

Evaluating the South African National Senior Certificate in relation to selected international qualifications: A self-referencing exercise to determine the standing of the NSC

**Research jointly undertaken by Umalusi and
Higher Education South Africa (HESA)**

OVERVIEW REPORT

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List of acronyms

CIE	Cambridge International Examinations
CIE AS Level	Cambridge Advanced Subsidiary Level
CIE A Level	Cambridge Advanced Level
FAL	First Additional Language
HESA	Higher Education South Africa
IGCSE	International General Certificate of Secondary Education
IBO	International Baccalaureate Organisation
IB SL	International Baccalaureate Standard Level
IB HL	International Baccalaureate Higher Level
NCS	<i>National Curriculum Statement</i>
NSC	<i>National Senior Certificate</i>
NQF	National Qualifications Framework
SC	<i>Senior Certificate</i>

Glossary

Candidates	This term is used to cover learners and students registered for or enrolled in programmes of study for the qualifications being evaluated. Where specific reference is made to teaching approaches, the term learner will still be applicable.
Educators	This term is used to cover reference to teachers, instructors or any person teaching a programme, subject or course.

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Executive Summary

1. Background

In 2008, a new South African qualification, the *National Senior Certificate (NSC)* replaced the *Senior Certificate*, commonly known as 'the matric'. The examinations, based on the *National Curriculum Statement (NCS)* for Grades 10 to 12, led to the issuing of the *National Senior Certificate (NSC)* exit-level qualification. In short, the NSC is the new matric that replaced the *Senior Certificate (SC)*, based on the NATED 550 curricula.

During 2008, Umalusi conducted research which compared the NSC curriculum and exams (exemplars and the first 2008 papers) to those of the *Senior Certificate*, both Higher and Standard Grades. The primary purpose for this research was to ensure continuity of standard between the old and new qualifications. For this process, an evaluation instrument, based on previous Umalusi research (2006–2008), was developed that addressed key areas in curriculum and examination analysis.

In 2008, HESA approached Umalusi to assist it in an equivalence-setting exercise for the *National Senior Certificate*, as it needed "to establish whether a foreign qualification could be recognised as fully or partially comparable to the NSC, and the minimum requirements for admission to degree, diploma and higher certificate status in South Africa" (HESA, 2008:1). While Umalusi is satisfied that it has been able to establish a clear understanding of the relationship of the NSC to the SC in both its Higher and Standard Grade forms, its comparability with international qualifications at equivalent educational levels was uncertain. For Umalusi, as the Quality Council for qualifications in General and Further Education and Training, the next step was to ascertain its standing in relation to other, similar international qualifications. Such a step has been regarded as a critical part of understanding the standard embodied by the qualification, its curricula and examinations.

Consequently, in 2009, in collaboration with HESA, Umalusi formulated an NSC-based equivalence-setting research project, in which this new qualification, its curricula and exams were benchmarked against the equivalent-level curricula and examinations of the various Cambridge International Examinations (CIE) and those of the International Baccalaureate (IB). In addition, the Namibian National Senior Secondary Certificate (NSCC) qualification was considered an example of the Cambridge qualification, contextualised within the Southern African environment.

While this report assists in establishing whether these international qualifications could be recognised as fully or partially comparable to the NSC, and may provide data helpful in determining the minimum requirements for admission to degree, diploma and higher certificate status in South Africa, it does not make recommendations regarding the minimum requirements for admission to higher education.

However, this benchmarking study and the empirical data obtained on equivalence-setting will be of great value to HESA in formulating an admission requirement policy that leads to consistency in decisions regarding treating candidates from school-leaving examinations more equitably. Tough and Brooks (2007) argued a few years ago that equivalence-setting studies and therefore also the perceived fairness of admission requirements would affect how

students, parents and educators view the education system as a whole, and would therefore smooth the admission process.

2. Structure of the qualifications

Chapter 2 provides a fairly detailed description of the NSC and the international qualifications it has been evaluated against. These qualifications are the International Baccalaureate (IB) at both Standard and Higher Level, and the following qualifications offered by Cambridge International Examinations: the International General Certificate of Secondary Education, the AS Level and the A Level.

The structure of each qualification includes some background information, a description indicating the duration of the qualification, its target group, the number of subjects included in the qualification, and the rules of combination that determine the qualification. The number of teaching hours, the nature of the assessment, the rating scales used for assessment, the pass requirements for certification and the current HESA admission requirements have also been taken into consideration in the equivalence-setting analysis. These descriptions will help readers to understand that the comparison cannot be regarded as a straightforward process, since qualifications differ in terms of duration, the number of subjects candidates are expected to study, and the additional demands that may be made on candidates in terms of how the qualifications are defined.

The fact that these qualifications differ in various dimensions meant that the Umalusi evaluation teams grappled in various ways to deal with these differences.

The critical features of the NSC and the selected international qualifications in this equivalence-setting project can be seen in **Table 1** on the next page.

Table 1: The critical features of the NSC and the selected international qualifications being evaluated

Qualification	Number of years for qualification	Educational years	Sublevels of qualification	Age of target candidate	Number of subjects prescribed for qualification/ no of subjects compulsory	Number of hours allocated for study per subject in total	Assessment rating scale	Minimum pass
National Department of Education, South Africa								
NSC	3 years	10–12 years of education	Grade 10 Grade 11 Grade 12	15–17	7 prescribed 4 compulsory	280–400	1 (Not achieved) to 7 (Outstanding)	2 (Elementary achievement) 3 required in Home Language
International Baccalaureate Organisation								
IB Diploma	2 years	12–13 years of education	Standard Level	16–19	6 prescribed learning areas with a variety of electives; 3 additional core requirements for qualification; subjects offered at Standard or Higher Level	150 (SL subjects) 240 (HL subjects)	1 (Lowest)–7 (Highest), 3 points for the additional qualification requirements; maximum points achievable: 42 + 3 = 45	4–7 are regarded as pass marks in a subject; qualification pass requirement: 24 (maximum marks = 45)
			Higher Level					
Cambridge International Examinations								
IGCSE	2 years	10–11 years of schooling	Core	14–16	7 or more 2 languages	150	C–G	C
			Extended				A*, A–E	C
A Level	2 years	12–13 years of schooling	AS Level (exit level qualification)	16–18	3–4 subjects prescribed; none compulsory; subjects selected at either AS or A Level (Candidates who have achieved AS Level subject, may choose to further their studies at A Level)	180	A (highest achievement) E (minimum required performance)	D
						+ 180 = 360 (cumulative over AS and A Level)	A* (highest achievement) E (minimum required performance)	D
Department of Education, Namibia/CIE								
NSSC	2 years	10–11 years of schooling	NSSC OL	16–18	6 subjects from Group 1, 5 of which are further grouped into 6 fields of study	320	A–G	C
		12 years of schooling	NSSC HL					1 (highest) to 4 (lowest)

3. Methodology

Chapter 3 provides a very brief overview of Umalusi's standard-determining research in order to locate the present evaluation. It also indicates what the research questions for the comparison were. The Umalusi evaluation teams were asked to address the following matters:

a. Comparability of the NSC curriculum with the other curricula

The teams had to give an opinion as to whether the NSC curriculum is comparable with the curricula belonging to the other international qualifications. For example, could the language curriculum of the IB be accorded the same value, or greater or less value, than the NSC, particularly in relation to the breadth, depth and cognitive complexity of the learning embodied in its respective curricula? Teams were also requested to comment specifically on the respective value ('creditworthiness') they would assign to each of the curricula. The following additional questions were posed to each team:

- What is your opinion about the assumption of equal/comparable creditworthiness (value) of the curricula included in this research? Please give reasons for your position.
- What worth would you attach to each curriculum?
- What reasons / justifications could you offer from the evaluation process in support of your opinion?

The matter of the comparability of the curricula (including exams) is not only important in terms of a more nuanced national understanding of how the premier South African school exit qualification compares with similar qualifications internationally, it is equally of importance to South African higher education institutions that need to determine how international school-leaving qualifications compare with the South African qualification they usually work with.

b. Mapping of NSC against the other curricula for determination of admission to higher education

The evaluation teams were also requested to assess whether the international qualifications could in terms of curricula be mapped in relation to the NSC. This mapping exercise would enable HESA in future to determine appropriate minimum admission requirements to South African higher educational institutions for candidates with these international educational qualifications.

c. Overview of assessment requirements

The evaluation teams were requested to provide a brief overview of the assessment requirements in the various curricula, offering a judgement on how the curriculum content (concepts) and expected skills are examined. The following questions were posed:

- By scanning the exam papers, did you find a lowering of expectations from what was indicated in the curriculum?
- Are the expected learning outcomes examined sufficiently?
- What cognitive demands are apparent in the papers?
- How would you judge the overall standard of the assessment?

d. Comparison with Namibian Senior Secondary Qualifications:

The evaluation teams were requested to do an 'ex post facto check' on the Namibian NSSC OL (Ordinary Level, equivalent to IGSCE/O Level) and NSSC HL (Higher Level, equivalent to HIGSCE/AS Level) as SADC-contextualised examples of CIE qualifications. They were asked to:

- Give their opinion as to whether the Namibian curricula are comparable to the NSC curricula.
- Judge whether the curricula, as reflected in the examinations, are comparable with, or of a higher or lower level of cognitive demand than the NSC.
- Justify their assessment by referring, for instance, to content, scope, level and abilities.

In addition, chapter three describes the composition of the teams and the work processes entailed. This chapter also describes the evaluation instruments as refined for the project. The structure of the instrument shaped both the findings made by the subject teams as well as the way in which these findings were reported, as will be evident in the final chapter of this report.

4. Trends across the curricula

Chapter 4 draws together trends that have been discerned across the subject reports presented by the five Umalusi team leaders. This chapter looks for patterns that seem to emerge as common perceptions from the work done separately. The findings from the five teams are not entirely consonant with one another, but differences aside, certain stable relationships between the NSC and the other qualifications are present. This chapter draws together the insights from the team reports to help South African educationists – and HESA in particular – to understand the status or standing of the new South African school-leaving qualification in relation to the international qualifications against which it has been benchmarked.

Organising principle and coherence

It was found that the NSC curriculum has the strongest explicit organising principles. These principles are clearly described in the NSC curriculum documents. Moreover, the NSC curriculum documents are organised according to learning outcomes and knowledge areas, rather than traditional topic clusters. Furthermore, the NSC curriculum's organising principles are integrally linked to the assessment standards per learning outcome and per grade and also have reference to the critical and developmental outcomes which form a standard part of South African qualification description.

There are no clear organising principles in the curriculum documents of the CIE qualifications and the IBO qualifications, but when considering the assessment guidelines, the Umalusi evaluation teams found assessment objectives as an organising principle. The description of the assessment objectives is made in such a manner that educators can use these objectives in determining their planning and methodology.

Sequencing, progression and pacing

In most of the subjects reviewed, the NSC curriculum shows the greatest attention to sequencing, progression and pacing. The NSC curriculum specifies content by year of study, and builds progressively on concepts across grades, facilitating vertical progression on a year-by-year basis for Grades 10 to 12, with external examination at the end of year 12. A fair

degree of guidance is given to educators. At the same time, the Umalusi evaluation teams commented that the pacing was regarded as too strenuous by many educators, or that insufficient balance was provided for different aspects of the curriculum. The attention to sequencing, progression and pacing is a strength of the NSC curriculum that could be built on in future to provide further support to educators.

In the CIE and IB curricula, a lot is assumed regarding sequencing and pacing. It seems that the educators have considerable latitude in planning the sequencing and pacing of the curriculum to suit the qualification expectations and to comply with the assessment guidelines.

Content and skills specification, and coverage

In general, there is a high degree of overlap of the NSC curriculum when compared with the CIE and IB curricula in terms of topics covered (breadth of content). All five of the Umalusi subject evaluation teams found that most of the topics covered in the IB and CIE curricula are covered in the core topics of the NSC curriculum. Within each broad learning area, it was observed that there are both notable overlaps and notable differences in the specification of sub-topics, but that these differences in sub-topics seem to link appropriately to the contexts of the envisaged candidates.

In terms of depth of content coverage, it seems that the NSC fits neatly between the CIE AS and A Levels as well as between the IB SL (Standard Level) and HL (Higher Level), as can be seen in the subject-specific comments in the individual subject reports. In terms of depth of content, the NSC seems to be closest to the IB SL and CIE AS Level.

