

What's in the CAPS package?

Overview



What's in the CAPS package?

A comparative study of the
National Curriculum Statement (NCS) and the
Curriculum and Assessment Policy Statement (CAPS)

Further Education and Training (FET) Phase

Overview Report

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With Umalusi's curriculum evaluation teams

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Umalusi regards the opportunity to engage in curriculum evaluation processes as a significant step towards co-operation between various role players at a systemic level on matters pertaining to the curriculum. It is hoped that this overview report, the subject and cluster reports, and the reports to follow, will provide a deeper understanding of the curriculum development space and the respective roles of the Departments, assessment bodies and Umalusi in ensuring the welfare of the nation's most prized qualifications.

The project was envisaged and conceptualised by Dr Celia Booyse, Manager: Curriculum, Umalusi. The project was co-managed by Dr Booyse and Dr Sharon Grussendorff. Dr Grussendorff provided much of the constructive commentary on the original subject reports, and prepared all the Excel spreadsheets for the transfer of data. She also helped to adapt the research instruments for the comparative analysis of the NCS and the CAPS, for the determining of entry-requirements and exit-level outcomes as well as the instrument for the international benchmarking (reports to follow).

Dr Grussendorff, a respected researcher, Physics lecturer and consultant for many educational initiatives, has been involved with Umalusi's curriculum research since 2006. In 2012, the Qualifications, Curriculum and Certification (QCC) unit approached her to co-manage the CAPS quality assurance research that was being planned. In addition to her management role, she was the team leader for Natural Sciences in the CAPS Intermediate Phase research and the team leader for the Physical Sciences team in the Further Education and Training (FET) Phase. Her experience in teacher support and the training in curriculum interpretation that she has offered in schools for the Joint Education Trust (JET) Education Services have made an invaluable contribution to the present research.

Dr Booyse managed the CAPS project with her usual immaculate planning, thorough preparation and gentle humanity. The evaluation teams attest to the fact that they were properly briefed and given the means to do their work well. Dr Booyse almost intuitively, it seems, manages that fine balance that Jerome Bruner (1995) writes about, between a safe, loving environment and sufficient challenge that allows for the best learning.

In the workshops, Drs Booyse and Grussendorff provided direction in the interpretation and application of the research instruments. Members of the evaluation teams attest to their support, guidance and encouragement during the workshops and the writing up of research findings.

Dr Grussendorff and Dr Booyse were responsible for most of the writing of this overview report. Ms Elizabeth Burroughs also assisted in this task, as did the Umalusi subject team leaders who were responsible for the subject reports.

Dr Booyse has been steadily supported by her colleagues in the QCC unit: Ms Elizabeth Burroughs, Senior Manager: QCC; Mr Duma Sithebe, Assistant Manager: Curriculum; Mr Mohau Kekana, Administrative Assistant; Mr Mohlahledi Nkadimeng, Administrative Assistant and Ms Helen Matshoba, Manager: Qualifications.

Mr Sithebe ably assisted in constituting the evaluation teams, dealing with communication and has done much of the document search for the comparative research, each of these a considerable undertaking.

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While the previous paragraph acknowledged the members of the research teams in general, Annexure A (Resumes of evaluation team members) demonstrates the wealth of experience and commitment this project has been privileged to draw upon.

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ACRONYMS AND ABBREVIATIONS

AS	Assessment Standards
CAPS	Curriculum and Assessment Policy Statement
CPUT	Cape Peninsula University of Technology
DBE	Department of Basic Education and Training
DHET	Department of Higher Education and Training
FAL	First Additional Language
FET	Further Education and Training
GET	General Education and Training
Gr	Grade
HESA	Higher Education South Africa
HL	Home Language
ICT	Information and Communications Technology
IT	Information Technology
JET	Joint Education Trust
KZN	KwaZulu-Natal
LO	Learning Outcome
NCS	National Curriculum Statement
NC (V)	National Curriculum (Vocational)
NQF	National Qualifications Framework
NSC	National Senior Certificate
NRF	National Research Foundation
OBE	Outcomes-Based Education
QC	Quality Council
QCC	Qualifications, Curriculum and Certification
SAICA	South African Institute of Chartered Accountants
SBA	School-based Assessment
SUN	Stellenbosch University
UCT	University of Cape Town
UFS	University of the Free State
UJ	University of Johannesburg
UKZN	University of KwaZulu-Natal
USA	United States of America
USSR	Union of Soviet Socialist Republics
UP	University of Pretoria
UNISA	University of South Africa
WITS	University of the Witwatersrand

EXECUTIVE SUMMARY

CURRICULUM DEVELOPMENT AND CHANGE IN SOUTH AFRICA 1995 – 2014

Questions about the quality of a curriculum and its implementation are not new, but continue to be asked as South Africa – and other countries across the globe – grapple with how best to educate the adults of the future.

In 1995, just after the first democratic elections, the South African government carried out a national audit on teaching which revealed many disparities and problems. Two years later, in 1997, the Department of Education launched its new curriculum policy, Curriculum 2005, which in its ideology, content and pedagogical approach contrasted strongly with the curriculum in effect at the time. Curriculum 2005 was an outcomes-based model. It drew from curriculum models being used in some highly developed countries, and sought to place the South African curriculum among the most progressive internationally. This policy became a highly contested issue within South Africa (Department of Education, 2000), and so, in 2000, the then-Minister of Education set up a Curriculum Review Committee, which led to a more “streamlined” approach to the curriculum.

The revised policy and the ensuing debate caused even more confusion and uncertainty. The “cascade model” of in-service teacher education proved to be highly inadequate and training reached the schools in a much-diluted form. In 2002, the curriculum was reconstructed once again into a Revised National Curriculum Statement which was approved on 15 April 2002 and implemented in 2004 (Department of Basic Education, 2010:2–7). This revised version became known as the National Curriculum Statement (NCS). The 2008 Grade 12 group wrote the first set of national examinations and were the first to be awarded the National Senior Certificate, a 130-credit qualification at Level 4 on the NQF, which replaced the Senior Certificate in schools.

In July 2009, the then-Minister of Basic Education in turn appointed a panel of experts to investigate the nature of the challenges and problems experienced in implementing the National Curriculum Statement (NCS), and to develop a set of recommendations designed to improve its implementation. The Minister's brief was in response to wide-ranging verbal and written comments received over several years from a range of stakeholders such as teachers, parents, teacher unions, school management and academics, on shortcomings in the implementation of the National Curriculum Statement (NCS). While the RNCS / NCS had positive support generally, there was nonetheless considerable criticism of various aspects of its implementation, including teacher-overload, confusion and stress arising from inconsistencies in the documentation and demands on teachers' time, as well as widespread learner underperformance in international and local assessments.

While several minor interventions over time were intended to address some of the challenges of implementing the curriculum, these changes had failed to have the desired effect.

The 2009 panel consequently set out to identify the challenges, particularly with reference to teachers and learning quality; to deliberate on how things could be improved

and to develop a set of practical interventions. The key areas identified for attention were the proliferation of curriculum policy and guideline documents, the transitions between grades and phases, assessment (particularly continuous assessment), learning and teaching support materials (particularly textbooks) and teacher support and training (for curriculum implementation).

As a result of the 2009 findings, the NCS was reviewed yet again in 2011. The amended NCS was called the CAPS, the Curriculum and Assessment Policy Statement (Department of Basic Education, 2009; 2011; Pinnock, 2011). On 28 December 2012, the approval of the regulations pertaining to the amended NCS Grades R–12 was published in Government Gazette No. 36041. According to this Gazette, the CAPS stipulates the aim, scope, content and assessment for each subject listed in the NCS Grades R–12 (Department of Basic Education, 2012:3).

UNDERTAKING THE CAPS RESEARCH: FET PHASE

In the context of this almost continuous curriculum revision and amendment, Umalusi received a request from the Department of Basic Education to quality assure the Curriculum and Assessment Policy Statement (CAPS) *for all phases*, a task which Umalusi has tackled. However, the fact that the first CAPS examinations are due to be written in 2014 has placed a particular pressure on reporting the nature of the CAPS for the last three years of schooling (FET Phase): since 2008, Umalusi has used its curriculum research findings to inform the deliberations of its Assessment Standards Committee regarding the standards of the final examinations. As a result of this urgency, the FET Phase investigation has preceded the finalisation of the research for the Senior Phase (Grades 7-9).

What's in the CAPS package? is the generic name for a series of research reports intended to provide advice to the Minister and Department of Basic Education on the strengths and weaknesses of the CAPS. The first set of these reports focuses on the Further Evaluation and Training (FET) Curriculum and Assessment Policy Statement (CAPS), and so will the second set of reports due later in 2014.

The research for the FET Phase has been done in 3 parts: Part 1 is a comparison between the CAPS and the previous curriculum, the National Curriculum Statement (NCS); Part 2 allowed for the determination of entry level requirements and exit level outcomes for all subjects, and Part 3, which is still ongoing, compares the South African CAPS with selected international curricula.

This first set of reports present the findings of Parts 1 and 2 of the FET research. The set consists of an Overview Report which describes the research and its results (this document) and a series of reports for eleven subjects, some of which have been clustered into Business, Commerce and Management, Languages, Natural Sciences and Social Sciences. The Mathematics and Mathematical Literacy reports are, however, presented as separate reports. All the reports mentioned above are published simultaneously.

The research findings about expected learner attainment (Part 2) marks a new direction in Umalusi's research. The attainment findings will serve as preparatory information for a longitudinal study that Umalusi plans to undertake in 2015, when the issue of the transition between the four phases of schooling will be fully addressed. The intent in the longitudinal study will be to examine critically the development of the major subjects across the twelve years of schooling. It is clear from the work Umalusi has already undertaken that the major discontinuities between phases create some of the difficulties currently experienced in the FET Phase of schooling.

OVERVIEW OF THE SET OF FET REPORTS

The subject reports – and this overview report – provide information and offer insights drawn from a detailed analysis of the curricula by more than 70 evaluators, all experts in their fields. The individual subject reports allow readers to see how the Umalusi teams analysed the data and came to their conclusions. These reports provide detailed information regarding the strengths and weaknesses of the various curricula, and point to ways in which the CAPS curricula could be strengthened and improved.

The process of the evaluation began with the identification of the teams for all the subjects under evaluation, followed by the refining of an existing instrument to evaluate and compare the NCS and the CAPS. Thereafter two workshops were held with the evaluation teams, in August and November of 2013, in order to brief them and to allow the teams to work together on the curriculum analysis. Finally, the evaluation teams completed their analysis via e-communication, and the team leaders took responsibility for the completion and submission of the teams' reports. This overview is a summary of the findings from all the subject reports.

This overview report provides the necessary background to the project as a whole. It explains why Umalusi has undertaken – and continues to work on – so extensive a project around the South African curriculum, and lays out the research process and methodology common to the subject evaluations.

STRUCTURE OF THE OVERVIEW REPORT

Sections 1.1 to 1.4 of this report locate the present research in the context of Umalusi's curriculum research. Indeed, the impulse that has driven the previous Umalusi research, drives this initiative also: the need to create continuity between the standards of one form of the school-leaving certificate and the next. The move from the Senior Certificate to the NSC, from the old qualification to the new, fuelled the *Maintaining Standards* research in 2008 and 2009, and the wholesale revision of the entire national curriculum from 2012 has required similar careful enquiry to support Umalusi's quality assurance processes. Do the changes made to the curriculum allow for assumptions of continuity, or do they indicate

a need for special awareness when it comes to matters such as moderation of papers and standardisation of results?

The research question for the first part of the CAPS research, which compared the previous and current curricula, is:

'What does the comparison between the Curriculum and Assessment Policy Statement (CAPS) for the FET Phase (Grades 10 to 12) and the National Curriculum Statement (NCS) reveal about:

- a. the extent to which the NCS curricula were re-packaged or re-written in the formulation of the CAPS;*
- b. the relative depth and breadth of the content covered in the respective curricula;*
- c. the overall design, structure and coherence of the curricula;*
- d. the level of specification of various aspects of the curricula; and*
- e. the guidance provided by the curricula for the teaching and assessment of the subject?'*

The following subjects, all of which were evaluated in the *Maintaining Standards* research, have once again been scrutinised, as these are regarded as the NSC 'gateway subjects':

Accounting	History
Business Studies	Mathematics
Economics	Mathematical Literacy
English Home Language	Life Sciences
English First Additional Language	Physical Sciences
Geography	

Section 1.5 of this overview report explains that this comparative research/evaluation used a customised instrument that required the evaluators to grapple deeply with issues around curriculum framing, and to deal with concepts such as content breadth and depth, sequencing, progression and coherence. The instrument included some measures to determine the topic weighting and curriculum focus in the documents.

Though the Umalusi evaluation teams began with the same instrument, each team had to grapple with the particular data at its disposal. Each team worked slightly differently from 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 for their respective subjects, there was nevertheless a reasonably high degree of consonance between the individual reports. This is evident from a reading of the subject reports themselves.

After closely examining the two respective curricula for their subject (that is, the NCS and the CAPS), the teams were asked to give their opinion regarding issues such as the

central design principle; the aims/objectives of the subject; the ideal learner envisaged; the weighting of each topic in terms of the percentage of time allocated to each; the emphasis placed on content and skills; the depth of the subject in terms of the extent to which learners could move from a superficial grasp of a topic to a more refined and powerful grasp; and the degree to which the curriculum of each subject is paced, in terms of the volume of work to be covered in a specific timeframe.

The teams were also expected to deliver findings on the specification of sequencing of topics; the progression of topics from Grades 10 to 12 in terms of increase in level of complexity and difficulty; the coherence of the curriculum for each subject, in terms of connections and coordination between topics through the levels; the degree to which teachers are given explicit guidance regarding pedagogy; the degree to which teachers are provided with guidance regarding assessment; and the format and user-friendliness of the curriculum documentation.

In drawing up their concluding remarks, evaluators were asked to comment on the appropriateness of the CAPS in the South African context and to make recommendations designed to strengthen the curriculum.

In this overview report, Section 1.6 briefly describes the two sets of curriculum documentation for readers who are unfamiliar with them, before the report moves on to a discussion, in Section 1.7, of the interesting shifts that have occurred in the information that introduces the two curricula. Section 1.7 compares the approaches represented in the rationale, aims, purposes and principles embodied in the two curricula. The section deals also with the changes to the design features which structure the curriculum, and with that, such comments as are provided regarding the intended learner and the type of teacher envisaged.

It is apparent from the analysis that both curriculum documents contain a similar list of values, which include social justice, human rights, inclusivity, environmental awareness and respect for people from diverse cultural, religious and ethnic backgrounds, and share a common list of purposes. In this regard, the newer document is a repackaging of the NCS. However, the learner's role has shifted from being a participant in the learning process and a negotiator of meaning in the NCS to being a recipient of a body of pre-determined knowledge, and the teacher, who was clearly described in the NCS, does not warrant a mention in the CAPS introductory material. In other words, the shift has been towards a much more technical and traditional approach toward teaching and learning, in which the more far-reaching aims of education for a living democracy have taken a back seat.

Section 1.8 offers readers some general insights about the CAPS drawn down from the individual subject reports. It is clear, for example, that the CAPS documents are generally much more succinct than the NCS is, and that, with one exception, the numerous contradictions that arose from having different NCS documents have been resolved. There is, however, some concern among the teams that the introduction of the CAPS Examination Guidelines will once again create disparities between the interpretation and

the implementation of the curriculum. Some of the teams also indicated that undated earlier versions of the CAPS in circulation could cause confusion.

Section 1.8 also comments on issues such as breadth and depth in the various subjects. Some subjects, such as Mathematics and Economics have become even broader than they previously were, while other subjects showed a much needed pruning of content. Apart from the extension of the Mathematics curriculum, which has long been identified as a challenge to teachers and learners, the most worrying trend in respect of breadth has been that the list of content topics included in the English FAL content overview remains too broad, in contrast with the reduced breadth of content in the teaching programme. This has resulted in internal inconsistencies in the CAPS document.

General findings regarding assessment indicate that the emphasis on tests and examinations remains, and that the number of formal assessment tasks prescribed per grade has remained the same except in English HL and English FAL. Life Sciences, however, has seen an increase in the number of tasks. The evaluation teams were in agreement that the CAPS has attempted to simplify the elaborate approach to assessment in the NCS, but have also noted the conflation that have occurred between formative and informal assessment, and summative and formal assessment.

In the subsection that deals with the South African context (Subsection 1.7.9.1), two issues are raised. Certain evaluation teams expressed concern about the lack of availability of the necessary resources for implementing the CAPS. These were, unsurprisingly, the experimental science subjects – Physical Science and Life Sciences – but also Economics, where the need for learner support materials such as magazines, newspapers, statistical data and access to the Internet, was regarded as unrealistic for many South African classrooms.

