic grounding in Science as well as in Mathematics?
- Could Biology, as a subject taken by most students, have an explicit role to play in the development of the ability to deal with abstraction, by virtue of the logic of the classificatory systems that are part of its subject matter? And if so, should this aspect of the curriculum not be strengthened?
- Should Physics and Chemistry be offered as two separate subjects or as a combined science course?

- Is the role of literature in the English syllabus more than ‘a tool for teaching reading’ and can one develop a flair for writing without literature?
- Mathematics generally claims to teach abstract thinking but how does this articulate with the current tendency to slant the curriculum towards ‘useful real life applications?’

From the point of view of evaluating and improving the curriculum documents, the report also raises questions and suggestions—many of which are discussed in depth in Umalusi’s other report from this project, *Making Educational Judgements: Reflections on judging standards of intended and examined curricula* (Umalusi 2007b). One issue perhaps worth repeating here is the notion of an *organizing principle* that determines *coherence*. Most evaluators in the current study could not find an explicit organizing principle. The Science evaluators argued that that the curricula in most of the countries in the study seem to be driven by an emphasis on practical work, projects, and the application of scientific knowledge. They also argued that outcomes provided an organizing framework in the new South African curriculum. This is, perhaps, an old debate but one which lies at the heart of current dissent around outcomes-based education, and is one which South African policy makers and researchers may wish to consider in more depth.

It is hoped that the ultimate value of the report thus lies in its being both informative and provocative, thereby containing the potential to stimulate new levels of curriculum debate and reform in South Africa, and possibly even the other countries whose curricula were under scrutiny.

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