Aims, purpose, vision, general outcomes and articulation

It was noted that all of the curricula evaluated list their aims and purposes clearly. Although the ways in which the aims are described differ, all of the curricula list similar aims for their respective courses. The aims of all of the curricula are described in a fairly broad way, and so are suited to a range of contexts. None of the curriculum documents explicitly deals with how the aims should be achieved. A concern raised by the Umalusi evaluation teams was that because these aims are expressed so broadly, they may not be very useful at a practical classroom level and may therefore have an impact on the enacted curriculum. However, the NSC curriculum documents do give some indicators as to how the assessment standards can serve as guidelines to educators in terms of planning and teaching.

Teaching approach and subject methodology

The NSC curriculum prescribes an outcomes-based approach to teaching, where the outcomes are the focus of the learning and teaching. The desired approaches are more clearly specified in the NSC than in any of the other curriculum documents. The approach described in the NSC encourages a move away from rote learning and content transmission, both traditional modes of teaching in South African classrooms. However, the learner-centred and activity-based approach recommended is not always easy to implement in under-resourced South African school contexts.

Although the organising principles of the CIE and IBO qualifications are based on assessment objectives, the approaches still seem to be learner-centred and skill-related. For instance, in the CIE IGSE English FAL curriculum, candidates' listening skills are highly valued, but the detailed description of the teaching and assessment of the skills clearly points to a deeply learner-involved teaching approach.

Assessment guidance

Most Umalusi subject evaluation teams found that the NSC has the most detailed assessment guidance, for both internal and external assessment. Both the structure and weighting of the examinations are detailed in the *Subject Assessment Guidelines*.

In the CIE and IBO curricula, the assessment objectives are clear and to the point. There are also clear indications as to where there is an extension of papers (for instance to indicate the transition and difference between AS and A Levels), which papers are compulsory, and where choices are involved. The assessment guidance for these curricula clearly indicates what is applicable to internal assessment and what will be covered in external assessment. In most instances, the weighting of the assessment is stated as well.

Availability and user-friendliness of the curricula

It seems that while the NSC curriculum documents provide the most detailed guidance in several different respects, this comprehensiveness (level of detail) tends to compromise their simplicity, and most Umalusi evaluation teams reported these documents to be complex and lengthy. In contrast, the other curriculum documents were clearly laid out, using simple language and providing straightforward assessment objectives to be achieved

Comparison of the value of NSC curriculum with the other curricula

In summary, for most of the elements in terms of which the curricula were assessed, the NSC curriculum fits comparably within the range of the selected curricula. More specifically, the common finding was that its content and level seem most similar to the IB SL and CIE AS Level, and in some instances such as English FAL, more like the CIE A Level.

In terms of collating depth, breadth and level of difficulty, the results of most (but not all) of the Umalusi subject evaluation teams may be summarised as follows:

Increasing depth and level of difficulty		South Africa	International Baccalaureate Organisation	Cambridge International Examinations	Namibia
			IB Mathematical Studies SL	IGCSE	Namibian OL
		NSC	IB SL	AS Level	Namibian HL
			IB HL	A Level	

The Umalusi evaluation teams were requested to consider whether the international qualifications could be mapped in relation to the NSC in order to enable HESA to determine appropriate minimum admission requirements at higher educational institutions. From the analysis, the following general points can be made:

- The CIE AS and IB SL courses can be considered comparable to the NSC. Consequently, it was concluded that in terms of admission to South African higher education institutions, both in terms of the depth of content in the curricula and in terms of the cognitive demand of the examinations, the CIE AS Level and the IB SL could be viewed as leading to the attainment of an educational level that is similar to that of the NSC subjects. Furthermore, when comparable admission points tables are determined, performance on the AS Levels, the IB HL and the NSC subjects should receive similar points by using the percentages.

- Overall, the IB HL and full A-Level courses are the most demanding, if examination difficulty and depth of curriculum content are taken into account. As a result, the educational level attained is likely to be higher than that of the NSC. Consequently, while both these qualifications are acceptable for higher education admissions, when comparable admission points tables are determined, higher points will have to be awarded for achievement in A-Level and IB HL courses than for NSC subjects.
- The IGCSE should not be considered at all comparable to the NSC. It would thus not be appropriate to set equal education entrance criteria for the IGCSE qualification as the education level attained is not equivalent to that of the NSC.

There were some differences in the above overall trends with respect to specific subjects, and it is advised that readers consult the detailed subject-specific reports for a more detailed analysis of these findings.

5. Curriculum reports

Individual subject reports allow readers to see for themselves how the Umalusi teams analysed their subjects and came to their findings. These subject reports provide detailed information regarding the strengths and weaknesses of the various curricula and examinations, and will, for the South African education system in particular, point to ways in which our own subject curricula and assessment can be strengthened and improved. Finally, it is worth noting, that, though the Umalusi teams began with the same instrument, each team had to grapple with the data at its disposal. Each team has consequently worked slightly differently than the others, and reported on their findings in ways suited to their subject. Nonetheless, while teams drew different inferences about the relationships between the levels of demand expressed in the different curricula and exams for their respective subjects, there was nevertheless a reasonably high degree of consonance between the individual reports, and this is evident from a reading of the subject reports themselves.

The reports can be viewed on the Umalusi and HESA websites.

1. Background to the research project

In 2008, a new South African qualification, the *National Senior Certificate (NSC)* replaced the *Senior Certificate*, commonly known as 'the matric'. The significance of the introduction of the NSC has been underplayed in that for the very first time in South Africa, all candidates in Grade 12 finally wrote common national examinations. The vision of a common exit examination for all candidates, regardless of colour or location, had finally been achieved. The examinations, based on the *National Curriculum Statement (NCS)* for Grades 10 to 12, led to the issuing of the *National Senior Certificate (NSC)* exit-level qualification. In short, the NSC is the new matric, replacing the *Senior Certificate (SC)*, which was based on the NATED 550 curricula.

During 2008, Umalusi conducted research into the new South African *National Curriculum Statement (NCS)* in order to gain an understanding of the quality and levels of cognitive demand of the new curricula for six of the so-called gateway subjects. The research compared the NSC curriculum and exams (exemplars and the first 2008 papers) to those of the *Senior Certificate*, for both Higher and Standard Grades. The primary purpose for this research was to ensure continuity of standard between the old and new qualifications for a variety of Umalusi's standardisation processes. For this process, an evaluation instrument, based on previous Umalusi research (2006–2008), was developed that addressed key areas in curriculum and examination analysis.

Also in 2008, HESA approached Umalusi to assist it in an equivalence-setting exercise for the *National Senior Certificate*, as it needed "to establish whether a foreign qualification could be recognised as fully or partially comparable to the NSC, and the minimum requirements for admission to degree, diploma and higher certificate status in South Africa" (HESA, 2008:1). Umalusi indicated that, as the Maintaining Standards work was already underway, any additional comparative work should be held over until the research was complete.

While Umalusi is satisfied that, through the 2008 research, it has been able to establish a clear understanding of the relationship of the NSC to the SC in both its Higher and Standard Grade forms, its comparability with international qualifications at equivalent educational levels was uncertain. For Umalusi, as the Quality Council for qualifications in General and Further Education and Training, the next step was to ascertain its standing in relation to other similar international qualifications. Such a step has been regarded as a critical part of understanding the standard embodied by the qualification, its curricula and examinations.

Consequently, in 2009, in collaboration with HESA, Umalusi formulated an NSC-based equivalence-setting research project in which this new qualification, its curricula and exams were benchmarked against the equivalent-level curricula and examinations of the various Cambridge International Examinations (CIE) and those of the International Baccalaureate (IB). In addition, the Namibian NSSC qualification was considered as an example of the Cambridge qualification, contextualised within a Southern African environment.

While this report will help to establish whether a foreign qualification could be recognised as fully or partially comparable to the NSC, and may provide data helpful in determining the minimum requirements for admission to degree, diploma and higher certificate status in South

Africa, it will not make recommendations regarding the minimum requirements for admission to higher education.

The remainder of the report is structured as follows. Chapter 2 provides a fairly detailed description of the NSC and the qualifications against which it was evaluated. Each description indicates the duration of the qualification, its target group, and the number of subjects included in the qualification, as well as the rules of combination that determine the qualification. The number of teaching hours, the nature of assessment, the rating scales used for assessment, the pass requirements for certification and the current HESA admission requirements, have also been considered in the investigation. These descriptions provide the necessary background information to help readers to understand that the comparison cannot be regarded as a straightforward process, since qualifications differ in terms of duration, the number of subjects candidates are expected to study, and the additional demands that may be made on candidates in terms of how the qualifications are defined. The fact that these qualifications differ in these dimensions means that the Umalusi evaluation teams have grappled in various ways to deal with these differences.

Chapter 3 provides a very brief overview of Umalusi's standard-determining research in order to locate the present evaluation, indicates what the research questions for the comparison were, describes the composition of the Umalusi teams, and outlines the work processes entailed. This chapter also describes the evaluation instruments as refined for the project.

Chapter 4 draws together trends that have been discerned across the subject reports presented by the five Umalusi team leaders. This chapter looks for patterns that seem to emerge as common perceptions from the work done separately. The findings from the five teams are not entirely consonant with one another, but, differences aside, certain stable relationships between the NSC and the other qualifications are present. This chapter draws together the insights from the team reports to help South African educationists – and HESA in particular – to understand the status or standing of the new South African school-leaving qualification in relation to the international qualifications against which it has been benchmarked.

Although, in some respects, Chapter 4 may be regarded as the concluding chapter of the report, it seems to be in the interest of all concerned that the more detailed and nuanced findings on which Chapter 4 is based also be presented as part of the research. As mentioned before, the individual subject reports, published separately and available on the Umalusi and HESA websites, allow readers to see for themselves how the Umalusi teams analysed their subjects and came to their findings. These subject reports provide detailed information regarding the strengths and weaknesses of the various curricula and examinations, and will, for the South African education system in particular, point to ways in which our own subject curricula and assessment can be further strengthened and improved. It is worth noting, finally, that though the Umalusi teams began with the same instrument, each team had to grapple with the data at its disposal. The teams have consequently worked slightly differently from one another, and reported on their findings in ways suited to their subjects.

2. Structure of the qualifications

2.1. Introduction

Before embarking on a description of the methodology used in the equivalence-setting process, it is important to establish that the qualifications themselves differ from one another in quite significant ways. These differences in terms of number of years, number of subjects, and compulsory requirements vs voluntary choices mean that the comparisons cannot be rigid, and that qualification contexts need to be taken into account when examining the curricula and the examinations.

In the following sections, the qualifications being compared are described to help readers understand how the qualifications are structured.

2.2. *National Senior Certificate, South Africa*

In the South African education system, candidates normally undergo 13 years of schooling, from Grade 0, otherwise known as Grade R ('reception year'), through to Grade 12 ('matric'). Grades 0 to 9 (compulsory for all children) are known as General Education, and Grades 10 to 12 constitute Further Education. During the final three years, senior secondary schooling, candidates study for the *National Senior Certificate*, a three-year qualification. Successful candidates are awarded the NSC, which allows for three levels of admission to higher education: at higher certificate, diploma, and bachelor's degree entry levels. A candidate may achieve the NSC without any form of entry to higher education, but this accounts for a miniscule number of NSC passes.

The NSC is registered on the National Qualifications Framework (NQF) at Level 4, bearing 130 credits. It is a curriculum-based, as opposed to a unit standards-based qualification.

The NSC is underpinned by the *National Curriculum Statement (NCS)*. Subjects in the NSC are divided into the following learning fields:

- Agriculture
- Arts and Culture
- Business, Commerce and Management Studies and Services
- Languages
- Manufacturing, Engineering and Technology
- Human and Social Sciences
- Physical, Mathematical, Computer and Life Sciences

For the NSC, candidates are required to study seven subjects, of which four are compulsory, namely:

- a Home Language, generally one of the 11 official languages
- an additional South African language
- either Mathematics or Mathematical Literacy
- Life Orientation (which is a non-examinable subject).

The remaining three subjects are to be chosen from the other learning fields. However, no candidate may do both Mathematics and Mathematical Literacy, nor may certain languages be studied together (e.g. IsiZulu and IsiNdebele). All subjects count for 20 credits except for Life Orientation, which is internally assessed and is worth 10 credits.