The second issue relates to the kind of teacher needed to teach using the CAPS. While most teams felt that the CAPS is more likely to facilitate the development of sound knowledge and skills in the current South African context, the English FAL team comments pertinently on the conflicting assumptions about teacher expertise embodied in the curriculum. The overt assumption is that teachers do not have the time or expertise to develop teaching programmes, and hence are provided with these, and yet, closer analysis reveals that the programme requires a highly skilled teacher to deal with critical issues such as depth and progression since so little guidance is given.

Section 1.8 provides a number of recommendations and concluding ideas arising from Part 1 of the research, and identifies three curricula where urgent attention is required. They are Mathematics, and both English HL and English FAL. The issues around the language curricula are far larger than a reconsideration of the matters raised in the reports: What lies at the heart of the difficulties in these curricula is an unwillingness to deal openly with the linguistic complexities in our educational system. The issues with these two language curricula have ramifications that affect the curricula for all official languages in the country, and in all phases of education from the Foundation Phase upwards.

Part 2 of this overview reports on a new direction in Umalusi's curriculum research. At the second of the FET workshops, the teams were asked to determine both the FET entry-level requirements for the subject as well as to create a profile of attainment for learners who have completed the phase. Both of these sets of requirements were inferred from the nuanced understanding of the curriculum developed at the first workshop. The findings presented here – of expected learner attainment at the end of the FET phase – are regarded as a preliminary step towards the proposed longitudinal study of the NSC planned for 2015.

CONCLUDING THOUGHTS

For each of the eleven subjects, the evaluation teams have provided a view of the suitability of the curricula in preparing learners for a final assessment after twelve years of schooling. One of the themes expressed repeatedly in these summaries is that, while the curriculum provides for the development of the full range of cognitive abilities, the actual implementation of these curricula seldom gives sufficient opportunities for the development and practice of the creative, analytic and synthesising skills in the curriculum. These skills prepare learners for the demands of the workplace and post-school education and training. This finding suggests, once again, that the challenge in the South African educational system lies less in the quality of the curriculum than in its translation into the classroom context. Lively, demanding classroom activities are needed that encourage young South Africans to use their minds creatively and analytically, to write intelligently and critically, and to read and process information at levels really required at the end of twelve years of schooling. Such classrooms need well-educated teachers, who are well prepared to teach; good textbooks and other resources in schools that are well managed. All these issues cannot be resolved by having a fine curriculum.

It is worth bearing in mind, in concluding, that the October 2009 Department of Education report, *Report of the Task Team for the Review of the Implementation of the National Curriculum Statement, which recommended the development of 'one Curriculum and Assessment Policy document for every learning area and subject (by phase) that will be the definitive support for all teachers'* (DoE, 2009: 7), saw the curriculum initiative as one among seven other major reforms. These included the development and communication of a clear vision and plan for education, strengthening and clarifying the role of subject advisors as curriculum mediators in the national system and the strengthening of teacher development and training, to name just three more. In short, while the rewriting of the curriculum 'to address the complexities and confusion created by curriculum and assessment policy vagueness and lack of specification, document proliferation and misinterpretation' (DoE, 2009: 8) was designed to strengthen implementation, the intention was that it be implemented along with other major systemic developments.

The curriculum has been finalised, and with a few exceptions, can be regarded as providing the right kind of content and skills, which, properly taught and assessed, will allow

South African learners to emerge from the system 'well educated'. In short, curriculum development in this country now needs to be put onto a different footing. The Department of Basic Education (DBE) should take on the role of curriculum management and move into a process of cyclic review of curricula that allows the education system to stabilise in terms of what it offers. To put it another way, curriculum change should no longer be the prerogative of Ministerial panels, which create seismic changes in the entire curriculum and as a result, affect the entire education system. The Department needs to attend to the language and Mathematics curricula as a matter of urgency over the next two years, and then to move into an eight year cycle in which all the subjects are in turn reviewed.

Umalusi is conscious that this report comes out at a time when another Ministerial task team is deliberating on the pass requirements of the NSC. It is hoped that the findings of this Ministerial team will reinforce the need to slow down the pace of curriculum change in order to allow teachers, university schools of education, and the national and provincial departments of education to work towards a common understanding of what needs to be taught and learned. In other words, there should be delivery on the other major recommendations proposed in the 2009 DBE report on the implementation of the national curriculum.

It is worth concluding by noting that research such as this is undertaken to build a clear picture of how the CAPS has - or has not fully - addressed the issues it was expected to deal with in terms of the 2009 *Report on the implementation of the NCS* (DoE, 2009) and how these changes affect the curriculum, and assessment of the largest national qualification in education. Such research also informs the bigger picture of the nature of the qualification itself: What its strengths might be, and what challenges its implementation presents to the institutions and staff offering it. In short, the research is undertaken with a commitment to ensuring a better understanding of the NSC for all involved.

1 OVERVIEW OF THE COMPARATIVE ANALYSIS OF THE NCS AND CAPS: TRENDS ACROSS THE SUBJECTS

1.1 OVERVIEW AND BACKGROUND

In 2008, with the promulgation of the National Qualifications Framework (NQF) Act, Umalusi became one of the three quality councils (QCs) responsible for managing the sub-frameworks of the NQF. The National Senior Certificate (NSC) is in the General and Further Education and Training Qualifications Sub-framework, for which Umalusi is responsible. In order to understand the quality and standing of the qualification itself, Umalusi systematically researches various aspects of its components.

Umalusi has a 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, and then its successor, the NSC. In 2008, Umalusi conducted research which compared the NSC curriculum and examinations (exemplars and the first 2008 papers) to those of the Senior Certificate (NATED 550), both Higher and Standard Grades. The primary purpose for this research was to ensure continuity of standard between the old and new qualifications. The research, which became known as the *Maintaining Standards* project (Umalusi, 2009), was primarily undertaken to strengthen understanding of the relationships between the old and new matric examinations for standardisation purposes.

During the 2008 research, Umalusi sought an understanding of the nature of the content and skills and the levels of cognitive demand embodied in the new National Curriculum Statement (NCS) for Mathematics, English FAL, Physical Sciences, Life Sciences, Geography and Mathematical Literacy. The research, extended in 2009 to four more subjects, compared the curriculum documents and exams (exemplars, and the 2008 and 2009 question papers) for the NSC to the related subject curricula for both Higher and Standard Grades in the old Senior Certificate. While the primary purpose for all this *Maintaining Standards* research was to ensure continuity of standard between the old and new qualifications, the research has had additional uses, including allowing detailed and constructive feedback to the Department of Basic Education – and the general public – regarding the subject curricula and the examinations.

In addition, also in 2009, Umalusi undertook similar research on four of the National Certificate (Vocational) (NC (V)) subjects: English First Additional Language (FAL), Mathematics, Mathematical Literacy and Physical Sciences. The research, using the same instruments and methodology, aimed to compare the NCS and the NC (V) subjects in terms of their curricula and the standards set through the quality of the examinations in the individual subjects. Furthermore, the research aimed to find out how progression takes place across NC (V) Levels 2, 3 and 4. It also considered content, sequencing, pacing and the ways in which the NC (V) as a qualification interprets vocational demands.

At the end of 2010, when the CAPS reworking had been completed under the guidance of the Ministerial Project Committee, Umalusi received a letter from its Chairperson requesting it to 'quality assure the newly developed Curriculum and Assessment Policy Statements for Grades R – 12'. The timeframe proposed for dealing with almost fifty separate curricula across the entire school spectrum was approximately two and a half months.

The process of quality assuring the entire national curriculum was planned in 2011, and began with work on the Foundation and Intermediate Phases. However, the demand for understanding the FET Phase meant that the final phase of the project was moved forward in to 2013 to help Umalusi prepare for its various quality assurance processes for the first CAPS exams in 2014. The Senior Phase evaluation project will be undertaken in the second half of 2014 once the FET findings have been made public.

Umalusi has had to work hard in order to understand what quality assuring a curriculum means. In the event, Umalusi has come to understand quality assurance as including its existing evaluation processes: Comparing the curriculum in question with its predecessor to understand the significant similarities and differences; comparing the curriculum in question to relevant international counterparts and then finally comparing the kinds of cognitive challenge and levels of difficulty which are assessed at the exit point. But quality assurance of the curricula, as Umalusi is coming to understand it, requires an understanding of the full developmental trajectory of selected individual subjects across the twelve years of schooling. It requires a careful consideration of the points of transition within schooling, and to that end, Umalusi's teams have developed entry requirements and expected levels of learner attainment for the phases they have evaluated to date. Apart from developing a detailed understanding of the spectrum of curricula from Grades R to 12, and allowing identification of critical points for more careful consideration, the research is intended to provide a set of constructs which would allow for reliable assessment in all the subjects evaluated. These constructs will provide profiles which will help the system to report much more accurately on learner achievement and provide a publicly available picture of what achievement in the NSC means.

The work Umalusi undertook for the FET Phase in 2013 is thus similar to the comparative research done in 2008, and has internally been called an extension of the *Maintaining Standards* project. The core intention in 2013 has been to establish the quality of the Curriculum and Assessment Policy Statement (the CAPS), as the amended version is called, in relation to the Further Education and Training (FET) Phase of the National Curriculum Statement (NCS) of 2008.

As one of its starting points, the research used the report which formed the catalyst for the CAPS development: *Report of the Task Team for the Review of the Implementation of the National Curriculum Statement* (DoE, 2009). The report helped the evaluation teams gauge the extent to which the subject curricula reflected the recommendations made. Umalusi is not of necessity in agreement with all the recommendations in that report, but has used it as a yardstick to check the extent to which the subjects now conform to the criteria laid out there. Some of the issues, such as the recommendation that English be introduced as an additional language in Grade 1 for learners that will use it as a language of learning and teaching will, for example, be dealt with elsewhere.

Research such as this not only helps Umalusi and others to understand the strengths and weaknesses of the subject curricula, it helps to build a bigger picture of the nature of the qualification itself – what its strengths might be, and what challenges its implementation

presents to the institutions and staff offering it. In short, the research is undertaken with a commitment to ensuring a better understanding of the NSC for all involved.

The report will be submitted to the Department of Basic Education (DBE). The findings and recommendations are formulated as guidelines for improvement, in terms both of the national policy and of implementation and assessment. The findings also point to areas that need strengthening in teacher education and professional development. Umalusi, in collaboration with the DBE, Department of Higher Education and Training, Higher Education Institutions and Higher Education South Africa (HESA), could use this research work towards improving the quality of teacher preparation, not only to equip teachers as field experts, but also as subject methodologists who are able to reflect on their own teaching practice.

1.2 THE RESEARCH PROCESS AND METHODOLOGY

This part of the overview report provides a summary of the *What's in the CAPS package?* project. It explains how Umalusi undertook the research and indicates the extent of the work, some of which is described in this report and the accompanying subject reports. The subsequent international benchmarking reports, and the feedback on the nature of first 2014 CAPS examinations are still to follow.

This overview is a summary of the findings from all the subject reports.

The first step in the process of constituting the FET Phase evaluation teams was to invite qualifying and interested people from the earlier research process for the Intermediate Phase comparison to apply for inclusion in the FET teams. (The need for consistency in the research teams is an important consideration, and these teams will be used where possible for similar research on the Senior Phase, and the cross-phase longitudinal study planned for 2015.) Thereafter an invitation was extended to Umalusi's external moderators and post-examination analysis evaluators for possible inclusion in the FET team. The inclusion of moderators in the teams is crucial as it enabled them to develop a sense of the extent of the repackaging of the CAPS, thus preparing them for the moderation process of the first examination of the CAPS at the end of the 2014 academic year.

As a last step towards gathering subject experts for the evaluation teams, an invitation was sent out to assessment bodies and provincial education departments for referrals. The invitation was directed to people who fitted the following profiles:

- a) School-based individuals with –
 - A recognised four-year teacher qualification
 - Six years of teaching experience with at least four years of teaching in the FET Phase
 - Grounded subject knowledge and teaching methodology
- b) NCS Provincial Coordinators/Subject Advisors with –
 - A recognised four-year teacher qualification
 - At least 2 years of subject advising experience
 - Experience in coordinating a specific subject
- c) University/Higher Education institution based individuals with –
 - Lecturing experience in at least one of the subjects
 - A sound knowledge of curriculum studies, subject didactics or instructional science
- d) Curriculum Developers with –
 - A recognised four-year teacher qualification and teaching experience
 - Extensive knowledge of teaching methodology
 - Knowledge of a curriculum development process.

The intention was to have teams consisting of people who bring different strengths and perspectives on the subject being investigated. Each team had a team leader to take overall responsibility for the reporting on that subject.

Evaluation teams were assembled for the following subjects:

Accounting	History
Business Studies	Mathematics
Economics	Mathematical Literacy
English Home Language	Life Sciences
English First Additional Language	Physical Sciences
Geography	

The evaluators were contracted over 8 months for the full extent of the investigation. With the exception of the Business Studies and Physical Sciences teams, which each had five members, and Mathematical Literacy, with four members, the rest of the evaluation teams consisted of six members. Two workshops were held with the evaluation teams, in August and November of 2013, in order to brief them about the evaluation and for the teams to work together on the curriculum analysis. Finally, the evaluation teams completed their analysis via e-communication, and the team leaders took responsibility for the completion and submission of the teams' reports. Constant communication with the

teams, before and after the workshops, regarding logistics, document analysis, instrument interpretation, preparatory reading towards work sessions and the finalisation of reports was vital for the success of this project.

The research was rolled out in three parts, namely a comparative analysis, an investigation to determine entry-level requirement into the FET phase and exit-level outcomes on completion of Grade 12, and an international benchmarking. The following subsections (1.2.1-1.2.3) explain the three parts of the CAPS FET project that have been undertaken by the teams, and provides an indication of the extent to which the CAPS has been investigated.

1.2.1 Part 1: A Comparative Analysis of the FET Phase for the National Curriculum Statement (NCS) and the Curriculum and Assessment Policy Statement (CAPS)

The first workshop contextualised the research process in a number of ways.

In the workshop, the *Report of the Task Team for the Review of the Implementation of the National Curriculum Statement* (DoE, 2009), submitted to Minister Angie Motshekga in October 2009 was presented to the evaluation teams. The teams were exposed to the findings and recommendations of the Ministerial panel which was tasked to identify the challenges presented to the schooling system by the revised NCS (2005) and to make recommendations regarding difficulties in respect of curriculum policy, and its delivery. This report, which provided the rationale for and the direction taken when the NCS was revised or 're-packaged' as the CAPS, was thus a critical document of which the teams needed to be aware. The presentation helped the evaluation teams to locate the comparative work they would undertake.

The evaluation teams also received information and documentation about the curriculum dimensions they would use for their analysis, and about approaches to curriculum development and reviews.

The comparative investigation used an instrument that was customised for this investigation. It required the evaluators to grapple deeply with issues around curriculum framing, and concepts such as content breadth and depth, sequencing, progression, coherence and how to determine the weighting and curriculum focus in the documents. All those who participated in the process learned a great deal, and they in turn offered insights from their own expertise that added value to the report.

Having closely examined the two respective curricula for their subjects, the evaluation teams were asked to give their opinion regarding –

- Broad curriculum design – the central design principle;
- The aims/objectives of the subject;

- The ideal learner envisaged;
- The weighting of each topic in terms of the percentage of time allocated to each;
- The emphasis placed on content and skills;
- The depth of the subject in terms of the extent to which learners could move from a superficial grasp of a topic to a more refined and powerful grasp;
- The degree to which the curriculum of each subject is paced, in terms of the volume of work to be covered in a specific timeframe;
- The specification of sequencing of topics;
- The progression of topics from Grades 10 to 12 in terms of increase in level of complexity and difficulty;
- The coherence of the curriculum for each subject, in terms of connections and co-ordination between topics through the levels;
- The degree to which teachers are given explicit guidance regarding pedagogy;
- The degree to which teachers are provided with guidance regarding assessment;
- Format and user-friendliness of the curriculum documentation.

In drawing up their concluding remarks, evaluators were asked to comment on the overall guidance and use of the curriculum and the central values underpinning each curriculum.

In addition, the teams had to substantiate their opinions about the extent to which the CAPS has 're-packaged' or completely re-written the curriculum in the revision process. The evaluation teams were asked to identify the extent to which the repackaging has extended or contracted the content and skills which learners are expected to acquire and teachers to teach. Another point for attention was whether the CAPS provides better guidance to teachers than the NCS or not.

Lastly, the evaluation teams were required to make recommendations, based on their findings regarding all the points above for the strengthening of the CAPS for each subject where these may still require improvement. Such recommendations will form the basis for negotiating subsequent work to be undertaken by the Department of Basic Education and monitored by Umalusi.

1.2.2 Part 2: Determining the entry-level requirements and exit-level outcomes for the FET Phase

The intent in this part of the investigation was to determine the entry-level requirements regarding knowledge and skills for a learner entering the FET Phase at Grade 10, and the exit-level outcomes for the FET Phase, based on the details provided in the CAPS documentation. The evaluation teams had the opportunity to make recommendations regarding expected learner attainment in order to strengthen the FET Phase CAPS.

The findings from this part of the investigation will inform the research that is planned for the Senior Phase. The intent is to determine possible gaps from the cross-mapping between the Senior Phase and FET Phase. These findings will also provide information for the longitudinal study across all of the phases, which is planned for 2015.

1.2.3 Part 3: A comparative analysis of the CAPS with respective curricula from selected international qualifications

The central focus of the international benchmarking has been to compare the FET Phase CAPS with comparable curricula from Kenya, Singapore and British Columbia (Canada). This was achieved by comparing the CAPS and the international curricula using similar categories to those used in Part 1 of the research, but with specific focus on some of the curriculum dimensions.

The investigation also searched for factors in these curricula that may need to be considered in the South African context to strengthen the CAPS. The teams were asked to use the insight gained from this comparison to identify characteristics specific to the FET Phase within the South African NSC qualification as a whole, and to determine what distinguishes this phase from the other phases in the qualification. The teams were requested to review and strengthen the recommendations made in Parts 1 and 2 for the strengthening of each subject CAPS in the light of the international benchmarking study.

1.2.4 In summary

It is worth noting again that this document only reports on a summary of the findings. It explains the trends that have emerged in the shift from the NCS to the CAPS, and captures the exit level outcomes determined for the FET Phase from Parts 1 and 2 of this research process.

It should also be noted that each of the individual subject reports is presented in full in the cluster reports, and readers who are interested in the subject-related details are referred to these reports for the detailed analysis.

The findings from Part 3 of the research, namely the international benchmarking, will be reported on separately.

1.3 THE RESEARCH QUESTION FOR THE CAPS/NCS COMPARATIVE INVESTIGATION (PART 1)

The research question for the comparative NCS/CAPS evaluation is worded as follows:

What does the comparison between the Curriculum and Assessment Policy Statement (CAPS) for the FET Phase (Grades 10 to 12) and the National Curriculum Statement (NCS) reveal about:

- a. the extent to which the NCS curricula were re-packaged or re-written in the formulation of the CAPS;*
- b. the relative depth and breadth of the content covered in the respective curricula;*
- c. the overall design, structure and coherence of the curricula;*
- d. the level of specification of various aspects of the curricula; and*
- e. the guidance provided by the curricula for the teaching and assessment of the subject?*

1.4 THE EVALUATION INSTRUMENT FOR THE COMPARISON OF THE INTENDED CURRICULA

The instrument used for the comparative evaluation of the NCS and the CAPS draws conceptually on two sources.

Firstly, as in Umalusi's previous work comparing curricula from different countries, the instrument considers the features in the intended curricula of countries that perform well on international standardised tests. These features include:

- Clear, succinct, unambiguous, easily understood, measurable statements of learning (Donnelly, 1999, 2002, 2005)
- A foundation on essential learning as represented by subject disciplines (Donnelly, 1999, 2002, 2005) and a strong, discipline-based approach to school subjects (Schmidt et al, 2005)
- Curriculum coherence – the overall sequence or order of the curriculum from one grade to the next, and internal disciplinary principles evident in the sequencing and progression (Schmidt et al, 2005).

Secondly, the instrument is underpinned by Bernstein's (1990; 1996) conceptual categories that comprehensively describe the structuring of curriculum and pedagogy, including:

- The relationship between different subjects in the curriculum
- The relationship between topics within subjects

- The relationship between subjects and the everyday world or the world of work
- The specification of the sequencing of the curriculum
- The specification of the pacing of the curriculum
- The specification of knowledge or that which is to be learnt in the curriculum.

The evaluation teams involved in the process were asked to consider the following dimensions of the intended curriculum. These dimensions have been developed and refined over a successive series of Umalusi studies (Umalusi 2004, 2006a, 2006b; 2007a; 2007b; 2008; 2010a; 2010b):

1. Curriculum aims/objectives
2. Curriculum coverage, breadth and specification
3. Curriculum weighting, emphasis and depth
4. Curriculum pacing
5. Curriculum sequence and progression
6. Curriculum coherence
7. Specification of pedagogic approaches
8. Assessment guidance
9. Curriculum integration
10. Curriculum format and user-friendliness.

The instrument used for the comparison has been refined by Umalusi to allow for both qualitative and quantitative reporting on the similarities and differences between curricula. The instrument has previously been used to compare curricula for the fundamentals in the NSC and the NC (V), for example, and for subject comparisons between the NSC and selected international qualifications.

Further refinement of the instrument was necessary for the present analysis of the NCS and CAPS. Umalusi required the evaluators to report on the following aspects which became headings in each of the subject reports:

a) Broad curriculum design, format and user-friendliness of curriculum documentation

In this section of the report, evaluators wrote a few descriptive paragraphs about the general design of the respective curricula. The description of the overall curriculum design made reference to the number of documents which comprise the curriculum, and the function of each document, as well as provided comments on the central design principle and how **user-friendly** the documents are for teachers to use.

The evaluators judged the extent to which the documents are user-friendly as follows:

- 'Good' or very user-friendly when the function and the structuring of the documents are clear

- Moderately user-friendly, when the function and the structuring of the documents are sometimes clear but at other times the function seems unclear or the structuring confusing
- 'Poor' or not user-friendly when the function and the structuring of the documents are often unclear or the structuring is overly complex.

Regarding the accessibility of the language used in the curriculum, the evaluators considered the language as follows:

- Very accessible where the documents use plain, direct language
- Moderately accessible where the documents sometimes use plain, direct language and at other times used language that is complex or obscure, or terms that are ill-defined
- Inaccessible where the documents often use complex or obscure language and terms that are not defined.

In describing the **broad curriculum design**, the alignment of the various documents was also considered as follows:

- 'Good' alignment, when it is clear how the documents relate to and complement one another.
- Moderately good alignment, when it is only sometimes clear how documents relate to one another, and there are some contradictions across documents, or there are instances where it is not clear how documents complement or relate to one another.
- 'Poor' alignment of documents when it was unclear how documents relate to one another, or where there were numerous contradictions across documents, or there was no evidence as to how the documents were expected complement one another.

The evaluation teams were also asked to identify and to find evidence for the technical aspect(s) used to organise the design of the curriculum. The instrument gave as examples, 'outcomes-based'; 'standards-based'; 'syllabus', for the technical design aspect. Some of the teams made reference to 'topic- structured' and 'spiral-curriculum' in the discussion.

As a task in this section, the evaluation teams had to draw out the patterns and salient points emerging across curriculum documents, and to write comparatively about the examples and the data collected.

b) Curriculum objectives

The evaluators were asked to look at the list of subject-specific aims, objectives or broad outcomes given in each document for the particular subject. The evaluation teams commented on any similarities or differences across the stated objectives that they noticed between the curricula.

c) Content/skills coverage, breadth and depth

The instrument provides guidance to the evaluators about what is meant by curriculum coverage, content breadth and depth. Curriculum coverage is described as all the content, concepts and skills covered by the curriculum. Content breadth is construed as the number of topics represented in the curriculum for a specific subject, and content depth refers to the complexity and extent of cognitive challenge associated with the topic.

In terms of **content breadth**, the evaluators were asked to identify all the content / concept/skill areas represented for the FET Phase in the NCS and CAPS, and list the topics in a table provided. In the cases where content/concepts and skills are separated out, the evaluators had to list the content/concepts first, followed by the skills.

From how the breadth of content was represented, the evaluation teams could infer the relative breadth of the various curricula and comment on any content that is covered in one curriculum and not in the other. The evaluators also considered and reported on how the curriculum breadth is likely to impact on learners learning through a second or third language.

In terms of **content depth**, the evaluation teams used a 4-point scale in determining the relative degree of depth of content in the NCS and CAPS.

The evaluation teams used the following codes:

1. Introductory level content; superficial; mainly definitions and descriptions
2. Definitions and descriptions plus some detail provided
3. Detailed indications of concepts/topics; requires understanding of relationships between concepts
4. Highly detailed indication of topic; topic required to be dealt with in a conceptually challenging way; requires complex understanding of relationships between concepts

In other words, the depth of a curriculum refers to the extent to which topics are explored. When a topic is given a significant amount of time and the expectation is for engagement at a demanding conceptual level, the topic is considered to have been covered in depth.

From this analysis, evaluators were able to draw conclusions about content depth, referring to considerations such as the extent to which the curricula provide learners with the opportunity to move from a superficial or primitive grasp of a topic to a more refined and powerful grasp of it¹.

Breadth and depth are in constant tension, because the greater the depth expected, the fewer the topics which can be covered in the time available. Ideally, a subject curriculum must attempt to find a balance between these diverging curriculum impulses, something which may be achieved by covering certain topics in greater depth while conceding the need to cover a range of other topics more quickly and in a way that demands less intellectual rigour.

d) Specification of topics

In this section the evaluation teams considered the curriculum specification in terms of the degree to which knowledge is broken down for stipulation in the curriculum. The evaluation teams were asked to determine in how much detail the various topics are specified in the curriculum document. In other words, how clear would it be for the user of the curriculum to understand exactly which content/concepts and skills are to be covered for the particular subject, or to what extent would the teacher be required to draw on his/her previous knowledge and experience of the subject to be able to interpret the curriculum?

e) Comments on content/Skill coverage

In this section of the subject analysis, the evaluators commented on the overall coverage of content and skills by addressing the following:

- The comparison of content and skills across the two curricula, and the appropriateness of these for the relevant age group.
- To what extent do the curricula provide clear, succinct, unambiguous, measurable statements of learning?
- To what extent are the curricula based on a strong, discipline-based approach to the particular subject?
- Is the way in which the subject knowledge is presented in the curricula up-to-date with any shifts in the discipline itself?
- Any erroneous, missing or inappropriate content or skills that are noted. The evaluation teams were asked to provide a list of these issues, and explain fully why they have a concern over this content.

¹ A paraphrase of Bruner's (1995:334) concept of depth.

f) Curriculum weighting and emphasis

i. Curriculum emphasis within the phase (Subject time allocation)

The evaluation teams determined emphasis by looking at how the time allocation for the subject is addressed in the NCS and the CAPS, and indicated the amount of time allocated for the subject as a percentage of total classroom time allocated for all subjects within the phase.

ii. Curriculum emphasis within the subject (Topic Weighting)

The evaluators determined the curriculum emphasis in the NCS and the CAPS in terms of the central topics covered within the subject. They then explained how the weighting of topics compared across the curricula. In order to do so, the evaluators had to indicate the amount of time allocated for each central topic as a percentage of the total classroom time allocated for the subject, that is, if time allocation per topic is addressed in the curriculum document. If time allocation could not be captured as a percentage of the total classroom time, the evaluators had to describe how time is dealt with in the documents.

g) Curriculum pacing

Pacing for a subject in the NCS and CAPS was determined in terms of the relationship between the volume of learning material (topics to be covered) and the particular timeframe given to the subject. Firstly, the **specification of the pacing** (or whether the pacing is stipulated) was determined as follows:

- **High** degree of specification of pacing: Where the pacing is made explicit through clear stipulation of the topics are to be covered in terms of a timeframe over the course of the grade
- **Moderate** degree of specification of pacing is evident where the curriculum provides broad parameters regarding what should be covered when over the course of the grade
- **Low** degree of specification refers to pacing that is left to the discretion of the teacher, and where little or no indication is given of the rate at which content should be covered.

It should be noted, however, that **low** and **high** are not necessarily value judgements about pacing. High levels of specification may be thought appropriate where many teachers are poorly educated and trained. Alternatively, high levels of specification could be regarded as unnecessarily constraining on experienced and knowledgeable teachers, especially if there is an insistence on treating a national curriculum as the letter of the law.

In addition, the evaluators were asked to make a judgement on the **level of the pacing** itself as *it would be experienced by learners in the FET Phase*. The evaluators were asked to judge whether the pace expected is in the following categories:

- **Fast** for learners at this level of development
- **Moderate**, and appropriate for learners at this level of development
- **Slow** for learners at this level

The evaluators were requested to compare data in the data collection tables regarding the stipulation and level of pacing in the NCS and the CAPS.

h) Curriculum sequencing and progression

i. Specification of sequence

Evaluators were asked to describe the level of specification of sequencing in the curricula being evaluated, using the following descriptors:

- **High:** Indicates that the order in which topics are to be taught is clearly specified and prescribed within and across grades;
- **Moderate:** Refers to situations where a general suggested order is given in which topics are expected to be taught within and across grades, but allowance is made for some discretion on the part of the teacher;
- **Low:** Indicates that there is no particular order indicated in which the teacher should present the topics within and across grades, and the sequencing of content is at the discretion of the teacher.

In addition, the evaluators were asked to comment for each curriculum on the appropriateness of the sequencing to the subject and level. In other words, they had to indicate whether the order in which the topics are expected to be dealt with is appropriate, and whether it makes sense in terms of the structure or nature of the subject itself.

Sequencing as a curriculum requirement is much more critical in some subjects than in others. In subjects such as Mathematics and Physical Sciences, the sequencing of topics is important because earlier content must have been acquired in order to learn more advanced concepts and skills. While all subjects will have some sequencing requirements, the sequencing may be less stringent than in subjects which are, in Bernstein's terms, horizontal in structure (Bernstein, 1996). Nevertheless, sequencing of content can be of great assistance to teachers and others such as materials developers.

ii. Indication of progression

Progression is the increase in the level of complexity or difficulty at which a topic is addressed through a grade or across the phase.

The evaluators were asked to describe the changing nature of topics (and the nature of their treatment) over the course of Grades 10, 11 and 12 in terms of an increase in the level of complexity or difficulty at which a topic is addressed over the three years. The evaluation teams inferred from data collected whether there is any indication of progression within and between grades in the FET Phase, using the following criteria of progression:

- **Strong**, if there is evidence of clear movement from one type of related content/concept/skill to another, or a clear progression in terms of increasing complexity or difficulty in a topic from one grade to the next
- **Moderate**, where some indications of a shift to different content/concepts/skills are found, or where some instances point to an increase in the complexity or difficulty at which topics are addressed at different levels in Grades 10, 11 and 12
- **Weak**, when very little indication of progression in terms of shift of content/concept/skill from one grade to the next is found, or where there is little evidence of increasing complexity or difficulty from one level to the next
- **None**, where no shift in the content concept/skill or change in complexity/difficulty from one grade to the next is evident

Analysis of progression across grades often helps to pinpoint potential difficulties, for example, where a topic may have been introduced in one level, neglected in a second, and then becomes both conceptually demanding and difficult in a third level. Looking for progression helps evaluators to check whether the content is logically organised within a grade and across grades.

i) Specification of pedagogic approaches

The evaluators took the meaning of a pedagogic approach to be the way in which teaching and learning is intended to happen in the classroom. Often described in terms of 'teacher-centred' or 'learner-centred', a pedagogic approach can include other, more specific approaches such as problem-based learning, constructivist learning or direct instruction.

The evaluators were asked to describe the extent to which the NCS and the CAPS provide explicit guidance regarding the preferred subject-specific pedagogic approach(es) to be adopted. The following descriptors were used:

- **High:** Describes a curriculum where detailed guidance is given regarding the preferred pedagogic approach to be taken;
- **Moderate:** Describes a curriculum where some guidance is given regarding the preferred pedagogic approach to be taken;
- **Low:** Describes a curriculum where the preferred pedagogic approach is mentioned in a few places but no details are provided;
- **None:** Describes a curriculum that provides no information or guidance regarding the pedagogic approach.

Using the coding, and by making inferences from the data collected, the evaluators were requested to provide a brief description of the subject-specific pedagogic approaches provided, if any are specified. Furthermore, they had to indicate the extent to which the curriculum provides explicit guidance regarding the preferred pedagogic approach to be adopted. They had to write comments on the appropriateness of the approaches for learners at this level of development. Lastly, they had to give an opinion on how the role of the teacher and the perceived ideal learner (or the theory of the learner) compares across the NCS and the CAPS.

j) **Assessment guidance**

The evaluators were asked to give an overview of the nature and extent of the assessment guidance provided in each of the curricula, including any information offered that would contribute towards a general understanding of the approach taken towards assessment. More specifically, evaluators had to indicate the number and types of assessment tasks specified in the curricula, and the dominant types of assessment specified.