The teaching time per subject for the NSC is stipulated in the *Learning Programme Guidelines* for the various subjects. Additional anecdotal evidence from educators in various contexts suggests that teaching time per subject can range anywhere from 280 to 400 hours over the three years of schooling, depending on the structure of the teaching programme at different schools.

Internal assessment, evaluated by means of a student portfolio, contributes 25% towards the final mark. The external assessment consists of a number of examination papers that are set at a national level.

A seven-point rating scale is used to rate assessment as well as to record final performance on the certificate itself:

- 7 = Outstanding achievement (80%–100%)
- 6 = Meritorious achievement (70%–79%)
- 5 = Substantial achievement (60%–69%)
- 4 = Moderate achievement (50%–59%)
- 3 = Adequate achievement (40%–49%)
- 2 = Elementary achievement (30%–39%)
- 1 = Not achieved (0%–29%)

Achievement at Level 2 is regarded as sufficient for the candidate to pass, except for the first language, where a pass at Level 3 is required.

A *National Senior Certificate* is awarded according to the following criteria:

- All compulsory subjects should be passed with at least
 - Level 3 (40–49%) for the Home Language,
 - Level 3 (40–49%) for 2 other subjects,
 - Level 2 (30–39%) for 4 subjects,
 - a completed portfolio of evidence available for any 1 subject failed.

Different criteria are set for entry into degree, diploma and higher certificate study, as follows:

Qualification	Minimum entry requirement
Higher Certificate	Pass NSC with: At least 2 for the Language of Learning and Teaching (LOLT) of the higher education institution
Diploma	Pass NSC with: • An achievement rating of 3 (40–49%) or better in four subjects. • At least 2 for the Language of Learning and Teaching (LOLT) of the higher education institution
Bachelor Degree	Pass NSC with: • An achievement rating of 4 (50–59%) or better in four subjects from the designated list • At least 2 for the Language of Learning and Teaching (LOLT) of the higher education institution

Please note that universities may still add additional requirements to those mentioned above.

2.3. International Baccalaureate Diploma, International Baccalaureate Organisation

The International Baccalaureate Organisation (IBO), founded in 1968, offers three educational programmes for students aged 3 to 19 years. The three programmes are:

- the Primary Years Programme (PYP) for students aged 3 to 12,
- the Middle Years Programme (MYP) for students aged 11 to 16, and
- the Diploma Programme for students aged 16 to 19.

IBO programmes are offered by 2,715 schools in 138 countries. Schools are required to undergo an authorisation process to be able to offer any of these programmes, and upon receiving authorisation, they become known as 'IB World Schools'. These schools are provided with a curriculum that includes suggested teaching strategies, student assessment, professional development for educators, and a process of ongoing evaluation. The IB World Schools contribute to the processes of curriculum development, student assessment and the governance of the IB.

The IBO programme of interest in this research is the Diploma Programme, since it is a two-year pre-university course designed for students in the 16 to 19 age range, and is thus at a comparable level to the South African qualification.

The International Baccalaureate Diploma is a two-year programme of study, with subjects being offered at two levels: Standard Level and Higher Level (Document 9), rather like the old Higher and Standard Grades for the *Senior Certificate* (South Africa).

The Diploma Programme consists of six compulsory academic areas, each containing a number of elective subjects, namely:

- Group 1 = first language
- Group 2 = second language
- Group 3 = individuals and societies
- Group 4 = the experimental sciences
- Group 5 = mathematics and computer science
- Group 6 = the arts

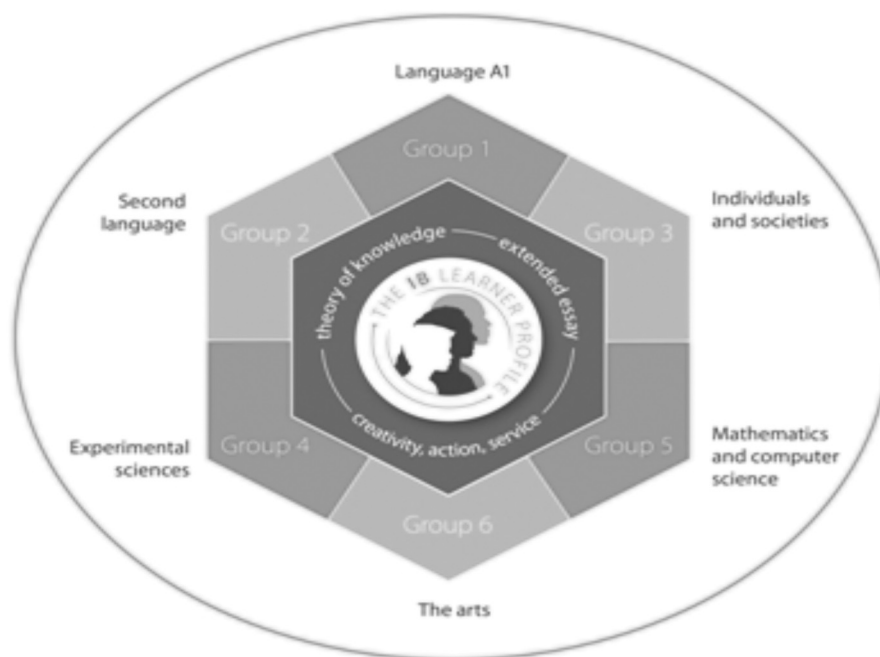
Candidates choose one subject from each of these six academic areas, although, in place of a group 6 subject (the arts), they may instead choose a second subject from groups 1 to 5. Candidates normally take three (or at most four) subjects at Higher Level (HL), and the rest at Standard Level (SL). Each HL subject involves 240 recommended teaching hours, and each SL subject involves 150 hours. Subjects at HL are covered in greater depth and breadth than at SL.

Besides the study programme in the individual subjects, the IB Diploma requires candidates to study the theory of knowledge (TOK), which is integrated into each subject. Through this component of the subject, candidates are encouraged to think about the nature of knowledge and the process of learning in their subjects, thus developing meta-cognitive knowledge. They are encouraged to integrate this learning across all their subjects, culminating in an extended essay, which investigates a topic of special interest to the candidate. The integrated essay requires independent research by the candidate, and results in a substantial piece of writing, similar to the kind of work students would be required to produce during university study.

In addition to the extended essay, candidates in the IB diploma are required to engage in experiential learning through a range of artistic, sporting, physical and service activities (CAS) (Document 9, p. 2).

A summary of the Diploma Programme curriculum model is usually represented by a hexagon with six academic areas surrounding the three core requirements.

Figure 1: Typical hexagonal Diploma Programme curriculum model



Candidates' achievement in the Diploma Programme is measured by means of internal and external assessment. The internal assessment includes oral work in languages, fieldwork in geography, laboratory work in the sciences, investigations in mathematics, and artistic performances. These internal assessments are carried out by the educator and checked by external examiners. They contribute between 20% and 30% of the total mark.

The external assessment consists of between two and three examination papers per subject, depending on the nature of the subject. These exams include essays, structured problems, short-response questions, data-response questions, text-response questions, case-study questions and multiple-choice questions.

The organisation of the IB diploma curriculum document is in terms of topics, followed by sub-topics, with estimated teaching times to cover the material. The outcomes expected of candidates at the end of the course of study are expressed in the form of assessment statements, e.g., "5.1.2 Distinguish between *autotroph* and *heterotroph*". The assessment statements indicate to examiners what candidates can be expected to do at the end of the course. Some educator's notes appear alongside some assessment statements and provide further guidance to educators (Document 9, p. 7).

The grades awarded for each course range from the lowest score of 1 to the highest score of 7. Scores from 4 to 7 are considered pass marks in a subject. Candidates can also be awarded a maximum of three additional points for their combined results for theory of knowledge and the extended essay. The highest total that a candidate can achieve is 45 points. The diploma is awarded to candidates who gain at least 24 points.

According to information provided by HESA, for entrance into South African universities, candidates currently need two Higher Level pass marks towards the International Baccalaureate Diploma as well as three Standard Level pass marks (provided English has been passed).

2.4. International General Certificate for Secondary Education (IGCSE), Advanced Levels, Cambridge International Examinations (CIE)

The CIE provides a wide range of international qualifications and programmes for candidates aged 5 to 18 years. These qualifications range from general (academic) qualifications to vocational qualifications and professional development for educators. The general qualifications offered are:

- For ages 5 to 11:
 - 1) Cambridge International Primary Programme
 - 2) Cambridge ICT Starters
- For ages 11 to 14:
 - 1) Lower Secondary Programme
 - 2) Cambridge Checkpoint
 - 3) Cambridge ICT Starters
- For ages 14 to 16:
 - 1) Cambridge IGCSE
 - 2) Cambridge International O Level
- For ages 16 to 18:
 - 1) Cambridge International AS Level and A Level
 - 2) Cambridge Pre-U

The CIE has worked in partnership with ministries of education, qualifications authorities and examination and assessment boards around the world for more than 150 years. In contextualising qualifications for particular environments, work is done with governments to reform education systems and to help with the localisation of examinations through the training of officials, educators, markers and examiners, in both curriculum development and assessment.

The CIE operates in 157 countries across Europe; South Asia; the Middle East; Asia Pacific; North, Central and South America; and Africa. In South Africa, there are approximately 40 CIE schools.

The CIE qualifications of interest in this report are the IGCSE and the International AS and A Levels. The reasoning behind the selection of the IGCSE is that it is the most popular international qualification in further education, and is considered by some countries as satisfactory preparation for university study. The International AS and A Levels were selected because they are pre-university level qualifications, and as such are important for comparison with the South African NSC.

The International General Certificate of Secondary Education (IGCSE)

The IGCSE is a two-year international qualification aimed at the 14 to 16 year-olds (or the 10th and 11th years of education). More than 70 subjects are available for study, and schools may offer any combination of these subjects. The subjects are organised into subject groups in the following way:

- Group 1: Languages
- Group 2: Humanities and Social Sciences
- Group 3: Sciences
- Group 4: Mathematics
- Group 5: Creative, Technical and Vocational.

In general, students are free to select whichever subjects they wish to study, and each subject passed *is individually certified*.

The teaching time per subject for the IGCSE is 150 hours over the two years of the course.

In the IGCSE, the internal assessment tasks may only be undertaken at schools that have been given written permission to undertake school-based assessment with their candidates. This internal assessment contributes 30% to the final mark. The external assessment in the IGCSE courses consists of a number of examination papers that include multiple choice questions, short-answer questions, structured questions and practical assessment, where appropriate. (In some subjects, not all examination papers are written by candidates, but examination papers are selected depending on the requirements and resources of the school.)

In some IGCSE subjects, there are two course levels, known as the Core Curriculum and the Extended Curriculum. The Extended Curriculum includes the material from the Core Curriculum, as well as additional, more advanced material.

Differing assessment grades are allocated to the Core and Extended Curricula:

For the Extended Curriculum: A*, A, B, C, D, E

For the Core Curriculum: C, D, E, F, G.

At present, Grades A to C serve as a pass mark for IGCSE or O-level subjects.

Apart from certificating individual subjects, the International Certificate of Education is awarded to students who pass exams in seven or more subjects with a 'C' Grade, including two languages, one subject from each of the other four groups, and one additional subject from any of the five groups.

Recognition of IGCSE qualifications for further study varies between countries and institutions. According to HESA, in Anglophone SADC countries (with the exception of Zimbabwe and Tanzania), IGCSE qualifications satisfy the entrance requirements for university, while in other countries a combination of IGCSE and A-Level qualifications is required. The requirements for entrance into South African universities are described under the International Advanced Level heading.

The International Advanced (A) Level

The International A Level is a two-year international qualification aimed at the 16 to 18 age range (or the 12th and 13th years of education), and is intended to follow on from the IGCSE or Cambridge O-Level qualifications. The A-Level courses are designed to be flexible, and can be structured in a variety of ways:

- Candidates may take all A-Level components in the same examination session leading to the full A Level
- Candidates may follow a staged route to the A Level by first completing the less extensive Advanced Subsidiary (AS) qualification in the first year. It is worth noting that in terms of curriculum and assessment, the AS Level is an optional qualification at the end of year one of the two-year A-Level curriculum. Therefore, at a later stage candidates can choose to complete the additional part of the course, leading to the full A Level.
- Candidates may take the AS-Level qualification only, which is general practice in the Southern African region, but seldom the case in the UK.