The degree of specificity of assessment guidance had to be analysed, using the following descriptors:

- **General** means that only generic assessment guidance is given
- **Subject-specific** means that subject-specific assessment guidelines are provided
- **Both** means that both general guidance and subject-specific guidelines are provided
- **Neither** refers to a curriculum where no assessment guidance is provided at all

The *degree of clarity of guidance* regarding assessment was indicated by the use of the following descriptors:

- **High** describes assessment guidance that provides detailed, specific, clear, and comprehensive information, and is not likely to result in greatly differing interpretations of the assessment requirements

- **Moderate** describes assessment guidance that provides moderate amounts of information regarding assessment that is generally clear, but which leaves scope for differing interpretations of the assessment requirements
- **Low** describes assessment guidance that provides only broad statements about assessment that lack clarity and which allow for multiple interpretations
- **None** describes a curriculum where no guidance regarding assessment is provided

k) Curriculum integration

The evaluators first considered the degree to which different subjects are consciously integrated across the curriculum, or kept separate, using the following descriptors:

- **High** refers to a curriculum where an effort has been made to understand and encourage integration across a number of different subjects
- **Moderate** refers to a curriculum where, in a few places, explicit reference is made to other subjects, or connections to topics in other subjects are referred to
- **Low** refers to a curriculum where the approach keeps subjects very separate from one another and there is very little or no reference to other subjects

The evaluators then considered the extent to which explicit relationships and connections are made to the learner's everyday knowledge and experience, and whether or not this knowledge forms part of the curriculum. The evaluators used the following descriptors:

- **High** indicates that the learners' everyday world and knowledge, the world of work and of communities are constantly referenced and form part of the contextualising knowledge specified in the curriculum
- **Moderate** indicates that the learners' everyday world and knowledge, the world of work and of learners' communities are referenced in a few places in the curriculum, but not seemingly as a conscious strategy
- **Low** indicates that the curriculum emphasises only subject-specific knowledge, and that there are few or no references to the everyday knowledge of the learners, their communities or the world of work

l) Curriculum coherence

Coherence is understood to be the extent to which a curriculum reflects a logic (often inherent in the nature of the discipline itself) in the organisation of topics, where the significant ideas of the subject and their development over time, are evident.

Having looked at the broad curriculum design, the curriculum objectives, the content/skill coverage as well as the sequence and the progression of the curriculum, the evaluation teams were required to make a judgement on the coherence of the NCS and the CAPS.

m) Implications for the South African context

Taking into consideration the South African school context for which the NCS and CAPS were developed, the evaluators were asked to comment on their appropriateness. Though this exercise was speculative, it was broadly based on the evaluators' knowledge of schooling and instructional contexts across South Africa, as well as on the research findings. The evaluators had to justify their claims by referring to examples from the data collected.

n) Assumptions regarding teacher expertise

By referring back to the content and skill coverage, the evaluators had to give an opinion about the manner and detail in which the content is laid out, with regard to assumptions about the teacher's knowledge, experience and capability in respect of the subject.

o) Concluding remarks

The evaluators were asked to summarise the most important findings from the analysis in brief concluding remarks.

p) Recommendations

Based on their analysis, evaluators were asked to make recommendations with a view to the strengthening of the CAPS.

In summary

The comparative research undertaken by the evaluators focused on the national policy through which the Minister sets the minimum norms and standards for the system, analysing the ideals entrenched in policy as well as the written form it takes. This analysis provides a view offered by a group of experienced educationists after an intensive and constructive engagement with those policies.

1.5 STRUCTURE OF THE CURRICULUM DOCUMENTATION

The analysis in this report focuses on the core curriculum documentation that teachers need to consult in order to prepare for teaching.

The **NCS** consists of the following four documents for each subject:

- The **Subject Statement** is the curriculum policy document for each subject. This provides broad background information that is common across all subjects, together with subject-specific guidance outlining the nature of the subject, the Learning Outcomes (LOs), Assessment Standards (ASs), content and contexts to be addressed within that subject. The document includes a general discussion on the assessment approach and methodology to be used.
- The **Learning Programme Guidelines** document for each subject provides guidance to teachers on how to design and structure a learning programme.
- The **Subject Assessment Guidelines** document provides both general and subject-specific guidance on how to design a programme of assessment for each subject.
- The **Examination Guidelines** document provides clarification on the exact structure and weighting of assessment for each subject for Grade 12, including a full description of the content to be examined in the external NSC examination, together with the weighting of the LOs, cognitive categories and content areas.

Various subsidiary documents were produced for certain subjects where additional clarification was needed. These will be discussed on a subject-by-subject basis in the individual subject reports. Hence, under the NCS, the number of subject-related documents that had to be consulted by teachers in order to structure their teaching programmes was a **minimum of four**.

The **CAPS** consists of the following documents:

- The **Curriculum and Assessment Policy Statement (CAPS)** for each subject provides a brief introduction to the CAPS, which is common across all subjects. It then provides subject-specific guidance outlining the nature of the subject, the Specific Aims and time allocation for the subject, an overview of the content, and a detailed specification of the exact content topics and sub-topics to be covered in the FET Phase. The document includes an outline of the structure of assessment for each year.
- The **National Protocol for Assessment (Gr R – 12)** is a general policy document that outlines the recording and reporting processes that are required of all schools registered with the Department of Basic Education. It stipulates the record-keeping and assessment policy for internal and external assessment.
- The **National Policy Pertaining to the Programme and Promotion Requirements of the National Curriculum Statement (Gr R – 12)** is a general document that outlines the policy regarding programme and promotion requirements. This document provides an outline of the structure of the educational programmes in each phase, and the progression requirements between grades and phases.

- An **Examination Guidelines** document has been introduced in 2014 for the CAPS, which performs a similar function to the NCS Examination Guidelines document. It was not released in time for the current research project, and has thus not formed part of the findings presented here.

Hence, under the CAPS, only **two** subject-related documents need to be consulted by teachers in order to structure their teaching programmes.

The recommendation made by the Task Team in the Department of Education (DoE) report (DoE, 2009:8) was to: *‘develop one Curriculum and Assessment Policy document ... that will be the definitive support for all teachers and help address the complexities and confusion created by curriculum and assessment policy vagueness, lack of specification, document proliferation and misinterpretation’*. Although this statement is, to some extent, realised in the reduction of subject-specific documentation for the CAPS from the NCS, the subsequent introduction of the Examination Guidelines documents (in 2014) may undermine this recommendation, introducing the possibility of contradictions between documents once more.

1.6 COMPARISON OF INTRODUCTORY INFORMATION FOR THE NCS AND THE CAPS

The introductory pages of the NCS Subject Statements are identical for all subjects, and comprise 7 pages. These provide a large amount of information on the background and history of the NCS. Much of this relates to redressing the imbalances caused by apartheid education. It also contains the rationale and description of Outcomes-Based Education (OBE), together with explanations of what is meant by the terms Learning Fields, Subjects, Learning Programs, LOs and ASs. In addition, each of the Subject Statements contains 8 pages of information on assessment. These are common to all the subjects.

The introductory pages of the CAPS subject documents consist of 7 pages of common introductory material, and between 5 and 32 pages of assessment guidance, some of which is generic and some subject-specific. The introductory pages make no mention of OBE, since this is no longer the approach adopted by the Department of Basic Education. Consequently, there are some clear shifts that have taken place in the underpinning educational values and approach. These can be traced through a comparison between the generic information provided in the CAPS and the NCS. Some of these shifts are discussed below.

1.6.1 Rationale

The rationale of a curriculum presents the socio-political view of the learning to be undertaken: it explains the necessity for the learning proposed. The rationale also explains the view taken of the teaching-learning process.

The essential rationale provided in the respective curricula is similar in both the NCS and the CAPS documents in terms of situating the curriculum within the aims of the South African constitution. In addition, the NCS includes the rationale for the choice of OBE as the selected educational approach, which seeks to 'enable all learners to reach their maximum learning potential by setting the Learning Outcomes to be achieved by the end of the education process' and to 'encourage a learner-centred and activity-based approach to education' (DoE, 2003:7). By way of contrast, the description in the CAPS document of an underlying educational approach is of the encouragement of '*an active and critical approach to learning, rather than rote and uncritical learning of given truths*' (CAPS subject statements, 2011:4).

The NCS also provides a large amount of information on the background and history of the curriculum in the South African context. Much of this relates to redressing the imbalances caused by apartheid education.

The DoE report (2009:12) describes the NCS as follows:

'The key and clear messaging [in the NCS] included a positive new beginning, the move away from Christian National Education and its attendant philosophy of Fundamental Pedagogics, to a new emphasis on rights-based education and the notion of learner centredness'.

In the move from the NCS to the CAPS, the background discussion around the desired values and social impact of the curriculum has been greatly reduced. This is appropriate in light of the different historical positioning of CAPS, which was introduced more than 17 years after the advent of democracy in South Africa. The omission of the hopeful, idealistic language of the NCS from the CAPS has given the CAPS the flavour of a more traditional curriculum, and has, at times, resulted in a certain amount of nostalgia amongst evaluators about the loss of the 'good vibrations' of the NCS, as it was described by a participant in one of the Umalusi subject evaluation teams.

1.6.2 Aims, purposes and principles

1.6.2.1 Aims

The general aims of a curriculum explain the curriculum's over-arching intention and broadly explain what the curriculum expects to achieve.

In the aims of both the CAPS and the NCS documents, mention is made of the importance of the curriculum conveying the knowledge, skills and values that should be communicated in a post-apartheid South Africa. Both documents contain a similar list of values, which include social justice, human rights, inclusivity, environmental awareness and respect for people from diverse cultural, religious and ethnic backgrounds. The NCS goes into more detail than the CAPS document with regard to the importance of redressing

the historical imbalances in education. The values associated with a democratic South Africa are also more extensively explicated in the NCS than in the CAPS.

1.6.2.2 Purposes

The purposes of a curriculum provide an explanation, in general terms, of what the curriculum intends to help the learner to achieve. Both the NCS and the CAPS provide a clear list of purposes², which is identical for both documents, namely:

- Equipping learners, irrespective of their socio-economic background, race, gender, physical ability or intellectual ability, with the knowledge, skills and values necessary for self-fulfilment, and meaningful participation in society as citizens of a free country;
- Providing access to higher education;
- Facilitating the transition of learners from education institutions to the workplace; and
- Providing employers with a sufficient profile of a learner's competencies.

1.6.2.3 Principles

The principles of a curriculum embody the underlying values or beliefs about what is important and desirable in a curriculum. These principles guide the structuring of the curriculum.

The NCS and the CAPS documents both contain a list of principles, which reiterate the values of human rights, inclusivity, environmental and social justice. Both documents also maintain that the curricula are based on a high level of skills and knowledge, and aim for an education that achieves credibility, quality and efficiency, by providing 'an education that is comparable in quality, breadth and depth to those of other countries' (DoE, 2003:10; CAPS subject documents, 2011:5).

The principles in both documents include the importance of Indigenous Knowledge Systems (IKS), but these are discussed at much greater length in the NCS, where the narrow Western construction of knowledge and intelligence is challenged. The principle of IKS would consciously have been paired with the notion of integration.

The NCS principles thus contain a discussion around integration within and across subjects, making explicit the importance of developing applied competence in learners in the form of practical, foundational and reflective competencies. There is no explicit mention of integration in the CAPS introduction. The CAPS is also missing any discussion around articulation and portability, which were central design features of the FETC qualification (the Further Education and Training Certificate), namely the NSC.

² For the NCS, these are listed as purposes of the FET Certificate in the DoE FETC Overview document (2003).

Where progression is described in the NCS as being across the grades, through the increased complexity of Assessment Standards, progression is described in the CAPS as taking place within each grade, through the progression of content and context from simple to complex.

Inclusivity is highlighted as an important principle in both curricula, with discussion on the need to address barriers to learning, although this matter is discussed in more detail in the NCS than in the CAPS.

1.6.3 Design features of the FET curriculum

The NCS provides a detailed discussion of the structure and design features of the FET curriculum. These include descriptions of Learning Fields, and their relationships to individual subjects. In addition, the NCS critiques the traditional notion of a subject as a 'specific body of academic knowledge', placing emphasis on knowledge at the expense of skills, values and attitudes, and maintaining the perception of subjects as static and unchanging. Instead, the NCS specifically mentions the intention to blur subject boundaries to encourage subjects to be viewed as 'dynamic, always responding to new and diverse knowledge, including knowledge that traditionally has been excluded from the formal curriculum' (DoE, 2003:11).

By contrast, the CAPS makes no mention of Learning Fields, Learning Programmes or Learning Areas, and provides no discussion around the meaning of the term 'subject'. This approach is in line with the recommendation made in the DoE report (2009:63) that 'Learning Programmes, Learning Areas and Subjects must all be called 'Subjects' at all levels to ensure simplicity, clarity and consistency'.

The implication is that there is a reversion to a traditional understanding of the notion of a subject, and a reinsertion of clear discipline-boundaries between the various subjects. This matter is discussed further in the section on curriculum coherence.

1.6.4 The type of learner envisaged

In the description given of the type of learner that is envisaged, both the NCS and the CAPS include the list of Critical Outcomes, although these are not named as such in the CAPS. The Critical Outcomes, as described on p 8 of the FETC Overview document (2003), require learners to be able to:

- Identify and solve problems and make decisions using critical and creative thinking;
- Work effectively with others as members of a team, group, organisation and community;
- Organise and manage themselves and their activities responsibly and effectively;

- Collect, analyse, organise and critically evaluate information;
- Communicate effectively using visual, symbolic and/or language skills in various modes;
- Use science and technology effectively and critically showing responsibility towards the environment and the health of others; and
- Demonstrate an understanding of the world as a set of related systems by recognising that problem solving contexts do not exist in isolation.

One key difference in the list of Critical Outcomes is that the CAPS document describes the second point as: *‘work effectively **as individuals** and with others as members of a team’* (CAPS subject statements, 2011:5). This acknowledges that learners must also be able to work effectively on their own, a capacity which was missing from the NCS, where the emphasis of group-work was paramount.

A notable omission from the CAPS is that the Developmental Outcomes listed in the NCS are not mentioned at all. These are fairly broad-based outcomes that include an exploration of learning strategies, participation as responsible citizens, and the development of cultural and aesthetic sensitivity.

In addition, the NCS contains a list of ideals that the curriculum aims to develop in learners, such as *‘one who will be imbued with the values and act in the interests of a society based on respect for democracy, equality, human dignity and social justice as promoted in the Constitution’*, *‘have access to, and succeed in, lifelong education and training of good quality’*, and to develop learners who *‘demonstrate an ability to think logically and analytically, as well as holistically and laterally’* and are *‘able to transfer skills from familiar to unfamiliar situations’* (DoE, 2003:17). Although some of these are touched on in the values of the CAPS, they are not mentioned in the descriptions of the type of learner that is envisaged.

The move from OBE has also resulted in a shift from discovery-based learning to a more content-driven learning approach. This in turn has led to a shift in the position of the learner from being a participant in the learning process, as a negotiator of meaning, to a recipient of a body of pre-determined knowledge. Significantly, there has also been a loss of the intention to develop critical thinking about knowledge validity and bias, which is captured in some of the LOs of the NCS. For example, part of LO 3 in the NCS Physical Sciences is the evaluation of knowledge claims. This requirement, a valuable one, is not incorporated in the CAPS Physical Sciences in any way.

1.6.5 The type of teacher envisaged

The NCS provides a clear description of the kind of teacher that is envisaged (DoE, 2003:18), namely that they be:

- Key contributors to the transformation of education in South Africa;
- Qualified, competent, dedicated and caring; and
- Able to fulfil the various roles outlined in the Norms and Standards for Educators: these include being mediators of learning, interpreters and designers of Learning Programmes and materials, leaders, administrators and managers, scholars, researchers and lifelong learners, community members, citizens and pastors, assessors and Learning Area or Phase specialists.

By contrast, the CAPS provides no description of the kind of teacher that is envisaged. This is a notable omission for such an important role player in the educational process.

1.7 TRENDS IN RESEARCH FINDINGS ACROSS THE SUBJECTS

Although the Umalusi subject evaluation teams were working towards the common goal of assessing the comparability of the NCS with the CAPS, the individual reports offer unique insights, with particular details that are of interest to the subjects in question. In addition, however, there are overarching trends that can be gleaned from the various subject reports. These trends are briefly described below.

1.7.1 The nature of the curriculum documentation

Where the NCS documents have considerable uniformity in style and length across the different subjects, the CAPS varies between subjects. For some subjects, such as Life Sciences and Physical Sciences, a full teaching programme is provided, with the content and prescribed activities clearly spelt out in very clear timeframes (sometimes to the level of quarter-of-an hour!). By contrast, some subjects, such as History, only provide a list of content to be covered per term, with no time indications for separate topics.

The extent of the assessment guidance also varies substantially between subjects, with the Mathematics CAPS containing the shortest guidance on assessment (5 pages), while the guidance provided for Mathematical Literacy covers 32 pages. The CAPS documents for English HL and English FAL both contain glossaries, but none of the other subjects have these. The table below illustrates the variation in the length of the subject-related curriculum documents for the CAPS compared with the NCS.

Table 1: Page counts for NCS and CAPS		
	NCS	CAPS
	FET NCS	FET CAPS
Highest number of pages	204 (English FAL)	164 (Physical Sciences)
Lowest number of pages	139 (Accounting)	48 (Economics)
Average number of pages	175	82

All these figures point down to a more 'pared down' presentation of the curriculum, and point also to the fact that much of the historical explanation and motivation for the form of the curriculum has been removed.

In addition, each subject appears to have been given some leeway – within a common structure (four sections) – as to how guidance is given to the teacher. This may contribute positively towards the CAPS providing clear and appropriate guidelines within each subject discipline, but it does suggest a less deliberate degree of coherence across subjects in terms of the approach taken.

In all subjects, with the exception of Physical Sciences, the **length** of the subject-related documents that teachers need to consult has been **reduced from the NCS to the CAPS**. (It must be noted that this conclusion does not include the Examination Guidelines document for the CAPS, which may now cause the number of pages in the CAPS documentation to exceed that of the NCS in some cases). The reason for the greater length of the Physical Sciences CAPS, for example, is that it provides an extremely detailed level of specification, a matter which will be further discussed under the Specification heading.

In all subjects, the evaluation teams regarded the CAPS documents as more **user-friendly** than the NCS counterparts, mainly due to the number of subject-specific policy documents that had to be cross-referenced in the NCS (a minimum of four). This issue alone meant that lesson preparation became complicated and unwieldy for teachers.

The accessibility of the **language** was generally considered acceptable for both curricula. Some of the evaluation teams commented on the complexity of the educational jargon used in the NCS when describing OBE. The CAPS uses much simpler language to describe the teaching and learning process.

For all subjects except Accounting, there has been an improvement in **alignment** between the documents within each curriculum. Many of the evaluation teams reported that in the NCS, contradictions exist between the various subject-related documents. The only evaluation team that did not report alignment problems in the NCS documentation was the Accounting evaluation team. It should, however, be remembered that having only one subject-related document for the CAPS at the time of the research process means that these misalignments are not an issue. This may not be so when the CAPS Examination Guidelines are in circulation³.

However, some of the evaluation teams also reported alignment issues between the various **undated versions** of the CAPS documents that were released during the implementation process. This has once again caused great confusion among teachers and other education practitioners who were unsure of whether the version that they have in their possession is the latest version.

² Informal reports do indicate that the CAPS Examination Guidelines are creating difficulties both in terms of introducing concepts not mentioned specifically in the curriculum documents and omitting others (eg Life Sciences), or by making reference to practices that are outdated or which have been changed by legislation, in the case of Accounting.

All evaluation teams agreed that the **design principle** of the CAPS has shifted from outcomes-based in the NCS to being content-driven or syllabus-based. Where an outcomes-based curriculum is, by nature, learner-centred and activity-based, a content-driven curriculum involves a more teacher-centred, instructive approach. However, both of the languages evaluation teams (English FAL and English HL) made the comment that, although the CAPS is teacher-driven, some skills-based principles such as text-based approaches remain, with content-based around topics and themes.

Overall, the evaluation teams concluded that the CAPS documents are an improvement over the NCS in terms of the design and structure of the curricula. The recommendation made in the DoE report (2009:63) for '*consistency, plain language and ease of understanding and use*' has been heeded.

1.7.2 Curriculum objectives

The evaluation teams were asked to compare the objectives that are stated for their subjects for the NCS and the CAPS. The general finding across the subjects was that the objectives are very similar for both curricula. (These are presented in detail in the individual subject reports). Some of the NCS objectives related to socio-political and ethical awareness, and sensitivity to cultural beliefs, prejudice and practices in society, have been excluded from the CAPS. In addition, where the NCS addresses the need for the development of skills related to self-employment and entrepreneurial ventures, these have been excluded in the CAPS objectives.

The English FAL evaluation team noted that the CAPS mainly omits objectives that include human experience, aesthetics of language, and social construction of knowledge. They comment that 'the CAPS has removed the explicit recognition of unequal status of languages and varieties - a key specific objective articulated in the NCS.' The implications of this shift are huge, and suggest a degree of denial around the complex language realities experienced in every school in this country.

As the Mathematics evaluation team described it, there is 'a de-emphasis in the CAPS of the more explicit transformatory agenda that is articulated in the NCS.' This is perhaps appropriate given the historical timing of the two versions of the curriculum, where the NCS was introduced during a time when 'the notion of a national curriculum was a new concept that coincided with the birth of a new democracy' (DoE, 2009:11).

Taken together, these observations suggest a profound shift in the curriculum, which has become a technical instruction with academic performance as the single most important indicator of educational achievement. The curriculum appears to take little or no account of the current historical realities for children, their parents and their teachers, the state of language and culture, or the challenges posed by the economy locally and globally.

1.7.3 Breadth and depth of content

One of the areas that was repeatedly highlighted in the *Maintaining Standards* reports (Umalusi, 2009) was the challenge posed by crammed curricula: a curriculum that tries to cover too much does so at the risk of losing depth of understanding. The DoE report (2009) also raises the need to find a balance between breadth and depth in the content of the curricula. It has been shown that covering more restricted content in greater depth ensures a better chance of future success in the discipline (Schwartz *et al*, 2008). With this in mind, the evaluation teams compared both the breadth and the depth of the NCS and the CAPS in order to determine any shifts that may have taken place in these areas.

1.7.3.1 Breadth

Breadth refers to the extent of curriculum coverage in terms of the number of topics represented in the curriculum for a specific subject. In the present study, the breadth of the NCS and the CAPS were compared by counting the total number of topics and/or sub-topics per grade, and across the whole FET Phase.

Umalusi's evaluation teams came up with different findings in respect of breadth in CAPS.

The Economics and Mathematics evaluation teams reported an **increase in the breadth** of content across the FET Phase in the move from the NCS to the CAPS.

- In Economics, an increase in the number of sub-topics to be covered in both Grades 10 and 11 in the CAPS was found. Of particular concern was the 30% increase in the number of sub-topics to be covered in Grade 10. The evaluation team made the comment that 'learners in Grade 10 are likely to experience this increased breadth as burdensome.'
- In Mathematics, the number of sub-topics in the CAPS has increased in each grade compared with those in the NCS, and overall, there is an increase of 15% in the total number of sub-topics prescribed across the FET phase. The evaluation team expressed grave concern at this increase in breadth, especially in a curriculum that was already challenging for teachers to manage. They commented that 'this increase in breadth could lead to teachers either omitting certain sub-topics, or compromising on the depth at which the sub-topics are dealt with'.

The English HL, Accounting, Business Studies, and History evaluation teams concluded that the **breadth across the FET Phase is similar** for the NCS and the CAPS.

- Although the English HL evaluation team reported a reduction in the actual number of topics covered in the CAPS, this results from the elimination of a section of shorter transactional texts that is no longer assessed in the writing paper. However, the skill required to write such texts is still being taught because of the choice of texts se-

lected for teaching. As a result, the overall breadth remains much the same across the NCS and the CAPS.

- In the case of Accounting, Business Studies and History, the number of actual topics covered in the CAPS was found to be lower than the NCS. However, the evaluation teams concluded that the content breadth is, in fact, very similar across the curricula, since some sub-topics have been relocated or grouped together, giving an apparent reduction in breadth, while the actual content covered across the FET phase remain, in fact, very similar for the NCS and the CAPS.

The Physical Sciences, Life Sciences, Geography and English FAL evaluation teams reported a **reduction in the breadth of content** across the FET Phase in the CAPS compared with that in the NCS:

- For Physical Sciences, the original content outlined in the NCS Subject Statement was extreme in its breadth (as noted in earlier Umalusi investigations, 2009, 2010a), and this curriculum was consequently never fully implemented in reality. However, even the comparison of the implemented NCS with the CAPS shows a marked and much needed reduction in breadth across the FET Phase.
- In the case of Life Sciences, although the total number of topics covered across the FET Phase is the same in the NCS and the CAPS, the number of sub-topics dealt with across the grades has been reduced in the CAPS. Nevertheless, the teachers in the evaluation team were of the opinion that the CAPS content for Grades 10 and 11 still remains too broad to be covered in sufficient depth within the time frames.
- For Geography, some broad content areas have been removed altogether in the shift from the NCS to the CAPS, and some new sub-topics have been added to the CAPS content listing. The end result has been a reduction in content breadth from the NCS to the CAPS. The evaluation team consider the breadth of the CAPS adequate, since it includes a good balance of topics from both the human and physical components of the discipline, and provides ample opportunity for learners to engage with both the theoretical aspects of the discipline and its application to social and environmental issues.
- Comparing the breadth in the case of the two English FAL curricula is problematic, since a comparison of the list of broad topics provided in the NCS is similar to that in the content overview in the CAPS (pp 10-48 of the English FAL CAPS). However, the CAPS teaching plans provided (pp 53-76) have not managed to incorporate all of the specified content in the teaching time available. As a result, there is considerable disparity between the topics included in the CAPS content overview and the topics represented in the teaching plans. Consequently, there appears to have been a reduction in breadth if the comparison of NCS content is made with the teaching plans. This points to a serious issue with the English FAL CAPS, as *there is internal misalignment of the prescribed content within the document itself*. With regard to the question of overall breadth of content in the CAPS, the evaluation team expressed the concern that the list of content topics that is prescribed in the content overview remains too broad, and that learners '*will require more time to engage meaningfully with all of the curriculum demands*'.

1.7.3.2 Depth

Depth refers to the complexity and extent of cognitive challenge associated with the topics in a curriculum. In the present study, depth was assessed by allocating a number to represent the level of depth of each topic, using to the following codes:

1. Introductory level content; superficial; mainly definitions and descriptions
2. Definitions and descriptions plus some detail provided
3. Detailed indications of concepts/topics; requires understanding of relationships between concepts
4. Highly detailed indication of topic; topic required to be dealt with in a conceptually challenging way; requires complex understanding of relationships between concepts

These descriptors were adjusted to suit the requirements of each subject. The percentage representation of each of these depth scores was then tallied for each grade and across the FET Phase. A total depth score (the average depth of all of the topics) was also computed for each grade and for the phase as a whole. This allowed for comparisons in depth to be made between the curricula.

An **increase in depth** from the NCS to the CAPS was noted for Economics and Mathematics.

- In the case of Economics, the depth increase for the FET Phase is very slight (from a depth score of 2,10 (out of 4) for the NCS to 2,19 for the CAPS). The evaluation team made the comment that even this modest increase in depth is welcome, as the content is covered in the NCS at a fairly superficial level. However, the overall shift is marginal, and is not likely to have substantive effects on teaching or learner performance.
- The Mathematics evaluation team did not allocate depth scores in the way that the other evaluation teams did, but instead assessed the cognitive demand of the material that has been added to the curriculum in a qualitative manner. They concluded that the addition of high demand topics like Euclidean geometry and probability, together with the increase in demand in statistics and data handling, and a slight increase in demand in algebra, means that the CAPS *is likely to be significantly more demanding* than the NCS.

The Accounting, Business Studies, Geography and Physical Sciences evaluation teams reported a **similarity in the depth** required across the FET Phase for the NCS and the CAPS:

- For Physical Sciences, most of the very deep content from the NCS was never examinable in practice, and so, although the depth of the specified NCS was high, a comparison between the examinable content in the NCS and the CAPS for Grade 12 shows a remarkable similarity in depth scores (2,84 in the NCS and 2,85 in the CAPS).
- For Accounting, the only changes that were noted were a few shifts in content between grades, making for slight variations in the depth scores for the grades.

However, the depth scores for the content across the whole FET Phase were found to be remarkably similar for the NCS (2,48) and the CAPS (2,49).

- In the case of Business Studies, the overall depth scores for the content across the whole FET Phase were also very similar for the NCS (2,6) and the CAPS (2,7), since the content covered in both curricula is virtually identical.
- For Geography, the overall depth scores for the content across the whole FET Phase were very similar for the NCS (2,75) and the CAPS (2,80), and the evaluation team considered the overall distribution of ratings at the different levels of complexity to be appropriate.

The English FAL and Life Sciences evaluation teams reported a **reduction in overall depth** from the NCS to the CAPS.

- For English FAL the overall depth score for the content covered in the NCS (2,45) is higher than that covered in the CAPS (2,32). The evaluation team made the comment that this is a worrying reduction in depth, and is likely to be exacerbated by their finding that the teaching plans provided in the CAPS lack the level of detail needed for teachers to know at what level or depth a skill needs to be taught. They concluded that 'overall, there appears to be a somewhat fairer and more appropriate distribution of depth of content in the NCS than in the CAPS'.
- In the case of Life Sciences, the overall depth score has decreased from 2,33 in the NCS to 2,27 in the CAPS. However, the evaluation team noted that the CAPS has increased the number of practical investigations, particularly the open-ended investigations, compared with the NCS. The representation of reasoning skills has also increased, resulting in an increase in depth at a continuous assessment level. However, the level of depth of examinable material is lower for the CAPS than for the NCS.

The English HL evaluation team could not comment on depth, since this is left to the discretion of the teacher in terms of the length and complexity of texts that are selected. They made the comment that, although some guidance is given in the CAPS around the selection of appropriate texts, it is insufficient to ensure a common understanding of the level of depth that is required.

The History evaluation team could not compare the depth of the curricula because the structure of the content outline provided in the NCS does not give sufficient detail to provide any form of guidance on the level of depth required. The evaluation team was able to comment on the depth of the CAPS itself, and their conclusion was that 'the CAPS manages the tensions between breadth and depth as well as is possible, although there is probably a greater emphasis on breadth than depth'.

The Mathematical Literacy evaluation team could not compare the depth of the curricula because the NCS appears to define depth in terms of the *mathematical processes involved*, whereas the CAPS defines depth in terms of the *level of problem-solving* required within the selected real-life situations or contexts. Hence, although in one sense the NCS

has greater depth than the CAPS, since it contains topics that require application of more complex mathematical skills, the evaluation team noted that the CAPS goes into greater depth than the NCS in almost every topic, since learners are expected to know more about the topic and to understand the complexity of the authentic real life situation.

1.7.4 Specification of content

The curriculum specification, or degree to which knowledge is broken down for stipulation, was compared for the NCS and the CAPS. On the whole, it was found that the level of specification of content is higher in the CAPS than in the NCS. More detail is provided on the exact scope and depth of the content that is to be taught and assessed.

However, three of the evaluation teams, namely Economics, English HL and English FAL, did not report an increase in specification of content in the CAPS:

- In Economics, where the NCS provides clear command verbs in the Assessment Standards, these have not been included in the CAPS. Instead, content is given as bare descriptors, without an indication of the level of scope and depth provided by the command verbs.
- in English HL, specification has been lost in the CAPS because the area of 'language structures' is not woven into the curriculum, but is included as an appendix which teachers would have to integrate into the teaching themselves. The implication is that grammar and language structures are under-valued and under-developed in the CAPS. This move compromises meta-language acquisition, especially where teachers are less confident in these areas.
- The English FAL evaluation team noted that, since not all of the topics mentioned in the content overview in the CAPS are represented in the teaching plans provided, there has been a loss in the clarity of the content specification in the CAPS. The evaluation team commented: 'In general, both the NCS and the CAPS lack detail which could guide the teacher; as a result of this, there could be misinterpretations of topics. Because of the lack of detail in both the NCS and the CAPS, teachers would have to draw on previous knowledge and experience to interpret the curriculum.'

In terms of satisfying the recommendation made in the DoE report (2009:62) that curricula should provide '*clear, succinct and unambiguous*' statements of learning, the majority of the CAPS subject documents satisfy the criterion. However, particular attention needs to be paid to the clarity provided in the two English language curricula to ensure that these give the necessary guidance to teachers.

In addition, many of the subject evaluation teams reported that the CAPS documents require a thorough edit, as there are numerous errors that appear throughout the documents, which could lead to confusion and erroneous interpretation of the curricula.

A schema, developed by the Netherlands Institute for Curriculum Development, identifies the various levels at which a curriculum can be pitched (Thijs and Van den Akker, 2009). This schema is represented in the table below.

Table 2: Curriculum levels, descriptions and examples		
Level	Description	Examples
Supra	International	• Common European Framework of References for Languages
Macro	System, national	• Core objectives, attainment levels • Examination programmes
Meso	School, institute	• School programme • Educational programme
Micro	Classroom, teacher	• Teaching plan, instructional materials • Module, course • Textbooks
Nano	Pupil, individual	• Personal plan for learning • Individual course of learning

A consequence of the increased level of specification in the CAPS, compared with the NCS, is that there has been a shift in terms of the level at which the curriculum is pitched. The NCS could be said to have been developed at the 'macro' level, focusing mainly on attainment levels in the LOs and ASs, while the construction of the actual educational programme is left to the teacher, supported by the Learning Program Guidelines document.

The CAPS, on the other hand, has shifted the national curriculum to the 'meso' level, and even, to some extent, to the 'micro' level, in that its structure is that of an instructional programme, with a very detailed description of content, sequencing and pacing.

None of these levels is superior to the others, but each has its advantages and its drawbacks. As a 'micro'-level curriculum, the CAPS will offer more assistance to teachers unsure of their subject knowledge and of how to teach the subject than the NCS was. For skilled teachers secure in their knowledge of the discipline, however, this level of specificity may prove thoroughly demotivating especially if district offices insist on a strict adherence to the 'suggested' teaching programme. Such teachers would presumably have thrived in the creative teaching space the NCS opened up for them.