The AS-Level qualification is therefore an exit-level qualification in its own right, and is the first half of the full A-Level qualification. Each AS-Level course is based on approximately 180 hours of teaching time taken over a one-year period, while each full A-Level course is based on 360 hours, taken over a two-year period.

Candidates normally take three A-Level subjects, although some choose to take four. Each subject that a candidate takes at AS Level or A Level receives a separately certificated grade.

There is no contribution from internal assessment towards the final mark awarded for A-Level qualifications. The external assessment is in the form of a number of examination papers. These examination papers consist of multiple-choice questions and structured questions, including essay questions, practical skills assessment tasks where relevant, and tasks assessing candidates' abilities in planning, analysis and evaluation.

For the A Levels, candidates are awarded a grade from A* (highest level of achievement) to E (minimum required performance), while for AS-Level subjects, students are awarded grades from A (highest achievement) to E (minimum performance).

Recognition of CIE qualifications varies between countries and institutions. At present, for the purpose of entrance to South African universities, HESA considers Grades A to D as pass marks for AS- or A-Level subjects. A South African matriculation exemption is granted to holders of Cambridge International qualifications who meet any of the following criteria for approved subjects (which must include English Language):

- Pass marks in two A-Level subjects and three IGCSE or O-Level subjects
- Pass marks in three A-Level subjects and one IGCSE or O-Level subject
- Pass marks in four AS-Level subjects and one IGCSE or O-Level subject
- Pass marks in five AS-Level subjects.

2.5. Namibian Senior Secondary Certificate, Namibian Department of Education

In Namibia, education is compulsory for all candidates for the first 10 years of schooling (from ages 6 to 16). This is called the Formal Basic Education band. Thereafter, candidates may continue with Formal Senior Secondary Education, culminating in the Namibia Senior

Secondary Certificate (NSSC) Examinations. The Formal Senior Secondary Education is the educational level of interest in this research, since it constitutes the final two years of secondary schooling, and is hence at a comparable educational level to the NSC.

Namibian Formal Senior Secondary Education

After obtaining independence in March 1990, Namibia initiated a policy of educational reform at all school levels, and initially adopted the Cambridge IGCSE and the HIGCSE at the Senior Secondary level (Grades 11 and 12). The NSSC is a Higher International General Certificate of Secondary Education, a qualification offered by Cambridge University for Southern African countries that require a Grade 12 or matric equivalent. It is therefore considered equivalent to matric in most countries, and to the international AS-Level qualification.

For the Namibian Senior Secondary Curriculum, the CIE curricula were localised and developed, and are therefore of particular interest in this research, as they are examples of locally contextualised versions of the Cambridge H/IGCSE.

The Namibian Senior Secondary phase is a continuous two-year course for Grades 11 and 12. Candidates take a minimum of six IGCSE and/or HIGCSE examination subjects. The number of NSSC OL or HL subjects included in the candidate's subject combination will influence the level of pass achieved, and whether admission to further study will be allowed.

Schools, not candidates, select their *Fields of Study* and supplementary subjects according to the needs and resources available. Subjects are grouped in the following ways:

- Group 1: Languages
- Group 2: Social Sciences and Humanities
- Group 3: Natural Sciences
- Group 4: Mathematics
- Group 5: Creative, Technical and Vocational

Subjects are further grouped into six *Fields of Study*, namely:

- A. Agricultural Field of Study
- B. Commercial Field of Study
- C. Home Economics and Health Education Field of Study
- D. Social Sciences and Humanities Field of Study
- E. Natural Sciences and Mathematics Field of Study
- F. Technical Field of Study

Candidates may follow a two-language curriculum, where the required subject combination is two languages plus three subjects from a particular Field of Study plus one additional supplementary subject. Alternatively, candidates may follow a one-language curriculum, where the required subject combination is one language plus three subjects from a particular Field of Study plus two additional supplementary subjects. In addition, Physical Education and Life Skills are compulsory non-examination subjects in all Senior Secondary Schools.

The teaching time per subject for each of the NSSC OL and HL courses is 320 hours over the two years of the course.

Candidates' performance is measured by means of internal or school-based assessment and external examinations.

As for the CIE IGCSE examination, the assessment gradings for the NSSC OL are Grades A to G.

The gradings for assessment for the NSSC HL are 1 to 4, where Grade 1 is awarded for the highest level of achievement, and Grade 4 for the lowest acceptable level of achievement. Results below the minimum required standard are ungraded.

At present, for the purpose of entrance to South African universities, Grades 1 to 3 are considered pass marks for NSSC HL subjects, and Grades A to C are considered pass marks for OL subjects. A South African matriculation exemption is granted to holders of Namibian Senior Secondary qualifications who have passed five approved subjects with at least four subjects at HL and one at OL.

3. Methodology of the Qualification Evaluation Project

3.1. Background

Umalusi has an extended history of research which has had as its primary purpose the establishment and understanding of the standard of the South African matric – first the *Senior Certificate* (Umalusi, 2004, 2005, 2006, 2007, 2008), and more recently, its successor, the *National Senior Certificate* (Umalusi, 2009a,b,c). The initial research focused on the level of cognitive demand of the SC examinations, which were compared to determine whether the standard of the matric examinations had dropped, remained constant, or improved over time. Later research compared the *Senior Certificate* with other similar, qualifications both locally and elsewhere in Anglophone Africa, and at this point the curricula concerned were drawn into the analysis. With each research project, the brief provided to the evaluators became more specific, until the process of the development of the instruments used in Umalusi's research itself became the focus for self-reflection in the 2007 report, *Making educational judgements*. Then, in 2008, with the *Maintaining Standards* project, the criteria emerging from the curriculum analyses undertaken in the *Learning from Africa* project were transformed into a very much more structured instrument that would allow for both qualitative and quantitative reporting on the similarities and differences between the NATED 550 curricula for the SC, and the NCS, which underpins the NSC. Similarly, the instruments used previously for comparing examinations were revised and refined in order to provide an item-by-item analysis, which helped evaluators to determine both the cognitive demand and the level of difficulty of the papers. The detailed information that the 2008 evaluation provided was seen as critical support for Umalusi's Standardisation and Assessment Committee in its deliberations as it evaluated the first NSC examinations in the absence of any historical norm for standardisation.

Not only does *Making educational judgements (2007)* consider how the evaluative tools have evolved, it also explains how Umalusi has selected its evaluators, and why.

The present self-referencing exercise, which compares the *National Senior Certificate* (NSC) with selected international qualifications, once again uses a comparative analysis of curricula and of examinations to establish the similarities and differences in the nature and extent of the learning presupposed in a critical set of subjects: English First Additional Language, Mathematics, Physical Science, Life Sciences/Biology and Geography. These subjects, which are regarded by higher education in South Africa, as 'gateway subjects', formed the basis for the comparison between the old matric and the new NSC, and have in turn, formed the basis of this comparison between the NSC and the selected international qualifications.

In order to be able to undertake the new research, the Umalusi evaluation teams, which had undertaken the *Maintaining Standards* research, were invited to participate in the new international equivalence-setting research. By and large, the teams undertaking the research remained reasonably stable, though some changes in composition have inevitably taken place. In addition, the instrument used for the present research, while identifiably the same as the one used previously, was adapted to answer the questions arising from the new comparisons needing to be made. These changes were made to the instrument by Celia Booysse and Dr Sharon Grussendorff, in consultation with Cobus Lotter from HESA.

3.2. Umalusi evaluation teams and processes

The Umalusi evaluation teams were selected for each of the five subjects (English First Additional Language, Mathematics, Physical Sciences, Biology/Life Sciences and Geography) on the basis of their knowledge and experience of the subject area and the education system. Each team of subject specialists comprised of four members with the following expertise:

- an Umalusi moderator with at least five years' experience,
- a subject methodology expert from a university school of education or equivalent, with at least three years of experience in that position,
- a subject advisor with at least five years of experience in that position,
- an educator considered by subject advisors to be an excellent educator, with at least 10 years' teaching experience, as well as a year or two of exam marking experience, and/or
- a subject-field expert working at an educational institution specialising in teaching and learning of the particular field.

The evaluation teams met together for an initial four-day workshop to be briefed in detail about the project, the qualifications they would be evaluating, and the instrument. The groups then worked with the various curricula and the evaluation instrument. The teams met for at least two more extended working sessions, which also allowed for refining the findings and doing the examination analysis. In between the workshops, individual team members helped by preparing data for the team.

The subject methodology expert played the role of the team leader and took responsibility for the compilation of the final report on behalf of the subject team.

3.3. The research tasks

The Umalusi evaluation teams were requested to address the following research tasks:

1. Comparability of the NSC curriculum with the other curricula

The teams had to give an opinion as to whether the NSC curriculum is comparable with the curricula belonging to the other international qualifications. For example, can the language curriculum, of the IB be accorded the same value, or greater or less value, than the NSC, particularly in relation to the breadth, depth and cognitive complexity of the learning embodied in its respective curricula? Teams were also requested to comment specifically on the respective value ('creditworthiness') they would assign to each of the curricula. The following additional questions were posed to each team:

- What is your opinion about the assumption of equal/comparable creditworthiness (value) of the curricula included in this research? Please give reasons for your position.
- What worth would you attach to each curriculum?
- What reasons/justification can you mention from the evaluation process for your opinion?

The matter of the comparability of the curricula (including exams) is not only important in terms of a more nuanced national understanding of how the premier South African school exit qualification compares with similar qualifications internationally, it is also equally important to South African higher education institutions that need to determine how international school-leaving qualifications compare with the South African qualification they usually work with.

2. Mapping of NSC curriculum against the other curricula for determining admission to higher education

The evaluation teams were asked to assess whether the international qualifications could be mapped in relation to the NSC, in terms of their curricula, in order to enable HESA to determine – in due course – appropriate minimum admission requirements to South African higher educational institutions for candidates with these international educational qualifications.

3. Overview of assessment requirements

The evaluation teams were requested to provide a brief overview of the assessment requirements of the various curricula, offering a judgement on how the curriculum content (concepts) and expected skills are examined. The following questions were posed:

- By scanning the exam papers, did you find a lowering of expectations from what was indicated in the curriculum?
- Are the expected learning outcomes examined sufficiently?
- What cognitive demands are apparent in the papers?
- How would you judge the overall standard of the assessment?

4. Comparison with Namibian Senior Secondary Qualifications:

The evaluation teams were requested to do an 'ex post facto-check' on the Namibian NSSC OL (Ordinary Level, equivalent to IGSCE/O Levels) and NSSC HL (Higher Level, equivalent to HIGSCE/AS Levels) as SADCC-contextualised examples of CIE qualifications. They were asked to:

- Give their opinion as to whether the Namibian curricula are comparable to the NSC curriculum.
- Judge whether the curricula, as reflected in the examinations, are comparable with, or of a higher or lower level of cognitive demand than the NSC curriculum.
- Justify their assessment by referring, for instance, to content, scope, level and abilities.

3.4. The evaluation instrument

A full background to and description of the Umalusi evaluation instrument that was used in the 2008 *Maintaining Standards* project is available in that report (Umalusi, 2008). Consequently, only a brief overview of this instrument as it was adapted for the present study is provided here.

The evaluation instrument requires the evaluators to compare and report on a number of significant curriculum elements. These elements, which are itemised below, became the headings for each Umalusi subject team's report. (The numbers in brackets below refer to the sections and subsections of the curriculum evaluation reports.)

(1) Content and skills specification and coverage

In the first section of the report, evaluators were asked to consider the content and skills of the curricula, in light of the depth and breadth of specification, topic weighting, and focus.

(1.1) Content specification (breadth and depth)

The Umalusi evaluation teams were asked to draw up table, with a full list of content topics for their subject. Separate columns for each qualification allowed teams to indicate which of the content topics was specified in that particular qualification, and whether or not these were examinable. The teams also provided an indication of the depth in which the topics were dealt with in the various curricula, to be recorded as *superficial*, *medium* or *deep*. From this data, the teams could draw conclusions as to the breadth and depth of content included and the content examinable in each of the respective curricula.

Table 2: Table for recording analysis of content

SUBJECT															
Full bibliographical details of curriculum documents														#	
														1	
														2	
1. Content required	CONTENT DETAILS			NSC		IQ1		IQ2		IQ3		IQ4		IQ5	
List all content described in the curriculum documents here (1.1=yellow; 1.2=blue; 1.3=green) (include document and page references please)	Document #	Page	Level	Specified	Examinable	Specified	Examinable	Specified	Examinable	Specified	Examinable	Specified	Examinable	Specified	Examinable
	(add as many rows as are needed)	1	E												
		8	M												
		3	D												
Totals															
% Discipline-specific curriculum content															
% Curriculum content that is general information															

(1.2) Content weighting

Evaluators were to determine, where possible, the amount of time specified in the respective curriculum documents to be spent on different content areas. This was used to provide additional information on the comparability of the various curricula.

(1.3) Content focus

The evaluators were asked to comment on the overall content focus in the respective curricula. To do this, they categorised each content topic as *discipline-specific*, *generic*, or *everyday applicable*. A content topic is considered *discipline-specific* when it is specifically applicable to the further study of the subject under evaluation. It is considered *generic* when it is relevant for school subjects outside of the subject in question. A topic would be classified as *everyday* when it is relevant for everyday life outside of the classroom context and could well be picked up in the course of everyday living.

(1.4) Skills specification

The Umalusi evaluation teams compiled tables that listed the skills for their subjects, with separate columns for each qualification indicating which of the particular skills was specified in that qualification, and whether or not these were examinable.

(1.5) Skills weighting

The evaluators were then required to determine the weighting of the skills in the various curricula, in terms of the amount of specified time in the curriculum documentation.

(1.6) Skills focus

The *skills focus* in the respective curricula was determined by categorising each individual *skill* as *discipline-specific*, *generic*, or *everyday applicable*. As for the content topics, skills are considered *discipline-specific* when they are specifically applicable to the further study of the particular subject. Skills are described as *generic* when they are relevant for school subjects other than the subject being evaluated. They are considered *everyday* when they are directly relevant for life outside of the classroom, and need not necessarily be learned in the classroom.

(1.7) Text specification

This task, which was undertaken by the Umalusi language team only, required the evaluation team to record the numbers and types of texts (recommended and compulsory) in the respective curricula. This information would contribute to the assessment of the breadth and depth of work to be covered in the curricula.

(2) Organising principle and coherence

Umalusi evaluators were asked to determine whether there are organising principles underlying the various curricula. The teams were requested to provide descriptions of these principles, and to comment on the clarity with which they are elaborated in the documentation.

(3) Sequence, progression and pacing

Evaluators were asked to find evidence of progression in the content and skills covered within a curriculum in any given year, and from one school year to the next. Progression should be evident in the conceptual development of content and skill areas, as well as in increasing levels of cognitive complexity.

(4) Aims, purpose, vision, general outcomes and articulation

The Umalusi evaluation teams were required to assess the clarity of the aims of each curriculum being evaluated, and the link with the content, skills, sequencing, progression, and pacing of the curricula. The teams were requested to describe the aims, as well as the guidance given for achieving these aims. They were also requested to comment on how the possible contexts within which the curricula were to be implemented were taken into account, and whether articulation with other parts of the system was outlined in the documents.

(5) Teaching approach and subject methodology

The evaluators were requested to assess the general and subject-specific teaching methodologies that are outlined in the various curriculum documents. The Umalusi teams were asked to describe the approaches, and to comment on their suitability for the learning contexts, the content and skills included in the curricula, and the interests and capacities of candidates for whom the curricula were intended.

(6) Assessment guidance

The Umalusi evaluation teams were requested to assess the quality of guidance given in the various curricula for internal and external assessment. They were asked to describe the numbers and types of tasks, the weightings for the various tasks, and the evaluation criteria to be used in assessment.

(7) Availability and user-friendliness of the curricula

The evaluators were requested to comment on the overall accessibility and user-friendliness of the documentation for the respective curricula.

(8) Concluding tasks

The Umalusi evaluation teams were asked to provide clear concluding statements that addressed the research questions described in Section 3.3 above. The conclusions were to be justified using the various findings in the report.

The Umalusi evaluation teams were requested, in the concluding tasks, to adjudicate on the quality of the examinations associated with the international qualifications. (In the 2008 *Maintaining Standards* reports, the evaluators had been asked to do detailed item-by-item analyses of the SC and NSC examinations using an instrument developed for that purpose. This level of detail was not required for the international benchmarking exercise, since its function in the earlier research had been to inform Umalusi's standardisation processes.) Each team was consequently required to examine the sample of international examinations provided in order to answer the following questions:

Task 5

Assessment-overview: Give a judgement on how the curriculum content (concepts) and expected skills are examined. (1000 words)

- By scanning the exam papers, did you find a drop in the demand, i.e. a lowering of the expectations as indicated in the curriculum?
- Are the expected learning outcomes examined sufficiently?
- What cognitive demands are apparent in the papers?
- How would you judge the overall standard of the assessment?

Task 6

You are requested to do an 'ex post facto-check' on the Namibian NSSC OL (Ordinary Level, equivalent to IGSCCE) and NSSC HL (Higher Level, equivalent to HIGSCCE/AS) as locally contextualised examples of CIE qualifications. (1500 words)

- Give your opinion on whether the mentioned curricula are comparable to the NSC.
- Judge whether the curricula are comparable with/or of a higher – or lower – demand than the NSC?
- Justify your stand by referring, for instance, to content, scope, level and ability.

4. Trends across the curricula

Although the Umalusi evaluation teams were working towards a common goal of assessing the comparability of the selected international curricula with the NSC curriculum, the subject teams approached the task in a variety of ways, usually due to the nature of the discipline or the formats in which the curricula are presented. Nevertheless, despite these differences, which will become evident to anyone going on to read the individual subject reports, the similarities in the findings present a reasonably consistent view of how the curricula and examinations for the South African NSC rated against the curricula and examinations for the selected international qualifications. The Umalusi teams' approaches and consequent findings are briefly described below, together with any overarching trends that may have emerged.

4.1. Curriculum content and skills

The breadth as well as depth of secondary school curricula have been shown to have a significant impact on the future success of students in higher education (Schwartz et al., 2008). This study suggests that a secondary school curriculum that includes a few topics that are studied in depth is associated with successful study at tertiary level, even if the detailed study has been at the expense of some breadth.

In the sections that follow, comparisons have been made between the various curricula regarding both breadth and depth of content. All of the Umalusi teams focused predominantly on the content and skills described in the curricula in order to be able to assess the comparability of the curricula, and these factors will therefore be given the greatest emphasis.

Three of the four Umalusi subject teams, namely Physical Sciences, Life Sciences and Geography, were able to report separately on content and skills. The Umalusi Mathematics team, on the other hand, found that content and skills in their discipline are too closely related to be treated separately, and they therefore treated content and skills together. The Umalusi English FAL team argued that content and skills are always interlinked in languages and it is difficult to specify content and skills or to link them directly to tuition time and content focus. They therefore used outcomes, assessment standards, assessment objectives and outlines to identify the particular content and skills required.

4.1.1 Approach to curriculum

In order to assess the comparability of the various curricula, all of the Umalusi teams assessed the breadth of content coverage in some way.

All of the teams constructed a matrix that listed generic content for the subject. A separate column for each qualification allowed the teams to indicate which content topics were dealt with in each qualification. They were then able to assess the breadth of each curriculum, measured as the total number of topics covered per course of study.

The Umalusi teams considered the teaching density of each course as the ratio of number of topics to teaching time. They also explored the overlap in content between the various

courses, and considered whether there were any critical gaps in the content for any of the courses.

The **Mathematics** evaluation team compiled a list of the content and skills from all the curricula and rated the depth with which each sub-topic was treated *relative to the NSC curriculum*. The respective ratings were similar to, lower than or higher than the level of that topic in the NSC curriculum.

The **Life Sciences** evaluation team constructed a generic list of content under seven main headings that are commonly used in core Biology courses. Their complete list of generic content consisted of 72 topics, and each curriculum was measured in relation to the generic content list. In other words, the breadth of each curriculum was measured as the ratio of the total number of topics covered per course of study to the number of topics on the generic content list. The team estimated the depth in which each topic was dealt with, using as criteria that the word *deep* would apply to topics close to the benchmark of a standard first-year University textbook; *superficial* would apply to topics dealt with in a considerably less rigorous manner, and *medium* would apply to topics that fell somewhere in-between. This categorisation enabled them to make judgments regarding the relative depth of the respective courses. The Life Sciences evaluation team also considered the teaching density of each course as the ratio of number of topics to teaching time. They explored the overlap in content between the various courses, and considered whether there were any significant gaps in the content of any of the curricula.

The **Physical Sciences** evaluation team used a similar approach to that of the Life Sciences team. They compiled a list of 88 generic topics, measuring breadth according to ratio of the total number of topics covered in each course in relation to the generic topic list, and the depth as *superficial*, *medium*, *deep* or *deep+* (this last category was used for very advanced topics that are usually dealt with beyond the first year of university study, such as relativity and quantum theory). To gain a more realistic sense of the breadth, the Physical Sciences team also considered the number of topics in relation to allocated teaching time. In addition, this team considered the extent of overlap between the NCS and the international curricula.

The **Geography** evaluation team also compiled a list of generic content topics, indicating which of the topics was covered in the respective curricula. This they used to give them an assessment of the breadth of each curriculum. They addressed the depth of the various curricula qualitatively, considering the extent of abstraction and depth of knowledge and understanding required.

The **English First Additional Language** evaluation team, on the other hand, analysed the learning outcomes and assessment standards as presented in the NSC curriculum and worked with the assessment objectives required to be achieved in the CIE and IB curricula to arrive at a list of content and skills to be mastered. The English FAL team used especially weighting in assessment to determine the main focus of the particular qualification. In order to make a final decision on weighting and focus, the team used the curriculum outlines (also referred to in some of the qualifications as syllabus outlines), assessment guidelines and curriculum statements of the different qualifications to make a final decision on content coverage, weighting and skills focus.

4.1.2 Results of comparisons of breadth of content (topics covered)

In general, there is a high degree of overlap between the NSC curriculum and the CIE and IB curricula in terms of topics covered (breadth of content). The Physical Sciences, Life Sciences and Geography evaluation teams found that most of the topics covered in

the IB and CIE curricula are covered in the core topics of the NSC curriculum. Within each broad area, it was observed that there are both notable overlaps and notable differences in the specification of sub-topics, but that these differences in sub-topics seem to relate the contents more closely to the contexts of the envisaged candidates.

The **English FAL** evaluation team found that the curricula and the demands are very different in the various qualifications. No indication of increase in cognitive demand is provided in AS-Level or A-Level curriculum documents. The AS-Level curriculum consists of English Language, which comprises passages for comment (Paper 1) and composition (Paper 2). Candidates are required to comment on the use of the language in the selected texts and to complete a directed writing task. For composition, candidates are assessed on narrative/descriptive/imaginative writing and discursive/argumentative writing. In addition, candidates are assessed on English Literature which comprises poetry, prose and drama.

Although content is not specified in lists in the IB curriculum, particular content for both HL and SL can be identified from the skills embedded in the aims of the curriculum and the so-called syllabus outlines. The content to be covered is linked to:

- Language
- Texts
- Cultural awareness
- Options
 - Cultural options – language and culture, or media and culture
 - Literary options

Candidates at the Higher Level must study four options, whereas candidates at the Standard Level must study three options. In the cultural option, they may choose between language and culture or media and culture.

In the literary option, candidates should consider how language and style are used to present ideas, themes, feelings and attitudes. They explore which aspects of literary texts are specific to the target language and its associated cultures, and which aspects cut across cultural and linguistic boundaries. This strategy clearly promotes multiculturalism and multilingualism in the IB qualification, but not necessarily an awareness of poetry, narrative or drama. It seems as though a wide variety of oral or written texts are used only for assessment purposes and therefore also for linguistic and analytic skills, but not for literary enrichment. The English FAL team was of the opinion that the main purpose of the IB programme is for candidates to be able to use language for communicating in written and spoken language, and that the general focus of the IB programme is for a candidate to be able to understand and use the target language accurately.