In summary, the CAPS has elevated a 'micro'/'meso' curriculum to the level of the national system. The likely outcome is that, after an initial step up in quality as a result of the additional level of specification, the system will then remain at that point because of the constraints written in to the curriculum itself.

1.7.5 Pacing

Pacing refers to the rate at which content should be covered (in given time frames) over the course of a grade or phase. The evaluation teams were first asked to comment on

the **degree of specification of the pacing** for each of the curricula; in other words, how clearly the intended pacing is described in the curricula. All of the evaluation teams, with the exception of Mathematical Literacy, agreed that the level of stipulation of the pacing is greater in the CAPS than in the NCS, since more explicit guidelines on time frames are provided in the CAPS. The Mathematical Literacy evaluation team found that the work schedules in the CAPS do not provide sufficient detail about the actual content to be taught or the resources needed for the teaching to allow for a clear sense of pacing. They also found discrepancies between the suggested work schedules which specify broad content for each week (Mathematical Literacy CAPS, pp 16-20) and the summary of the number of weeks to be spent on each topic (Mathematical Literacy CAPS, p 15).

The evaluation teams were also asked to comment on the **actual level of the pacing** for each of the curricula, as it would be experienced by learners at the FET Phase. The pacing was difficult to judge in the NCS due to the lower levels of specification, and the flexibility granted to teachers to determine the pace in response to the varying needs of learners. In spite of this lack of specification, however, some of the subjects were able to make broad judgements on the level of pacing, based on the breadth of content stipulated within the overall time frame for each grade. On this basis the Physical Sciences, Accounting, Economics, English FAL and Geography evaluation teams indicated that the pacing of the NCS was likely to be experienced as fast. The remaining evaluation teams were either unable to comment on the pacing, or considered the pace to be moderate.

For the CAPS, all of the subjects except for Geography, Mathematical Literacy and Life Sciences made the comment that pacing is likely to be experienced as fast by the learners, since the time allocation does not allow for a sufficient depth of engagement in the content that is specified. The Geography evaluation team concluded that the pacing is carefully considered and realistic in the CAPS. The Mathematical Literacy evaluation team deemed the pacing to be moderate, based on their overall impression of the material to be covered. The Life Sciences evaluation team considered the pacing to be fast for Grades 10 and 11, where they made the comment that *'the experience of teachers is that they have to rush through the curriculum to complete it in the year'*. They considered the pacing to be moderate for Grade 12, but went on to comment that the pacing is uneven, in that *'too much time is allocated for some topics, and too little for others'*.

1.7.6 Sequencing and progression

Sequencing refers to the order in which topics are required to be taught in a curriculum, and progression refers to the increase in the level of complexity or cognitive demand at which a topic is addressed through each grade, and across the phase.

The evaluation teams were asked to determine the **degree of specification of the sequencing** for the NCS and the CAPS. In general, the evaluation teams found the specifi-

cation of the sequence higher in the CAPS than in the NCS. This is to be expected from a curriculum that intends to provide a structured learning programme, as the CAPS does, in contrast with the approach taken by the NCS, which is to allow teachers the flexibility to design their own learning programmes.

The evaluation teams were asked to make a judgement on whether **progression within each grade** is evident in the NCS and the CAPS. Interestingly, although there is no expectation in the NCS that teachers follow the sequence of topics as they are laid out in the curriculum, many of the evaluation teams found that the order in which the topics are laid out in the curriculum offer an inherent sense of progression. However, a wide range of interpretations of the sequencing of topics by textbooks, provincial departments and other interpreters of the curriculum meant that this inherent progression was not always followed through in practice. For the CAPS, no clear trend is evident across the subjects in terms of the sequence of topics allowing for progression within each grade. The reasoning behind the sequencing of content is not always made clear, and in some cases does not appear to have been designed with progression in mind. An example of this is Physical Sciences, where the Grade 10 CAPS interrupts the flow of certain chemistry topics with the arbitrary insertion of unrelated physics topics, causing a break in the conceptual progression for learners. Exceptions to this are the findings of the Accounting, Economics, Business Studies and Mathematical Literacy evaluation teams, all of which reported strong evidence of progression within each grade.

The evaluation teams were also asked to make a judgement on whether **progression across the grades** is evident in the curricula. For the NCS the evaluation teams generally found that progression across the grades is clearly evident through the way in which the Assessment Standards are expressed, with clear increase in the cognitive demand indicated in the way in which these are expressed per grade. Progression in terms of the content across the grades was reported as strong by all evaluation teams except for Physical Sciences, Geography, History, English HL and Mathematical Literacy, where evaluation teams reported either a clear lack of progression, with uneven degrees of complexity across the grades, or a lack of guidance regarding the required level of complexity for the specified topics.

For the CAPS, all of the subjects, with the exception of the language evaluation teams, reported a clear progression across the grades. The English FAL evaluation team commented that 'the CAPS offers almost no specification as to the expected depth of topics to be covered in each successive grade, and no indication of progression across the phase.' The English HL evaluation team reported that the CAPS only offers guidelines as to how progression should take place, but does not give sufficient guidance to teachers to ensure that a clear increase in the level of complexity or difficulty is realised in the learning process. The lack of specification of the length and complexity of texts to be used exacerbates this.

1.7.7 Assessment guidance

Both the NCS and the CAPS provide generic guidance to teachers on the purpose, forms and methods of assessment. In addition, subject-specific guidelines are given for each subject in the various subject-related documents.

The **types** of assessment outlined in the NCS are baseline, diagnostic, formative and summative assessment. In addition, a distinction is made between formal and informal assessment. In contrast, the CAPS outlines only two types of assessment, namely formal ('assessment of learning') and informal ('assessment for learning'). What is notable is that the CAPS has conflated formative and informal assessment, and has done the same with summative and formal assessment. In addition, no mention is made in the CAPS of assessment as an aid to diagnosing or remediating barriers to learning.

The NCS describes three **methods** of assessment, namely self-assessment, peer assessment and group assessment. The CAPS narrows this down to self- and peer assessment.

The **methods** of recording assessment in the NCS include rating scales, task lists or checklists and rubrics. The method of recording in the CAPS is purely based on marks.

With regard to the formal assessment tasks for each subject, most of the evaluation teams reported that the number of formal assessment tasks prescribed per grade is the same for the NCS and the CAPS. Exceptions are English FAL and English HL, where the **number of formal assessment tasks** has been reduced, and Life Sciences, where the number of tasks has increased in the CAPS.

In all of the subjects a strong **emphasis on tests and examinations** remains in terms of the representation towards the overall summative assessment mark in the CAPS. The final mark for each grade in the CAPS is made up of 25% classwork and 75% end-of-year examination. The 25% classwork mark is made up of a high proportion of marks from tests or the June examination. Hence, the minimum contribution of tests and examinations towards the Grades 10 and 11 marks is 80%, and towards the final Grade 12 assessment mark is 85%. This leaves a maximum of 20% of the marks for projects, practical investigations, assignments and other forms of assessment at Grades 10 and 11, and a maximum of 15% for these at Grade 12. While this may be necessary for assessment to be reliable, it marginalizes the achievements of learners who perform better at tasks that are not test- or examination-based.

The Assessment chapter of the NCS Subject Statements includes a full set of competence descriptors for each level of achievement for each grade, ranging from Level 6 (Outstanding) to Level 1 (Inadequate). In practice, these descriptors were never used, as it was unclear how they should be applied. No such descriptors appear in the CAPS document.

Clearly an attempt has been made in the CAPS to simplify the approach taken to assessment from the fairly elaborate approach in the NCS. Although this necessary simplification

was made in order to reduce the complexity and administrative load caused by assessment under the NCS, it does raise the question of whether valuable insights that can be gleaned from a more nuanced approach to assessment have been lost in the process.

1.7.8 Curriculum integration

The evaluation teams were asked to assess the level of integration **between their subject and the other subjects in the FET Phase** for both curricula. In doing this, they were asked to look for explicit mention of cross-subject integration, rather than just commenting on the nature of the subject as *potentially* related to other subjects. All of the evaluation teams, without exception, found the level of integration between subjects to be low for the CAPS, with little or no explicit mention of reference to fields of learning in other subjects. In the NCS, the explicit mention of integration between subjects was only marginally greater than in the CAPS in History, English HL and English FAL. In all other subjects the NCS showed a similarly low level of integration with other subjects, in spite of the stated intention of cross-subject integration in the NCS.

The evaluation teams were also asked to assess the level of integration **between their subject and the everyday (general) knowledge of learners** at this stage of the learners' development and in this context. No clear trends are evident from the findings of the evaluation teams, since the subjects have varying degrees of applicability to everyday life. Some subjects, such as Mathematical Literacy and Accounting, have a natural link with the everyday world, and these evaluation teams hence reported a high level of integration with learners' everyday lives for both the NCS and the CAPS. Other subjects, namely Economics, Physical Sciences, Life Sciences, English FAL and English HL, reported a drop in the level of integration with everyday knowledge from the NCS to the CAPS. The only visible trend in the findings was that none of the subject evaluation teams reported an increase in the level of integration with everyday life in the move to the CAPS.

The findings by the evaluation teams around the area of curriculum integration point to the CAPS subject documents as having much clearer discipline-boundaries than those of the NCS. This satisfies the recommendation in the DoE report (2009) for 'statements which are clear, succinct, unambiguous, measurable, and based on essential learning as represented by subject disciplines' (p 49).

1.7.9 Curriculum coherence

Curriculum coherence refers to the extent to which an academic programme is well organized, with a clear design that facilitates learning. A coherent curriculum should be free of gaps and needless repetitions, and should be internally consistent within and across subjects. The Netherlands Institute for Curriculum Development suggests that *'it is essential to arrive at a coherent organization of content, both horizontally and vertically. The hori-*

zontal coherence involves the coherence between subjects and/or subject-transcending themes within domains of the same educational level (Thijs and Van den Akker, 2009).

The NCS shows clear evidence of an intention for **horizontal coherence**, in its description of integration and its definition of subjects: *'Integration is achieved within and across subjects and fields of learning. The integration of knowledge and skills across subjects and terrains of practice is crucial for achieving applied competence ... In an outcomes-based curriculum like the NCS, subject boundaries are blurred. Knowledge integrates theory, skills and values. Subjects are viewed as dynamic, always responding to new and diverse knowledge, including knowledge that traditionally has been excluded from the formal curriculum'* (DoE, 2003:8,11). However, this horizontal coherence was not achieved in practice in the NCS, and is evidenced by the lack of explicit guidance to teachers on how to achieve this integration across subjects. Instead, most of the subject evaluation teams commented on the fairly strong discipline-based approach to knowledge in the NCS, which suggests a vertically aligned curriculum structure. This shows a lack of consonance between the stated intention and the actual course structure of the NCS.

The low level of integration between subjects in the CAPS mentioned previously in this report indicates that horizontal coherence is not a design consideration of the CAPS documents. What is evident in the CAPS is a strongly discipline-based approach to knowledge within the subjects, as reported by all of the evaluation teams except English FAL and Mathematical Literacy. (It is perhaps appropriate that these two subjects are not strongly discipline-based, as they are both subjects which aim to develop literary/literacy competence in their respective fields, rather than being strictly disciplines in their own right.) It can therefore be inferred that the CAPS shows a clear and coherent **vertical alignment**, which is evidenced by the clearly demarcated subject boundaries, and the strong discipline-based approach within the subjects. What is gained in this approach is a clarity, on the part of teachers and learners, regarding the exact terminology, content and skill requirements within each discipline. This is likely to lead to a more rigorous induction into the discourse of each discipline, which would more thoroughly prepare learners for future study, than a more horizontally aligned curriculum may allow for. What is lost in a purely vertically aligned curriculum is any explicit development of the ability of a learner to transfer concepts and skills between subjects and into the everyday world.

1.7.10 Implications for the South African context

In the context of South Africa, given the past history of extreme disparities in access to good quality education, not all teachers will have similar levels of proficiency in the required content of their subject in order to be able to design their own teaching programs or classroom activities. With this in mind, many of the evaluation teams agreed that the structured outline of content and activities in the CAPS is more likely to facilitate the development of sound knowledge and skills than the more open, non-prescriptive approach of the NCS. The CAPS is therefore, on the whole, a better curriculum for the

present South African educational context. An exception to this view is expressed by the English FAL evaluation team, who comment that:

The CAPS is based on conflicting assumptions about teacher expertise. The overt assumptions are that teachers cannot, or should not have to, develop their own teaching plans, and thus they are provided with these. This suggests that the CAPS assumes that teachers do not have the expertise (or time) necessary to develop their own teaching programmes. However, there are so many gaps in the teaching plan, and there is so little specification about depth or progression in the CAPS, that it would require a highly skilled and competent teacher to identify such gaps and failures of logic, and take steps to mediate the plans to address these problems.

In addition, some of the evaluation teams expressed concern over the lack of availability of the necessary resources for implementing the CAPS:

- The Economics evaluation team indicated that the required learner support materials (such as magazines, newspapers, statistical data and the internet) are not available in all South African classrooms.
- Both of the experimental science subjects, namely Physical Sciences and Life Sciences, quoted statistics that fewer than 5% of South African schools have equipped, functional laboratories (Equal Education, 2012). Both evaluation teams indicate that the CAPS is unlikely to be fully implemented in the vast majority of South African schools, given the specialised nature of the equipment required for the classroom activities prescribed in the CAPS.

1.8 CONCLUDING IDEAS AND RECOMMENDATIONS

In the move from the NCS to the CAPS, a clear shift has taken place in the underpinning educational approach, from the OBE of the NCS, described as encouraging '*a learner-centred and activity-based approach*' (DoE, 2003:7), to the CAPS approach which is described as '*an active and critical approach to learning, rather than rote and uncritical learning of given truths*' (CAPS subject statements, 2011:4). It should be noted that '*rote and uncritical learning*' was not at any point part of the NCS approach, but it was deeply entrenched as the favoured mode in apartheid education, and may still be prevalent in many schools.

In line with the change the CAPS advocates, the new national curriculum has narrowed its focus to a more clearly discipline-specific approach, with the exclusion of principles such as integration, portability and articulation, and with the re-establishment of strong subject boundaries (as evidenced by the omission of any discussion around the definition of the term, 'subjects', and the omission of the NCS's stated intention of blurring of subject boundaries).

The shift from the strong focus on group-work which the NCS adopted to a focus on the learner taking individual responsibility for his/her learning is evidenced by the inclusion of the clause 'work as individuals' in the description of the type of learner envisaged (CAPS subject statements, 2011:5). The inclusion of individual responsibility for learning is a positive step provided that it does not do away with the benefits of shared learning altogether.

In addition, the move from OBE has also resulted in a shift from a co-operative, discovery-based learning approach, where the learner is a participant in the learning process, and a negotiator of meaning, to content-driven learning, where the learner is primarily a recipient of a body of pre-determined knowledge. Such an approach will require vigilance to ensure the active and critical approach CAPS intends to espouse.

Based on the findings of the subject evaluation teams, the CAPS documents generally do offer a much more detailed level of specification of content than the NCS documents. A consequence of this increased level of specification is that there has been a shift in terms of the level at which the curriculum is pitched: the NCS focuses mainly on providing broad descriptions of attainment levels and leaves the construction of the actual educational programme to the teacher. Such an approach would be categorised as being at the 'macro' level in the typology developed by the Netherlands Institute for Curriculum Development (Thijs and Van den Akker, 2009), while the CAPS approach has shifted the entire curriculum to the 'meso' level, and even, to some extent, the 'micro' level, in that it is structured as an instructional programme, with a detailed description of content, sequencing and pacing. While it needs to be recognised that there is no 'right' level for a curriculum to be pitched, each level comes with its own advantages and disadvantages.

Where the NCS explicitly states the teacher's role as being, amongst other roles, the interpreter and designer of learning programmes and associated classroom activities, the design of the CAPS curriculum takes a distinctly different view of the teacher, since the CAPS is itself a pre-designed learning programme, with prescriptive classroom activities. This, together with the silence in the introductory pages of the CAPS regarding the teacher, suggests that the significance of the teacher's role has become greatly diminished in the CAPS. The implication is that teachers operate more at the level of implementers of a predetermined learning programme, rather than having flexibility in the design and adaptation of this learning programme to the varying needs of their learners. The rigidity imposed by such tight specification of content and time is a two-edged sword, especially if implementation is intended to be literal.

However, judging from the findings of the Ministerial Task Team in the DoE report (2009), the expectation that teachers design their own learning programmes was strongly resisted by teachers and other respondents. Instead the suggestion in that report was that a more clearly structured teaching plan be provided to enable teachers to '*devote their energy to delivering quality instruction*' (p 19). In this sense, then, the CAPS satisfies the recommendations made in the report.

The findings of the subject evaluation teams show that, for the majority of subjects, the content covered in the CAPS does not differ significantly in breadth or depth from the content in the NCS. For those subjects, then, the process of reworking the NCS has primarily been one of re-packaging the content. Exceptions to this finding, are the following subjects:

- **Mathematics:** The evaluation team found that the CAPS content exceeds that of the NCS in both breadth and depth, and is thus likely to be experienced as '*significantly more demanding than the NCS*'.
- **Life Sciences:** The evaluation team found that, although the curriculum content has been mostly re-packaged in the transition from the NCS to the CAPS, there has been some reduction in both breadth and depth of the content in the CAPS in Grade 12. The team comments further that the extent of the Grade 10 and 11 content remains too broad to allow the topics to be covered in sufficient depth.

Each of the subject evaluation teams has made specific recommendations for the CAPS for their subject, and these are to be found in the subject reports. The following recommendations, however, are general ones, made with the intention of strengthening the CAPS:

- The silence on the role of the teacher in the CAPS documents is a concern. The **place of the teacher** in the learning process needs to be clearly acknowledged and articulated in the CAPS documents.
- Since there has been an implicit shift in the **underlying pedagogy** from a learner-centred to a teacher-centred approach, explicit guidance should be given on what this shift means in terms of the choice of teaching strategies.
- The CAPS documents require a **thorough edit**, as many of the subject evaluation teams reported that there are numerous errors that appear throughout the documents, which could lead to confusion and erroneous interpretation of the curricula. Many of the evaluation teams also commented on typographic and spelling errors in various places throughout the document which require a thorough language edit.

Most of the evaluation teams concluded that the CAPS documents are a distinct improvement over the NCS with regard to providing 'statements which are clear, succinct, unambiguous, measurable, and based on essential learning as represented by subject disciplines'. The following subjects are however, notable exceptions and require urgent attention:

- The **Mathematics** CAPS is considered to be significantly more demanding than the NCS, since the CAPS content exceeds that of the NCS in both breadth and depth. Since the NCS Mathematics is already experienced as challenging for a significant portion of the learners, a way of dealing with this extension of the content must be sought. The nature of the Mathematics revision must ensure that the provisioning of Mathematics is suitable for all learners wanting to take Mathematics in the FET Phase. This may require a strategy of allowing for choices within Mathematics.

- The **English FAL** CAPS is problematic, since not all of the topics mentioned in the very broad content overview in the CAPS (pp 10-48 of the English FAL CAPS) are represented in the teaching plans that are provided (pp 53-76 of the English FAL CAPS). In other words, the plans do not manage to incorporate all of the content in the teaching time available. As a result, the disparity between the topics that are included in the content overview and the topics that are represented in the teaching plans is likely to lead to a great deal of confusion for teachers, and probable variations in interpretations of the curriculum. Furthermore, the evaluation team comments that *'there are so many gaps in the teaching plan, and there is so little specification about depth or progression, that it would require a highly skilled and competent teacher to identify such gaps and failures of logic, and take steps to mediate the plans to address these problems'*. The selection of content in the overview therefore needs revision, and the teaching plans require reworking, to ensure internal consistency in the CAPS, and to prevent superficial or incoherent implementation of the curriculum. Special attention needs to be paid to the 'Language Structures' section, which, in particular, has major gaps and fails to progress logically.
- Although the **English HL** evaluation team's overall comment on the CAPS was favourable, in that the 'core topics are fundamental to any course or syllabus intending to teach literacy, and include the development of writing, reading, listening and grammatical skills', it found that the clarity of guidance provided in the CAPS is undermined by the lack of guidance regarding the texts to be selected, and the relegation of the teaching of language structures and conventions to an appendix in the CAPS document. It is recommended that, in order to provide clearer guidance to teachers, the teaching plans be revised to incorporate the following:
 - o More explicit guidance on the nature and complexity of texts to be selected, and
 - o The teaching of language structures should be integrated as part of the teaching plan.

Finally, the question about the extent to which the NCS curricula were repackaged or rewritten in the formulation of the CAPS requires different responses, depending on whether the focus is on content, context, approach or organising principle. In questioning the extent to which the content was altered, changed and adapted, the evaluation teams found that – in the majority of subjects – the content covered in the CAPS does not differ significantly in breadth or depth from the content in the NCS. Mathematics and Life Sciences are the exceptions. In Mathematics, the CAPS content exceeds that of the NCS in both breadth and depth, and is thus likely to be experienced as *'significantly more demanding than the NCS'*. The content in Life Sciences has been mostly repackaged in the transition from the NCS to the CAPS. There has, however, been a reduction in both the breadth and depth of the content in the CAPS in Grade 12, while the remaining content in Grades 10 and 11 is such that there is insufficient time for the topics to be covered

properly. On the whole, though, for none of the subjects would one say that the changes made to content in moving from the NCS to the CAPS are extreme enough to be considered as a full rearticulation.

However, in terms of explanation of context, theoretical framing, approach and organising principle, a drastic change in focus is evident. It is clear from the evaluation that the NCS is framed very strongly around issues of social justice, equal education and liberty through education, with a learner-centred approach underpinning the teaching methodology. In the CAPS, the focus has shifted to a syllabus-type curriculum, embedded in an instrumental theoretical framing and with a teacher-centred approach assumed as the teaching methodology. Another major shift is from Assessment Standards and Learning Outcomes as the organising principle in the NCS to content that is organised in topics and themes in the CAPS. One can conclude that, in terms of context, theoretical framing, approach and organising principle, the CAPS is not merely a repackaging of the NCS, but a full rearticulation.

2 EXPECTED LEARNER ATTAINMENT ON EXIT LEVEL IN THE FET PHASE

2.1 DETERMINING EXPECTED LEARNER ATTAINMENT

The intention of the second part of the evaluation was to determine the entry-level requirements regarding knowledge and skills (generic and subject-related) for a learner entering the FET Phase in Grade 10, and to determine the expected exit-level outcomes for the FET Phase (generic and subject-related), based on the details provided in the CAPS documentation.

Curriculum documents are not explicit in providing entry-level requirements regarding knowledge and skills expected of a learner entering a particular phase. Nor is it the case that exit-level outcomes are explicitly set for learners exiting a phase. Umalusi considers it important to determine expectancies and outcomes to be met.

As part of the data collection process, and in order to be able to make some inferences about entry-level requirement and expected exit-level outcomes, the evaluators referred to the report from Part 1 on the comparative NCS/CAPS analysis, in particular the data collected on the CAPS.

As a first task, the teams worked with the table of contents and skill coverage generated in Part 1 of the research in order to determine the knowledge and skills that are expected to be in place on entering Grade 10. The set of entry-level requirements generated in this way will be compared with exit-level outcomes from the Senior Phase, once these have been generated, to determine any gaps in conceptual or skill development that may exist between the phases.

The evaluation teams were then requested to determine the exit-level outcomes (skills and knowledge) for their particular subject in the FET Phase. The teams started with mapping the outcomes for the various content areas covered in the FET Phase, and, where appropriate, a consolidated list of exit-level content and skills was then generated for the subject.

Based on professional judgement and the experience of the various team members, the teams had to indicate whether any critical content, skills or competencies that should be in place have been **omitted** at exit-level from the FET Phase. The teams also had to give an opinion on how appropriate the emphasis is in terms of the broad **content areas, the broad areas of skills and competencies and the cognitive skills** as specified across the whole phase. If teams found the appropriateness to be questionable, they were asked to indicate what shifts are needed to create a more appropriate emphasis.

2.2 SUMMARY OF RESEARCH FINDINGS ON EXIT-LEVEL OUTCOMES

In the process of determining the exit-level outcomes for the FET Phase, some subjects needed to list the content and skill outcomes separately. These subjects are Accounting, Business Studies, Economics, Life Sciences, Physical Sciences, History and Geography.

There are certain subjects, however, where content and skills cannot be readily separated, since the cognitive skills and content areas are closely aligned and do not operate independently from one another. These subjects are English FAL, English HL, Mathematics and Mathematical Literacy.

The tables in which the exit-level outcomes are listed, together with the teams' comments on these outcomes, are detailed in the individual subject reports. A summary of the findings of each of the subjects is presented below.

2.2.1 Accounting

The Accounting team reported a satisfactory coverage of content and skills across the FET Phase, and did not find any major omissions. They did express concern that many teachers actually teach to the NSC exam, and hence might not allocate enough time to the development of the skill of independent research. They were also concerned that the CAPS document is not being updated in terms of current developments in the profession.

The team reported that the progression in terms of content from Grade 10 to Grade 12 is appropriate, but suggested a reduction in the Grade 10 content to allow for a deeper development of skills, and to facilitate a greater depth of understanding.

The team further commented that the spread of cognitive levels as detailed in the CAPS is appropriate, but expressed the concern that the development of the higher order skills present in the curriculum, such as analysis, evaluation and creative problem solving, is not guaranteed, as this is currently dependent on the teacher. More explicit guidance regarding the development of these higher order skills is definitely required in the CAPS.

2.2.2 Business Studies

The Business Studies evaluation team concluded that the subject content is covered adequately in the curriculum, coupled with a sufficiently comprehensive skills-set, and no omissions were reported. However, more emphasis could be placed on the practical application of content.

The content areas are appropriately emphasised in the phase, but some gaps in the flow of the development of concepts exist, as some topics are covered at Grades 10 and 12 but without any coverage at Grade 11. The shift needed is in the area of the sequencing of content areas across the whole phase to avoid interruption of the conceptual development in learners.

Regarding skills emphasis, the team concluded that the CAPS appropriately demands an array of competencies, but that the curriculum does not give clear guidance about

the practical implementation of how the skills should be applied. While a broad spectrum of cognitive skills is required across the phase – from basic thinking skills to more complex understanding and evaluation, the lower order cognitive skills (knowledge and comprehension) are over-represented across the phase, while the moderately high thinking skills (application, interpretation and low-level analysis) are under-represented.

2.2.3 Economics

The Economics evaluation team commented that, although all necessary content areas are covered in the FET Phase, some areas need more explicit emphasis. These areas are: *'broad social goals of Economics'*, *the issue of 'the predictable response of people to incentives'*, *the assumption that 'voluntary exchange occurs only when participating parties expect to gain'*, and the topic of *'interest rates'*, where the current exit-level content is not regarded as adequate for a Grade 12 Economics learner. In addition, the team commented that the CAPS places insufficient emphasis on the critique of government policies.

Regarding skills coverage and emphasis, the team was of the view that the CAPS offers a wide range of generic as well as subject-specific skills. These were spread across the phase, with higher-level demand at the higher grades (Grades 11 and 12). The team noted, though, that many of these skills remain *implicit* in the curriculum document. It would strengthen the curriculum if the very specific skills associated with particular content were explicitly signalled. This would be particularly helpful for teachers who may not have the ability to infer or deduce from the content alone what the associated skills are.

Regarding the range of cognitive demand in the CAPS, the team noted that just under a fifth of the curriculum content is conceptually challenging, requiring complex understanding, while approximately two-thirds (64%) is pitched at the two lowest levels of demand. The team is of the view that, in order to signal an improving standard, a higher percentage should be allocated to content and performance that teach and assess the higher-order cognitive demands (between 20% and 25%).

2.2.4 English FAL

The English First Additional Language evaluation team found that the outcomes outlined in the 'Overview of language skills and content' in the CAPS (p 10) are adequate, although very broad, and would suggest that learners completing Grade 12 are fluent and competent users of the additional language, across a range of texts and contexts. The overview also suggests that learners will be able to write in a range of different modes; adapting their structure, style and diction for a variety of audiences and purposes. A strong critical language awareness is also indicated: learners should be able to critique language use in their own and others' speaking and writing, and recognise bias, stereotyping and implied power relations.

However, if one compares what is suggested in the teaching plans (pp 53-76 of the English FAL CAPS) to these ideal outcomes, it is apparent that not all these outcomes will be realised through the activities suggested for the three years. The current weekly teaching plans are likely to lead to significant gaps and imbalances.

The team suggests that the overall breadth should be reduced to facilitate greater depth. In addition, there are too few authentic speaking opportunities in the curriculum, and an excessive emphasis on listening to the target language and reproducing others' texts (both orally and in written form.) A shift that facilitates greater emphasis on development of the learners' voice is suggested.

The writing programme should be structured to ensure that the more complex text types are engaged with, and not presented as options. A more coherent and integrated language programme needs to be developed and integrated into the weekly teaching plans. Finally, the curriculum should be reconceptualised to ensure that the specified language items are taught coherently and that a deeper engagement with the critical language outcomes is ensured.

2.2.5 English HL

The English HL evaluation team concluded that the FET Phase curriculum is comprehensive, does not omit any key content, skills or competencies, and includes a broad and inclusive range of content and skill areas across Grades 10 to 12.

However, while this specific curriculum should equip learners with high-level literacy skills so that they are able to understand and produce complex academic texts in Higher Education contexts, the CAPS does not actually provide for sufficient exposure to complex texts to ensure this level of competence.

The evaluation team found that the majority of the cognitive demands for the English HL CAPS fall into the higher order of cognitive demand. This is what would be expected from a learner who goes out into the world and needs language to give and receive meaning in all aspects of life.

2.2.6 Mathematics

The Mathematics evaluation team noted some gaps in the CAPS, in particular in the areas of functions, the 1st derivative in calculus, the notion of a proof in geometry, and the graphing of trigonometric functions. (Details of these can be found in the Mathematics subject report.) However, the team cautioned against increasing the breadth of the curriculum, since the Mathematics CAPS is already very broad at the FET level.

The evaluation team also noted that a number of the specific aims provided on p 8 and 9 of the Mathematics CAPS were not explicitly translated into the main body of the curriculum where the content is listed. The team felt that these omissions could result in important mathematical practices which are highlighted in the aims (e.g. modelling, conjecturing and generalisation, justification and proof), not receiving sufficient attention.

The team found that, in general, the emphasis and weighting of both cognitive skills and content areas is appropriate. They also noted that the weighting of levels of cognitive demand suggested in the CAPS is appropriate, but that assessment tasks, classroom-based tasks and teaching needs to reflect this balance. However, the experience of the evaluation team suggests that the focus in many classrooms is on lower-level tasks, requiring knowledge or the execution of routine procedures, and thus a considerable amount of work needs to be done for the specified weighting of cognitive demand to be realised in practice.

2.2.7 Mathematical Literacy

In considering the content coverage of the Mathematical Literacy CAPS, the evaluation team highlighted a number of gaps where the curriculum could be made more relevant to the daily lives of typical South Africans, in particular in the areas of finance, measurement and probability. (Details of these can be found in the Mathematical Literacy subject report.) However, the evaluation team found the content emphasis to be appropriate, and did not find that any one application topic is over-emphasised.

The evaluation team found that the higher order skills of analysis, comprehension, interpretation, decision-making and drawing conclusions form the greatest emphasis at the exit level, and expressed the opinion that this is an appropriate emphasis because it achieves the stated goals of the subject, which is to equip learners to live and function in a world that has many quantitative demands and challenges. The team did note, however, that it was not possible to comment on the emphasis in terms of the cognitive levels specified because in Mathematical Literacy the cognitive demand is evident only in the assessment of the subject. Every topic can be assessed at every level of cognitive demand by using different contexts.

2.2.8 Life Sciences

The Life Sciences evaluation team found that the content areas selected for the FET phase in the CAPS are an appropriate reflection of the scope of biological sciences at an introductory level. They further commented that the skills listed under Specific Aims 1, 2 and 3 in the CAPS are broadly appropriate for the Life Sciences. However, the team compiled a list of omissions and errors in the content outlined in the curriculum, and

further raised a number of concerns about the way in which some skills are interpreted or implemented. (Details of these concerns can be found in the Life Sciences subject report.)

Regarding the range of cognitive demand in the CAPS, the team found the representation of cognitive levels to be satisfactory, and noted that the way in which various models are used illustrate higher order thinking.

2.2.9 Physical Sciences

The Physical Sciences evaluation team concluded that all of the critical topics are adequately covered in the Grade 12 examinable curriculum (the exit level for the FET Phase), and no obvious omissions in either content or skills were noted. The evaluation team found that the content emphasis is appropriate, since there is a good match between the amount of time allocated to the teaching of the examinable material and the mark weighting given in the final Grade 12 assessment for these content areas.

Regarding the coverage of skills, the team concluded that the curriculum covers all of the required skills and competencies that would be expected of a learner exiting the FET Phase, and that the emphasis is appropriate. They found that no key skills are overlooked in the CAPS.

Regarding the range of cognitive demand in the CAPS, the team noted that the CAPS recommends that the daily problem solving activities should cover all cognitive levels. If this is followed through in practice, the weighting of cognitive skills is sufficient. The team did note that it is not possible to make a complete judgement on the weighting on cognitive demand at exit level without an analysis of the assessments themselves.