For **Mathematics**, the coverage of topics in the NSC curriculum matches most closely with the IB Maths SL, and the following CIE AS combinations:

- Pure Mathematics 1 (P1) and Pure Mathematics 2 (P2);
- Pure Mathematics P1 and Statistics 1 (S1);
- Pure Mathematics P1 and Mechanics 1 (M1).

For **Physical Sciences**, the number of topics covered in the NSC curriculum is most similar to the full CIE A-Level and IB HL courses.

The **Geography** evaluation team found the full CIE A-Level curriculum to be most comparable to the NSC curriculum for Geography in terms of breadth. The IB syllabi show the

highest level of breadth in terms of content coverage, while, in relation to the NSC curriculum, the CIE IGCSE and AS curricula contain notable gaps in the content specified.

For **Life Sciences**, the curricula most similar in breadth to the NSC curriculum are the IGCSE and the Namibian curricula, and the most dissimilar curricula are the full CIE A-Level and IB HL and SL curricula. The overall breadth of content is lowest for the A-Level curriculum and highest for the IB HL curriculum. This highlights the differing emphases of the courses, namely that the IGCSE and NSC curricula are designed to give a broad overview of Biology, whereas the IB and particularly the A Level are more selective, with a narrower range of topics, which are covered at greater depth.

For **Mathematics**, certain significant topics, e.g. vectors and matrices, covered in both the CIE and IB courses, are not covered in the NSC. For **Physical Sciences**, the most notable gaps from the examinable curriculum are the quantitative aspects of chemistry (such as molar and stoichiometric calculations and volumetric analysis), acids and bases, gas laws, the periodic table and trends, and inorganic chemistry (and this despite its being an enormous curriculum in its present form). The NSC **Geography curriculum** has significantly fewer topics on Population Geography than both the CIE and IB curricula.

For **Physical Sciences**, it was noted that the NSC curriculum is the only where not all of the specified topics are examinable in the final examination. This creates a risk of considerable gaps in important knowledge areas.

4.1.3 Results of comparisons of depth of content

It seems that, in terms of the depth of content in the NSC curriculum, the most comparable curricula seem to be the IB SL and CIE AS-Level curricula.

The **English FAL** evaluation team linked depth of content with what is expected from the candidates. The team found that the curricula and the demands are very different in the various curricula. The CIE AS Level requires the candidate to be able to use the language in the selected texts and to complete a directed writing task. For composition, candidates are assessed on narrative/descriptive/imaginative writing and discursive/argumentative writing. The A-Level curriculum consists of English Literature which comprises prescribed poetry, prose, drama, Shakespearean texts, 20th Century texts and comment and appreciation of previously unseen passages from poetry, prose or drama. Although an ability of language usage, and knowledge of language structures and grammar is assumed in the CIE A Level, the evaluators still found that to be a shortcoming in the qualification. Regarding the English FAL in the IB qualifications, skills are expected to develop from simple communication and understanding of the language to an appreciation of the subtleties and a critical examination of various texts in different forms, styles and registers. By the end of the Language A2 course, the candidates are expected to have achieved various forms of listening, speaking, reading and writing in the target language. As in some of the other subjects, the English FAL in IB HL demands higher order thinking in terms of interpretation, analysis and synthesis.

For **Mathematics**, the level at which topics are covered in the NSC curriculum matches most closely to that of the IB Maths SL. The IB Maths HL and Further Maths in general cover topics at a *higher* level than the NSC curriculum. The level of topics covered in the NSC curriculum is generally higher than in the IGCSE Core and Extended curricula. The NCS depth of content is most similar to the following CIE AS combinations: Pure Mathematics 1 (P1) and Pure Mathematics 2 (P2); Pure Mathematics P1 and Statistics 1 (S1), and Pure Mathematics P1 and

Mechanics 1 (M1). The depth of the CIE A-Level core is greater than the NSC curriculum for most topics.

For **Physical Sciences**, the NSC curriculum is similar in depth to the CIE AS and the IB SL courses, although both these curricula include a small percentage of topics at the 'Deep +' level (3% and 7% respectively), while 'Deep+' topics do not appear at all in the NSC curriculum (these Deep+ topics are typically covered at university level in South Africa). The NSC curriculum has a somewhat greater percentage of superficial content than the AS-Level curriculum, but this is expected since the NCS includes Grade 10-level content, whereas the AS-Level curriculum is aimed at a slightly older age group.

The **Geography** evaluation team found that the only international qualification that is comparable to the NSC in terms of depth is the CIE AS course. The IGCSE has the least depth of content of all the curricula. The content specified in the IB curriculum is notably more abstract and requires greater depth of knowledge and understanding than for any of the other curricula, while the full A Level goes into much greater depth than the NSC does, but only in a few topics.

For **Life Sciences**, the NSC curriculum at both Grades 10 and 11 combined and Grades 11 and 12 combined was intermediate between IGCSE and A Level (or IB), although the IGCSE Extended Curriculum approaches the depth of the NSC curriculum.

4.1.4 Content weighting

The **English FAL** evaluation team found that because of the integrated approach followed in the NSC, there is no clear indication of content weighting as such. From the *Subject Assessment Guidelines (SAG)*, however, the team found that there seems to be a greater emphasis or focus on writing (Learning Outcome 3) as writing carries 100 marks out of a total of 150 marks (oral excluded), whereas the mark allocation for the other Learning Outcomes is as follows:

Learning Outcomes 1 and 2: 50 marks (reading as an oral task)

Learning Outcome 2: 70 marks (reading and writing)

Learning Outcome 4: 80 marks (language in context).

As in the case of the NSC, content and skills in the CIE IGCSE qualification are interlinked in each objective; content is therefore used to demonstrate skills. However, from the assessment summary, the team found that reading and writing (Paper 1) for both core and extended tiers carry a weighting of 70%, while listening carries a weighting of 30%. There is thus a heavy focus on listening, which was not found in the NSC.

As with the NSC and IGCSE qualifications, content and skills in the CIE AS- and A-Level curricula are interlinked, and are presented in the assessment objectives. As a result of the fact that no specific content and skills specifications are provided, the team used the assessment guidelines provided to determine content and skill weighting. *Paper 1* includes passages for comment, on which candidates must answer two of three questions that involve a commentary on use of language in the passage, followed by a directed writing task based on the passage.

Paper 2 also focuses on writing. The emphasis in this paper is on the use of style and language in some narrative/descriptive/imaginative writing (Section A), while Section B includes discursive or argumentative writing on which candidates do not receive any guidance. The AS-Level candidate must write both narrative and discursive pieces, whereas in the NSC, a candidate may choose to write only a narrative essay.

In both the IB HL and SL programmes for English FAL, the assessment weighting is the same – external (Papers 1 and 2) 70%, and internal 30%. As for the CIE qualifications and the NSC, the focus is mainly on writing. This is evident from Paper 1 of the IB HL, in which the candidates must write a comparative commentary on one of two pairs of unseen texts that are linked by a theme. The candidates should be able to comprehend, interpret and analyse a particular text in order to give an opinion and to compile a commentary. This set of skills is high in its cognitive demand.

Although there is a greater focus and therefore also weighting in the NSC, CIE AS and in the IB qualifications on writing, the expectations (level of demand) and levels of skills related to writing differ. The IB levels require more – and more cognitively demanding – forms of writing than the NSC does.

Two of the Umalusi teams, namely Physical Sciences and Life Sciences, considered the ratio of specified content topics to available class time as an indicator of the relative teaching densities of the courses.

The **Life Sciences** evaluation team found that the density of teaching is highest in the IB SL, followed by the IGCSE, NCS Grade 10, IB HL and NCS Grade 11. The NSC curriculum for the Grade 12 year, however, has a substantially lower teaching density than for the other grades, and is on a par with the AS Level. The CIE A Level has a very low teaching density, which gives the impression that there may well be a higher level of candidate independence, which may further indicate that more is expected from candidates and that, therefore, less time is available to spend on direct input.

The **Physical Sciences** evaluation team found the NSC curriculum to have a far greater teaching density than all of the other curricula, followed by the IGCSE, IB SL and IB HL. Similar to the Life Sciences, they found the CIE A Level to have the lowest teaching density. This would suggest that the NSC curriculum would need to be covered very superficially if all topics were to be covered in the time available, or alternatively, that content is being left out in order to focus on the most critical topics most likely to be examined.

The **Geography** evaluation team considered the relative weighting of the two broad sections into which geography curricula are normally split, namely physical and human geography. They based this weighting on the hours specified in the exam weightings for the various curricula. Their findings were that each curriculum requires equal attention to be paid to these two broad sections.

Due to a lack of specification of class time and examination weighting per topic, the **Mathematics** evaluation team were unable to provide any assessment of content weighting.

Only the IB documentation provided a suggested classroom time per topic, so none of the Umalusi teams found it possible to evaluate content weighting on this basis.

4.1.5 Content focus

The evaluators were asked to comment on the overall content focus in the respective curricula. To do this, they categorised each content topic as *discipline-specific*, *generic*, or *everyday applicable*. Most Umalusi evaluation teams found that the NSC curriculum, like all the other curricula, focuses about two thirds (66%) to three quarters (75%) of their content on discipline-specific content, while the remaining third or quarter of the content is generic, or applied, in the case of the Life Sciences.

Since **Mathematics** is both a discipline in its own right and a tool in many other disciplines, the Umalusi evaluation team looked at the relative weighting of Pure Mathematics, Applied Mathematics and Statistics in the curricula, and at the way in which extra-mathematical contexts are described in the curricula or reflected in the examinations. They found that the NCS has a similar focus in terms of Pure Mathematics as the IB Mathematics SL and most of the IB Mathematics HL topics, but that the NSC curriculum core focuses less on Statistics and more on Applied Mathematics than do the IB courses. IB Mathematical Studies focuses less on Pure Mathematics and gives a much greater weighting to Statistics than the does the NSC core curriculum. A clear comparison could not be made with the AS- or A-Level courses, since the AS-Level courses allow candidates to specialise in Pure Mathematics or to combine Pure Mathematics with either Statistics or Mechanics, and the A-Level courses allow candidates to combine Pure Mathematics with either Statistics or Mechanics, or both.

Seventy-six percent of the content in the NSC **Physical Sciences** curriculum is classified as discipline-specific, which is in line with that in the CIE IGCSE and A-Level courses. The IB courses are even more weighted towards discipline-specific content, with the ratio of discipline-specific to generic topics being 90%:10% respectively. The percentage of everyday content in the NSC (82%) is in line with that in the CIE IGCSE and A-Level courses. Again, the IB courses differ from the others in this regard, with roughly 70% of the topics relating to everyday life.

For **Geography**, the NSC curriculum matches the IB HL most closely in terms of discipline-specific versus generic content (72%:28%). The CIE AS content is notably discipline-specific, with the ratio of discipline-specific to generic topics being 88%:12% respectively. The Geography evaluation team considered all of the content topics to be applicable to everyday life.

The **Life Sciences** evaluation team considered the relative percentages of discipline-specific and applied biology topics. They found the NSC curriculum to be most similar in this regard to the IB curricula, with the ratio of discipline-specific to applied topics being roughly 75%:25% respectively. All of the CIE curricula place more emphasis on the discipline-specific content, with the ratio being roughly 85%:15% respectively.

4.1.6 Skills coverage

The skills covered in the various curricula were assessed in different ways by the various Umalusi evaluation teams. As has already been mentioned, the Umalusi Mathematics and English FAL teams did not consider skills as separate from content, but dealt with these together. The skills have therefore been covered in the above discussions on content.

The **Life Sciences** evaluation team analysed each curriculum by searching for specific mention of skills. These were divided into thinking and reasoning skills, skills for conducting an investigation, skills specific to Biology, and skills that are used in other contexts. Their findings were that the NSC curriculum covers a more representative range of discipline-specific skills than any of the other curricula, although the A-Level and IB courses provide opportunity for more advanced laboratory skills. In terms of skills weighting, they found that overall, practical work is weighted at 20–25% of the final mark for all curricula except the NSC curriculum, where only 12.5% of the final mark comes directly from practical activities.

The **Physical Sciences** evaluation team used the learning outcomes and assessment standards (or assessment objectives) of the courses as an expression of the required skills in

the curricula. In addition, they also considered the more discipline-specific skills that may have been specified as part of the curriculum content. They found that the skills covered are very similar across the various curricula, but that, in general, they are very generically described, and are applicable to any scientific course. However, in the CIE AS and A Levels and IB curricula, additional practical skills listed in the content outline give a more discipline-specific focus to the skills.

The **Geography** evaluation team classified the specified skills into the following categories: map work skills and techniques, geographical enquiry skills and techniques, and demonstrating the recall and understanding of knowledge. In addition, the NSC curriculum contains the computer-based skill of using Geographical Information Systems (GIS) software. This team found that there is considerable overlap in the skills specified in the various curricula – both general information processing skills and discipline-based skills such as those related to map work. Only in the NSC curriculum is there specific mention of the computer-based skill related to the use of Geographical Information Systems (GIS) software – although at present the knowledge of, rather than the use of GIS is examined, since few schools have access to the requisite resources to actually use GIS. The level of difficulty of the skills is moderate (average) in all of the curricula, except in the IB, where more advanced quantitative methods are specified.

From the findings of especially the Physical Science and Geography teams, a trend in the SA curricula seems to suggest avoidance of discipline-specific skills, even if they are somehow referred to in the curricula.

4.2. Organising principle and coherence

Umalusi evaluators were asked to determine whether there are organising principles that underlie the various curricula. The teams were asked to provide descriptions of these principles and to comment on the clarity with which they are elaborated in the documentation. For most of the subjects included in this study, it was found that the NSC curriculum has the strongest explicit organising principles. These principles are clearly described in the NSC documents. Moreover, the NSC curricula are organised according to learning outcomes and knowledge areas, rather than traditional topic clusters. Furthermore, the NSC organising principles are integrally linked to the assessment standards. Finally, NSC subjects, in the *Learning Programme Guidelines*, explain how the learning outcomes relate to both the critical and developmental outcomes, which form an intrinsic part of many qualifications lodged on the NQF.

The NSC **English FAL** curriculum is organised according to nine principles which frame the NSC across all subjects and learning areas. These are social transformation; Outcomes-Based Education; high knowledge and high skills; integration and applied competence; progression, articulation and portability; human rights, inclusivity, environmental and social justice; valuing indigenous knowledge systems; credibility, quality and efficiency. However, the principle of Outcomes-Based Education (OBE) is the most fundamental principle according to which the NSC is organised, and is aimed at allowing candidates to reach their maximum potential through the setting of learning outcomes and related assessment standards to be achieved at the end of each grade. Outcomes-Based Education (OBE) also includes critical and developmental outcomes on which the learning outcomes are based. These critical and developmental outcomes are derived from the Constitution of the Republic of South Africa.

The coherence of the English FAL curriculum is ensured by the fact that the curriculum is organised around four learning outcomes (which are the same for all grades throughout the FET band) and related assessment standards, which increase in depth and difficulty from one grade to the next.

Just as the organising principle of the NSC is based on learning outcomes and related assessment criteria, so the IGCSE is organised around objectives, especially assessment objectives. These assessment objectives are reading, writing, listening and speaking. The refined objectives for reading and listening for both the core and extended tiers are exactly the same. Apart from a few differences, the refined outcomes for writing and speaking are very similar.

The AS- and A-Level curricula are organised according to assessment objectives which differ according to the core focus of a course.

The objectives for English language (AS Level) are:

- reading and understanding of a variety of written material
- knowledge and understanding of the English language
- the ability to write clearly, accurately and effectively.

The objectives for Literature in English are:

- the ability to respond to texts
- understanding of the ways in which writers shape meaning
- the ability to produce informed, independent opinions on literary texts
- the ability to communicate knowledge and insight appropriate to literary study
- the ability to appreciate and discuss opinions on literary works (A Level only).

The objectives for Language and Literature in English are:

- knowledge and understanding of features of the English language
- the ability to write clearly, accurately and effectively
- the ability to respond to texts
- understanding of the ways in which writers shape meaning
- the ability to produce opinions and judgements on literary texts
- the ability to communicate knowledge, understanding and insight appropriate to literary study.

The distinction between the AS Level and A Level lies in the depth of the objectives to be achieved and the fact that the A-Level curriculum provides for an extension of two (and in some instances three) additional examination papers (a choice between Paper 6 [20th Century writing] and Paper 7 [Comment and appreciation], and in some instances, Paper 8 [Coursework or school-based assessment]).

Cohesion in the CIE AS- and A-Level curricula is ensured as the objectives to be achieved are all assessed in the different papers.

The English FAL evaluators found that the main focus of the IB (SL and HL) curricula is on linguistic ability, and would therefore assume that these qualifications are organised around language abilities. Language provision seems to be an essential component of the programme, which is designed to achieve a high level of competence in the target language. The curriculum is structured in such a manner as to provide candidates the opportunity to study language texts and culture, to develop personal analytical skills and

even to develop and refine vocabulary and complex grammatical structures. The different types of texts suggested in the curriculum are used purely to work with register, style, ideas, themes, feelings and attitudes. The English FAL evaluation team came to the conclusion that the organising principle around language is the achievement of language skills across cultural and linguistic boundaries – in other words, linguistic abilities.

The NSC **Mathematics** curriculum is organised into four learning outcomes, which are content-oriented. The assessment standards, which provide details of what candidates need to be able to do, are listed under these learning outcomes. The various IB curricula are organised into differing numbers of content topics. The list of topics for the CIE IGCSE is ordered into sets of content-oriented topics. The CIE A- and AS-Level courses are organised into the broad areas of Pure Mathematics, Applied Mathematics and Probability and Statistics.

The organising principle for the NSC **Physical Sciences** curriculum is clearly stated in the NSC curriculum documentation: the content is organised around six knowledge areas, which are broad descriptors intended to ensure the proper planning and clustering of concepts, skills and values. This provides a clear framework in which knowledge can be constructed. No clear organising principle is given in the CIE or IB curricula for the selection and organisation of content, other than traditional frameworks of related topics clustered together under collective headings.

In all of the **Geography** curricula, the content is organised according to themes/topics and sub-themes/topics. The Umalusi evaluation team felt that there is a clear description of requirements in terms of physical and human geography content and skills in all of the curricula, and that the organising principles are readily evident, even if not explicitly stated as organising principles.

The NSC and IB **Life Sciences** curricula provide some form of rationale according to which choices were made for the organisation of subject matter. In the NSC, the organising principle is stated broadly in the curriculum documents and more specifically with regard to the content framework, where the vision is described of a holistic approach to the study of Biology, with interlinking concepts, centred around two foci: the whole living organism and evolution by natural selection. All other concepts link to these foci. Content in the IB curricula is organised in relation to four principles, and this shows an attempt at some higher-order organisation of knowledge in the syllabus. This organisation is absent in the Cambridge curricula.

4.3. Sequence, progression and pacing

Progression is evident when the content and skills in a course increase in cognitive demand within a given grade or level, and from one level to the next. The sequencing and pacing of material in the course therefore needs to be appropriately structured to allow for this development. The various curricula were considered in this light.

In most of the subjects reviewed, the NSC curricula show the greatest attention to sequencing, progression and pacing. The NSC curriculum specifies content by year of study, and builds progressively on concepts across grades, facilitating vertical progression and increasing cognitive complexity. For instance, in **English FAL**, the progression of skills and content for listening and speaking, reading and viewing, writing and presenting, and language outcomes is even indicated within each year (Grade 10–12) and is clearly defined

through layout and descriptors identifying the gradual increase in level of complexity of each assessment standard. The cognitive demand of skills and content for listening and speaking, reading and viewing, writing and presenting and language outcomes is intended to increase gradually from one grade to the next and is indicated through the use of various descriptors for the different grades. Even though there is supposedly a clear demand for increased complexity in the choice of content to be selected and gradual exposure to higher order skills, the differences that are explained in the assessment standards are actually minimal, and it may be that the subtleties provided do not in fact offer significant guidance to educators as to the difference between levels.

For all of the subjects in the NSC, the Learning Programme Guideline document provides a suggested work schedule for the year. In addition, work schedules, which are drawn up at provincial, district and school levels, can provide educators with guidance as to the sequence in which they should teach topics and the length of time they should spend on them. However, these documents are not prescriptive and only provide one suggested ordering of topics, which is at times different to the ordering given in the *National Curriculum Statement*. This suggests that the curriculum was not intentionally designed for progression from one topic to the next within a given year. In terms of progression between the years, the NSC is the only curriculum that specifies content by year of study, and concepts are progressively developed in successive grades, showing clear progression from one year to the next. However, for the IGCSE and IB curricula, no comment could be made about progression or advancement from one year to the next. It is important to note that both the IGCSE and IB programmes are two-year integrated programmes assessed on completion.

In terms of progression within the IB and CIE courses as a whole, for all of the subjects it was noted that there is no clear evidence of progression. The **Physical Sciences** evaluation team commented that there is some progression evident in the sense that basic foundational skills and concepts are covered earlier in the course, but that this is not necessarily evidence of progression in terms of cognitive complexity. The **English FAL** evaluation team found that both in the objectives of IB Language A2 and the curriculum documents, detailed progression of skills are clearly stated. In each case the skills develop from communicating clearly, and understanding and using the language to appreciating the subtleties of technique and style, and showing sensitivity to the culture related to the language studied. Although the increase in cognitive demand is not very clear from the IB curriculum, as no content is prescribed, it is clear that skills develop from simple communication and understanding of the language to appreciation of subtleties and the critical examination of various texts in different forms, styles and registers. By the end of the Language A2 course, candidates are expected to have achieved various forms of listening, speaking, reading and writing in the target language.

4.4. Aims, purpose, vision, general outcomes and articulation

The Umalusi evaluation teams were required to assess the clarity of the aims of each curriculum being evaluated, and the link with the content, skills, sequencing, progression, and pacing of the curricula. The teams were asked to describe the aims, as well as the guidance given for achieving these aims. They were also asked to comment on how the possible contexts within which the curricula were to be implemented were taken into account, and whether articulation with other parts of the system was outlined in the documents.

It was noted that all of the curricula list their aims and purposes clearly. Although the way in which the aims are described differs, all of the curricula list similar aims for the respective courses. The aims of all of the curricula are described in a fairly broad way and so are suited to a range of contexts. None of the curriculum documents explicitly dealt with how the aims should be achieved. A concern raised by the Umalusi evaluation teams was that because these aims are expressed so broadly they may not be very useful at a practical classroom level. However, the NSC documents do give some indicators for the manner in which the assessment standards are described. Extending this explanation of how the aims should be achieved may rather fall into the domain of educator education and professional development than form part of the curriculum itself.

4.5. Teaching approach and subject methodology

The evaluators were asked to comment on the general and subject-specific teaching methodologies that are outlined in the various curriculum documents.

The NSC curriculum prescribes an outcomes-based approach to teaching, where the outcomes are the focus of the teaching. These are assessed through assessment standards, which provide descriptors of achievement of learning outcomes at various levels in the senior secondary phase. The desired pedagogical approach, namely a learner-centred, activity-based approach, is more clearly specified in the NSC curriculum documents than in the other documents. There are no similar statements of broad pedagogic approach in the other documents. However, the IB curriculum documents do give a broad statement regarding the overall teaching approach, which entails developing particular attitudes and values as well as knowledge and skills. However, no particular pedagogy is promoted in the documentation.

The approach described in the NSC curriculum documents is considered appropriate to our context as it encourages a move away from rote learning and content transmission. However, it is generally agreed that a learner-centred and activity-based approach is currently not always easy to implement in many South African school contexts, where classrooms are overcrowded and poorly resourced, and where educators do not all have the necessary skills to implement this approach effectively. In this respect, the curriculum for the NSC is aimed at an ideal, which will need to be achieved gradually through improved educator training and the steady resourcing and improved management of schools.

4.6. Assessment guidance

The Umalusi evaluation teams were asked to assess the quality of guidance given in the various curricula for internal and external assessment. They were asked to describe the numbers and types of tasks, the weightings for the various tasks, and the evaluation criteria to be used in assessment.

Most of the Umalusi subject evaluation teams found that the NSC curriculum has the most detailed assessment guidance, for both internal and external assessment. Both the structure and weighting of the examinations are provided and detailed in the Subject Assessment Guidelines. One challenge of the NSC examination structure is that at times it separates topics, which may lead to compartmentalisation of knowledge.

With regard to internal assessment, a Subject Assessment Guideline document for each subject in the NSC clearly outlines the number and types of tasks required, as well as a full description of these tasks, and the relative contributions towards the Continuous Assessment (CASS) mark. In the IB curricula, details are provided for the required internal assessment tasks, such as project work and portfolio work. These details include the purpose, requirements, time allocation and assessment criteria. For the CIE IGCSE, only certified schools may conduct internal assessment, and hence details for this kind of assessment are sketchy in the documentation. For the CIE AS- and A-Level courses, no internal assessment component is mentioned.

In terms of external assessment, all of the curricula give clear guidance regarding the number of examination papers, and the structure and relative weighting of each of these papers. The types of questions and the content to be covered in each paper are clearly provided.

Each curriculum provides some kind of taxonomy that outlines the intended weightings of cognitive levels to be expected in the examination papers as a whole.

4.7. Availability and user-friendliness of the curricula

The evaluators were asked to comment on the overall accessibility and user-friendliness of the documentation for the respective curricula. It seems that while the NSC curriculum documents provide the most detailed guidance in several different respects, this tends to compromise their simplicity, and most Umalusi evaluation teams reported these documents to be complex and lengthy. In contrast, the other curriculum documents were clearly laid out, using simple language.

Interestingly, the **Mathematics** evaluation team commented that they found the format of the IB curricula particularly clear to work with. For each broad topic area, the content was listed, alongside which amplifications and exclusions were listed, and thereafter teaching notes. These served to make the content requirements of the curriculum explicit.

The **Physical Sciences** evaluation team noted that a number of versions of the documents associated with the NSC have been released at different dates, and some of the information is inconsistent across the different versions. This is a concern noted by HESA as well, namely that curriculum and policy documents on the departmental website are often amended by circular but not in the policy on the website. The documents are also very lengthy, which make them inaccessible to educators, particularly to those who have English as their second or third language. The Department of Education's website does not always provide the latest version of the documentation.

In summary, while the NSC documents clearly intend to provide detailed support for educators, the evaluation teams regard the additional support as potentially making the documents more difficult for educators to use.

4.8 Examination analysis

Most of the Umalusi subject evaluation teams reported that the NSC examination is of a considerably higher standard than the examinations for the IGCSE core and extended courses. In addition, it was generally concluded that the NSC examination is of a comparable

standard to the CIE AS- and A- Level examinations in most respects, with the exception of Life Sciences, where the AS- and A-Level examinations were found to be the most demanding of all the curricula in this study.

The **English FAL** evaluation team found that there is an attempt in the NSC curriculum and assessment to integrate the four primary language skills as well as the teaching of grammar structures and literary devices. From the assessment guidelines, it seems as though there is an emphasis on writing (33%), but unlike the international qualifications, the testing of language in context (which includes the testing of language structures) carries a weighting of 26%. There is also a strong emphasis on the study of literary texts (23% weighting) from varied literary periods. The assessment approach, which requires comment and critical appreciation, demands mature thinking and advanced reading and writing skills that may be specified in the intended curriculum but are lacking in the examined curriculum. This gives the impression that exam questions can appear quite superficial in relation to the set requirements. Evaluation reports from the marking process of NSC examinations indicate that NSC EFAL candidates possess limited capabilities in terms of essay writing, with a tendency to narrate instead of undertaking a critical analysis of texts in response to the question.

The English FAL team found that in the CIE IGCSE qualification, the emphasis is on speaking. Although the weighting of the reading and writing paper (core and extended) is 70% and the weighting of the listening paper (core and extended) is only 30%, candidates must also offer Components 5 and 6, which are both oral components, and thus the programme clearly emphasises speaking. In the AS- and A-Level qualifications, the general focus is on effective and appropriate communication, but the main focus is on writing. Candidates must be able to give informed responses to a variety of texts, but mainly to literary texts. Apart from some mention of language usage in the section, no language content or skills are prescribed in the AS- and A-Level qualifications.

The English FAL evaluation team found that in the IB qualification the main focus is on writing (weighting of 70%) and oral (weighting of 30%) activities in which language skills are incorporated. As in the AS-Level and A-Level curriculum, candidates must comment on texts or write essays based on a variety of literary or cultural texts. Assessment in the oral component is also based on literary or cultural texts.

The **Physical Sciences** evaluation team observed that it is more difficult for candidates to achieve high marks (A Grades) in the NSC examination than in the other examinations, with the exception of the IB HL, which has similar demands in terms of difficulty. The IGCSE Physics and Chemistry examinations are the least challenging, with the highest percentage of factual recall questions and questions classified as 'Easy'. The CIE AS- and A-Level exams are very similar to one another in terms of cognitive demand and level of difficulty, and are less demanding than the NSC and IB HL exams. The IB SL Physics and Chemistry exams are less challenging than the IB HL, AS, A and NCS exams, but more demanding than the IGCSE examinations.

The **Life Sciences** examination analysis found that the AS- and A-Level examination papers were the most difficult papers, and contained the least proportion of marks for questions requiring recall of factual knowledge. The IB exam papers were weighted at lower levels of cognitive demand, with easier question papers than for the A Level. This could possibly be ascribed to the broad-based IB-Diploma-group qualification requirements compared with the specialised subject-based approach of the A Levels, with its optional AS-Level exit qualification. The NSC examination papers were weighted rather heavily for recalling factual knowledge, with just over 10% of the marks assigned for questions requiring reasoning

and synthesis. However, the examination papers were more demanding in terms of level of difficulty. The NSC papers contained more difficult questions than the IB SL papers, but fewer than the IB HL papers. The CIE IGCSE papers were well balanced in terms of cognitive demand and levels of difficulty; the proportion of difficult questions was the lowest of all the curricula in the study.

The **Geography** evaluation team found that there was a wide range in the level of cognitive demand of the examination papers for the different courses. In the IB, there was a weighting toward higher order questions, with evaluation, judgement and synthesis being required, along with the analysis of a range of sources. In the A-Level papers, there was a combination of less demanding recall questions and higher order questions where candidates had to synthesise information and apply it to the writing of an extended answer. In most of the other papers, there were medium and lower order questions with less demand for extended responses. In the NSC curriculum, cognitive demands are diluted by the setting of many short-answer questions that do not lend themselves to candidates having to select and organise information to produce a more extended coherent response.

The **Mathematics** evaluation team analysed the exam papers in conjunction with the curriculum documents. They found that the examinations for the AS-Level and the NSC could be of a comparable level of difficulty.

The CIE and NSC curricula and examinations assume that the candidates will have access to a basic scientific calculator. The NSC curriculum encourages the use of other available technology where possible. Candidates doing the IB curricula are expected to have access to a graphic display calculator (GDC). This alters the nature of some of the mathematical work done in the IB curricula. For example, solutions to equations are done using the GDC; candidates can work with a variety of functions because of access to the GDC.

The Mathematics team found that the level of cognitive demand in the IB Mathematical Studies SL and the CIE IGSCE is below that of the NSC curriculum. Although Mathematical Studies offers probability, data and statistics at a slightly higher level and offers sets, logic and probability, which the NSC curriculum does not. It does not offer any calculus, nor does it specify any mathematical modelling, and it offers the rest of the topics at a lower level. For these reasons, the team argued that Mathematical Studies is not comparable to the NSC curriculum and they would therefore not provide sufficient background for candidates to be admitted to courses in higher education that require NSC Mathematics. The same can be said of the CIE IGSCE, namely, although the IGSCE offers probability, data and statistics and geometry at a slightly higher level and offers introductory vectors and matrices, which the NSC curriculum does not, it does not offer any calculus, nor does it specify any mathematical modelling, and it offers the rest of the topics at a lower level.

The greater extent of content and the more demanding content at CIE A Level and in the IB HL curricula make the examinations in general also more demanding.

4.9. Comments on Namibian Senior Secondary Curricula

The Umalusi evaluation team did an 'ex post facto-check' of the Namibian NSSC Ordinary Level (OL) and Higher Level (HL) as SADC-contextualised examples of CIE qualifications. The following points are made in this regard.

In terms of breadth and depth of content, all of the subject evaluation teams found that the Namibian OL is almost identical to the IGCSE core curriculum, and at a level substantially lower than the NSC curriculum. Most Umalusi teams found that the Namibian HL curriculum is similar in breadth and level to the NSC curriculum.

Further comments were made that there is not much evidence of attempts to contextualise the Namibian courses for Africa.

In the Namibian NSSC (OL and HL), the main focus in **English FAL** is on reading and oral skills, as the case is in the CIE IGSCCE qualification. As in the NSC, specific language content is prescribed, but from the examination papers analysed, the evaluation team found that the assessment of language structures carries very little weighting (11% [OL Extended 2007, 2008] and 13% [OL Core, 2007, 2008]). From this it can be deduced that, as with the other international qualifications, the emphasis in the NSSC is on practical communicative language skills rather than on knowledge of specific content.

The Namibian Ordinary Level **Mathematics** (core and extended) examination papers contained content and skills at a similar level to the IGCSE core and extended examination papers. Thus, the evaluation team for Mathematics felt that the Namibian Ordinary Level was of a lower level than the NSC. The Namibian Higher-Level examination papers cover content that is similar to that specified at the CIE AS Level. This similarity suggests that Namibian Higher-Level examination papers will be comparable with the NSC.

The **Physical Sciences** evaluation team found that the Namibian curricula are very similar in depth to the IGCSE curricula. It could therefore be concluded that the NSC Physical Science curriculum has greater depth than the Namibian Physical Science curriculum, and these curricula therefore cannot be considered comparable. In fact, the evaluation team members are of the opinion that both the OL and HL courses are equivalent to the South African Grades 10 and 11, both in terms of depth of content and in terms of cognitive demand of the examinations.

The **Life Sciences** evaluation team categorised the Namibian curriculum as broad and relatively superficial, particularly at the OL, yet the examination papers tested more higher order cognitive skills than other examination papers, particularly the OL paper. There appeared to be a mismatch between examination papers and the level of the curriculum.

The **Geography** evaluation team found that the Namibian curriculum compared well with the NSC curriculum in terms of the overall aims/outcomes and the broad content and skills requirements. However, they regarded the Namibian OL as of a lower level than the NSC, since the content is less demanding in terms of breadth, depth and theoretical and abstract knowledge.

4.10. Concluding comments

The Umalusi evaluation teams were asked to provide clear concluding statements that addressed the research questions described in Section 2.2 of this report.

In terms of collating depth, breadth and level of difficulty, the results of most (but not all) of the subject evaluation teams may be summarised as follows:

Increasing depth and level of difficulty	South Africa	International Baccalaureate Organisation	Cambridge International Examinations	Namibia
		IB Mathematical Studies SL	IGCSE	Namibian OL
	NSC	IB SL	AS Level	Namibian HL
		IB HL	A Level	

The Umalusi evaluation teams were also requested to consider whether the international qualifications could be mapped in relation to the NSC in order to enable HESA to determine appropriate minimum higher education admission requirements. From the above analysis, the following general points can be made:

- The CIE AS-Level and IB SL courses could be considered comparable to the NSC. Consequently, it was concluded that in terms of admission to South African higher education institutions, both in terms of the depth of content in the curricula and in terms of the cognitive demand of the examinations, the CIE AS Levels and the IB SL could be viewed as leading to the attainment of an educational level that is similar to that of the NSC subjects. Furthermore, when comparable admission point tables are determined, performance in the AS Levels, the IB SL and the NSC should receive similar points by using the percentages obtained to arrive at comparable points.
- The IB HL and full A-Level courses are overall the most demanding, if examination difficulty and depth of curriculum content are taken into account. As a result, the educational level attained is likely to be higher than for the NSC. Consequently, while both these qualifications are acceptable for higher education admissions, when comparable admission points tables are determined, higher points will have to be awarded for achievement in A-Level and IB HL courses compared with points awarded for NSC subjects. English FAL will be the exception here because the CIE A-Level course consists of only literature, and no attention is given in the content to language and grammar as such. The NSC English FAL is therefore considered to map between the CIE AS-Level and A-Level courses because of the detailed attention to both language and literature.
- The IGCSE should not be considered comparable to the NSC. It would thus not be appropriate to set equal education entrance criteria for the IGCSE qualification as the education level attained is not equivalent to that of the NSC.

There were some differences in the above overall trends with respect to specific subjects, and it is advised that readers consult the detailed subject-specific reports for a more detailed analysis of these findings.

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