2.2.10 History

The History evaluation team found that the content covered at exit level for the FET Phase is appropriate, in that the curriculum requires learners to develop an understanding of some of the significant historical events that have had an impact on Europe, United States of America (USA), Union of Soviet Socialist Republics (USSR), China (or Vietnam), Cuba, selected countries in Africa and South Africa, from the mid-1940s until the present. However, they noted that it is possible for learners to learn only two topics in each exam, as they have a choice of questions, so they may choose to only focus on two thirds of the content topics.

Regarding the coverage of skills, the team noted that the list of exit-level skills gleaned from the History CAPS would describe the 'ideal' learner who has engaged with a wide range of source-based tasks during the FET Phase; has been explicitly taught how to

construct an academic essay, and has had the opportunity to engage with research projects in a supportive and scaffolded classroom environment. However, not all learners who pass the NSC exam will have had such experience and so will not necessarily achieve the exit-level outcomes to this 'ideal' level: When considering the CAPS Section 4 on Assessment, it was found that learners may pass the NSC without achieving what the team has described as the exit-level outcomes, since learners can pass the source-based section of the Grade 12 History exam by answering only Level 1 and Level 2 source-based questions. Thus learners who pass with between 40% and 50% may well not have achieved all of the exit-level outcomes.

In addition, according to the CAPS, the essays that learners write in the final Grade 12 exam must show that they are able to 'develop and sustain an independent and well-balanced argument' and can 'use evidence to support an argument' (p 40 of the History CAPS). However, the team found that an achievement of 40% for an essay in Grade 12 does not indicate that the learner has met what the team has described as the exit-level outcomes for this skill.

2.2.11 Geography

The Geography evaluation team commented that the exit level outcomes for the FET Phase CAPS are generally considered adequate and appropriate. One gap that was noted is the lack of an Information and Communications Technology (ICT) base to the Geographic Information Systems (GIS) work, with only a paper GIS being required. They further noted that, in the settlement section, it would be beneficial to include some work on land use competition.

The evaluation team concluded that the emphasis on the various content areas is appropriate over the phase, since the content is studied at different scales, giving learners appropriate perspectives on systems, processes and issues in local, regional and global contexts. In addition, they reported that there is an appropriate balance between theoretical work and its application in various contexts.

The evaluation team found that the skills that are directly specified are generally appropriate. However, it is problematic that essay writing is optional. Learners should be encouraged to apply the skills of more sustained writing that have been developed in language subjects to their work in Geography. The evaluation team further suggested that more opportunities for learners to develop the skills associated with practical and fieldwork should be encouraged. The evaluation team found the emphasis on cognitive skills to be appropriate in the sense that a wide range is covered, including high order skills. The geographic skills and techniques also refer to a wide range of cognitive skills, including higher order ones. They noted that there is clear and appropriate weighting of cognitive levels in the assessment guidelines in the final section of the CAPS document, which could guide teachers in terms of development of higher order skills during classroom activities.

2.2.12 In Conclusion

For each of the eleven subjects, the evaluation teams have provided a view of the suitability of the curricula in preparing learners for a final assessment after twelve years of schooling. One of the themes expressed repeatedly in these summaries is that, while the curriculum provides for the development of the full range of cognitive abilities, the actual *implementation* seldom gives sufficient opportunities for the development and practice of the creative, analytic and synthesising skills in the curriculum. These skills prepare learners for the demands of the workplace and post-school education and training. This set of findings suggests, once again, that the challenge in the South African educational system lies less in the quality of the curriculum than in its translation. Lively, demanding classroom activities are needed that encourage young South Africans to use their minds creatively and analytically, to write intelligently and critically, and to read and process information at levels really required at the end of twelve years of schooling. Such classrooms need well-educated teachers, who are well prepared to teach and good textbooks and other resources in schools that are well managed. These issues and gaps will not be resolved by having a fine curriculum only. Systems addressing these issues and gaps must be put in place and regularly monitored.

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ANNEXURE A: RESUMÉS OF THE UMALUSI FET EVALUATION TEAM MEMBERS

ACCOUNTING

- **Dr Jabulisile Ngwenya** has a PhD in Education. She is a university Accounting Education lecturer with eight years lecturing experience from first year to post-graduate level including Honours and Master's supervision. She is the head of Commerce Education discipline. She is also an external moderator and examiner of Commerce education modules. She has fifteen years' experience as Accounting secondary teacher of which six years were as Head of Department (Commerce) and two as a deputy principal
- **Mr Trevor Hall** has an M Com degree in Accounting, as well as post-graduate Dip Acc and HDE qualifications. He has held the position of Principal of Westville Boys' High School (KZN) since 1997. He has 34 years' experience as an Accounting educator in the FET phase, 23 years' experience as a provincial examiner/moderator, and 12 years' experience as a national moderator of DBE and IEB Accounting examinations. He also serves the DBE as a trainer of national and provincial examiners and moderators across all subjects examined by the DBE.
- **Mrs Pamela Townsend** has a B Com degree from Rhodes University and a Master's of Education from the University of the Witwatersrand (Wits). She is a senior lecturer in the School of Accountancy at Wits where she is the course co-ordinator of the first year accounting programme and also lectures on this programme. She has 12 years lecturing experience and prior to this taught high school accounting for 20 years where she either started accounting at these schools or was appointed as head of the accounting department in these schools. She has been both an internal examiner and external examiner for first year accounting. She also served as an IEB matric marker for 7 years prior to joining Wits. Her current research interests are related to how first year students adapt to the challenges of tertiary education.
- **Mrs Mahlape Vanneer** has a B Com (Ed) and a B Com (Hons). She is also a qualified assessor. She is a subject advisor with 10 years' experience as an Accounting teacher in the FET phase, 7 years' experience as an Accounting subject advisor advising teachers on curriculum delivery, 4 years' experience as a provincial moderator, 6 years' experience as a NSC/SC provincial marker, and 4 years' experience as a senior marker. Taught project management at CUT for two years – part time.
- **Mrs Diane Woodroffe** has a B Com degree and has taught in the FET and GET Phase since 1978. Besides this she has lectured in teacher training and been actively involved as a consultant with the DBE through the launch of the NCS. Having taught in IEB schools she was the standard grade examiner for 3 years before being appointed as external moderator for Accounting to Umalusi. She has held this position since 2002. She is at present the examiner for the SAICA Olympiad exam and does several workshops for SAICA a year, particularly to teachers in the under-performing schools.

- **Ms Kirsti Chapman** has a four year B Ed degree with 7 years' experience of teaching at FET level, two years' experience as a provincial marker and a year's experience as an Accounting material resource developer. She currently holds the position of HOD Accounting at Pretoria High School for Girls.

BUNINESS STUDIES

- **Dr Carina America** has an M Com (Management Sciences) and a PhD in Education. She is a university Economic and Management Sciences lecturer with ten years lecturing experience from first year to post-graduate level in an Education Faculty and a Business Faculty. She is currently lecturing at Stellenbosch University in the Curriculum Studies department, having undergraduate B Ed students: Economic and Management Sciences (EMS), as well as PGCE (Post Graduate Certificate in Education) in Accounting, Economics and Business Studies, B Ed (Hons) in Economics and post graduate supervision as part of her responsibilities. She is an external moderator and examiner; has five years cumulative experience in the corporate sector and in research finance administration and fifteen years' experience as secondary teacher in commerce subjects, of which eight years were as Head of Department.
- **Dr Molebatsi Milton Nkoane** has a PhD in Education. He is a university Commerce Education lecturer with more than 15 years' experience in lecturing Commerce Education at the university from first year to postgraduate level, including PhD supervision. He is an external moderator and examiner of education modules.
- **Mr Bernhard Botha** has a four year Teachers' Diploma in Commerce and a B Com degree. He is a Business Studies subject advisor (Senior Education Specialist) with 21 years' experience of teaching at FET level, six years' experience as a Subject Advisor (Senior Education Specialist) and six years of experience as a senior provincial marker.
- **Mrs Presheena Morris** has a HDE (M+4) and a B Com (Hons) degree. She is a Commerce schoolteacher with 25 years teaching experience and is Acting Head of Department: Commerce. She is the Sub-district Cluster Co-ordinator and a provincial marker.
- **Mr Daniel MacPherson** has an M Ed in Comparative Education Systems. He is a former Business Studies/Economics educator with 25 years teaching experience; marker, senior marker, deputy chief marker, chief marker and examiner. He was the Senior Education Specialist for a period of 5 years and is currently a principal of a FET School (Gr 8 -12). He is the External Moderator for Business Studies.

ECONOMICS

- **Prof Suriamurthee Maistry** is an academic and researcher in Business Education at the University of KwaZulu-Natal (UKZN). He holds a Bachelor of Paedagogics degree (Commerce); B Com Honours (Economics); B Ed Honours, M Ed and PhD. He currently supervises Masters and PhD students in Commerce Education (researching both school and higher education contexts). He also leads a textbook research project. He is an NRF rated researcher (C3) who has published several peer journal articles.
- **Prof Micheal van Wyk** holds a PhD (Curriculum Studies), M Ed (Educational leadership and Management), B Ed (Hons) (Curriculum Studies), B Econ, Secondary Teachers' Diploma, Certificate in Assessment and Certificate in Financial Management. He is a senior professor in the Department of Curriculum and Instructional Studies, College of Education at Unisa. He is an NRF rated researcher in Economics Education. He was awarded the Chancellor's 2013 Award for Excellence in Research at Unisa. He is currently the Business Education (Accounting, Business Studies, Economics, Economic and Management Sciences) primary lecturer in the College of Education, Unisa. He has ten years lecturing experience from undergraduate to post-graduate level at the College of Education. He is an external moderator for several South African and international universities for doctoral and master studies. He is the founder and Editor-in-chief of the Journal of African Pedagogy and Curriculum. He has experiences in post-graduate supervision. He has twenty three years experiences as a secondary teacher in commerce subjects. He was a marker for Business Studies and Economics as well as commerce subject advisor in the Northern Cape Department of Basic Education.
- **Mr Edwin Pretorius** has B Com and B Ed degrees and a Diploma in Accounting & Finance. He is a former Economics/Accounting educator and deputy chief education specialist with 35 years' experience in the field of education. He was marker, senior marker, chief examiner and internal moderator for Economics. He is a PGCE contract lecturer for Methods of Economics and Accounting. He co-authored Economics and Accounting FET text books and is currently external moderator for Economics. is the External Moderator for the National Senior Certificate (Economics).
- **Mr Sathiselan Ponnen** held a B Ed (Hons). He was a former teacher of Economics and head of department of Commerce. He served as an examiner for NSC Economics under the former House of Delegates. He lectured at UKZN in both the B Ed and the Postgraduate Certificate in Education programmes. He was the Umalusi moderator for the National Senior Certificate (Economics).
- **Mr Lionel Johnson** has an HDE, B Econ, B Ed (Hons) and Master's degree in Educational Development and Management. He is a university lecturer in Economics and Management and Business Studies at the Cape Peninsula University of Technology, with five years lecturing experience from first year to fourth year at the Education

Faculty; six years' experience as a subject advisor (senior education specialist) and ten years of experience as a marker and senior provincial marker for Business Studies and Economics; eighteen years' experience as a secondary teacher in commerce subject at a secondary school, and an external moderator and examiner of Economics and Management modules.

- **Mrs Moleboheng Lenkie Rambuda** holds BA, B Com and B Ed (Hons) degrees. She is an Economics Subject Advisor (Senior Education Specialist) with 14 years of teaching experience at FET level. She also has seven years of experience in supporting, advising and monitoring curriculum delivery in schools and six years of experience as a Provincial Senior Marker. She is a subject advisor and sub-examiner in Economics in the Free State. Since 2008 she has been involved in comparative research to enhance the implementation of the curriculum. She is a team member of the Umalusi curriculum evaluation team for the past 5 years and was involved in the examination paper analysis from 2008 – 2012.

ENGLISH FIRST ADDITION LANGUAGE

- **Ms Jean Moore** is an experienced teacher who has specialised in First Additional (FAL) language teaching at secondary and tertiary level. She taught English FAL and Home Language (HL) in South Africa for eight years and was Head of English FAL for three of these. She ran a school-based *English as Additional Language* Unit for immigrants, in England. She has worked for Unisa and UKZN in academic literacy development; running the Reading and Writing Centre on the Unisa, Pietermaritzburg campus and working as the academic development co-ordinator for the Law School, UKZN. She developed materials and tutored for the Social Sciences extended curriculum project at UKZN, and taught English FAL method modules for PGCE students and *Reading and Writing for Academic Purposes* to B Ed (Hons) students at UKZN's School of Education. Jean has co-authored several English FAL textbooks for the Senior and FET phase. She currently teaches at Parktown High School for Girls in Johannesburg and manages a teacher development network.
- **Ms Nomsa Zindela** holds an MA in English Language; a degree in English Language and Literature; and a diploma in Education. Currently, she is a lecturer in the Department of English Studies at the University of South Africa (Unisa) where she teaches courses at undergraduate and Masters' level in Applied English language studies; English for Specific Purposes and TESOL. She has taught English language and literature at several secondary and high schools in Swaziland. In 2001 to 2007, she taught Language and Applied Linguistics at the University of Swaziland before coming to UNISA in 2008. Nomsa has also worked as a language editor for Macmillan Educational Publishers (Swaziland); has served as an examiner, marker and marker-trainer for the O Level and Cambridge International Examinations; has served as an English language panellist and chair of the English Language and Literature National Panel of Swaziland; has written and translated English language materials for both the Swa-

ziland Educational and Examination sectors as well as educational publishers in South Africa. She is currently one of the external evaluators of English FAL for Umalusi.

- **Mrs Patience Voller** holds a three year Primary Teacher's Diploma and a BA degree with English. She was a high school teacher for 27 years and served as head of the Languages Department for six years. She taught English Home Language (HL) and First Additional Language (FAL) in the Senior and FET Phase for 20 years. From 2000 to 2003 she tutored English FAL in the Intermediate Phase, to in-service teachers completing the National Professional Diploma in Education (NPDE) at UKZN. As a specialist coordinator: school Improvement at JET Education Services, she has facilitated English FAL workshops for FET teachers in the Teacher Development and School Improvement projects. She has designed GET and FET learning modules and assessments for JET Education Services School Improvement/Teacher Development intervention. She was also Project Manager (JET Materials development) for Foundation Phase (Lesson Plans utilizing DBE workbooks.)
- **Ms Nandipha Nonkwelo** holds a Master's degree in Applied English Language Studies and is the Deputy Chief Education Specialist for FET languages in the FET Curriculum Development and Support Directorate in the Gauteng DoE. Her experience in education spans 11 years as an English HL and FAL teacher and HOD and 7 years as a curriculum coordinator. Her responsibilities include the training of subject advisors and teachers in the NCS and the CAPS, monitoring of curriculum implementation and providing teacher and learner support. She has also written several English textbooks. Her participation in the Umalusi Standard Setting project started in 2008. She is currently a member of the English FAL post-exam evaluation team.
- **Prof Leketi Makalela** is an Associate Professor and Deputy Head of the Division of Languages, Literacies & Literatures at the Wits School of Education, University of the Witwatersrand. He received his PhD (through a Fulbright scholarship) in Applied English language studies, literacy and education. He is a National Research Foundation rated researcher in biliteracy development, language policy and planning, and World Englishes, and he serves as Chairperson of the Wits School of Education Research Committee. His publications appear in internationally accredited journals such as *World Englishes*, *Written Communication*, and *International Journal of Multilingual Research*. His latest book publication is *Language Teacher Research in Africa*. He is Editor-in-Chief of the *South African Linguistics and Applied Languages Studies Journal*. Prof Makalela is a recipient of numerous research grants from international bodies such as the USAID, Belgium Inter-University Cooperation and the Southern African- Netherlands Partnership for Alternative Development. In 2011, he became a recipient of the African Studies Association Presidential Award, which saw him giving keynote talks at Rutgers University and at the US Library of Congress, Washington DC.
- **Dr Llewellyn Bull** is the current External Moderator for English FAL and SAL. He received his D Ed in 1994. He was awarded his L.T.C.L (with distinction) in 2011. He has had 29 years of teaching experience having taught both English Home Language

and English First Additional Language, and was later promoted to Deputy Chief Education Specialist for the Gauteng Education Department, as head of the Editing Section of the Assessment Materials Unit. He has had a number of articles published and is co-author of 'Business English'.

ENGLISH HOME LANGUAGE

- **Mrs Deirdre McCusker** is the HOD Languages (From 1996 – present. 17 years) at Pretoria High School for Girls; Head of Subject English Home Language; Convenor: English Subject Committee N3 DACC; IEB and GDE Project – Portfolio assessment 1999; Project 2000 GDE schools. Instrumental to writing Guideline Document for English Portfolios and continuous assessment; Cluster Leader English First Language District N3; Cluster Leader English First language Tshwane South –groups 3, 5 and 6 (20 schools); Moderator of English Orals within clusters (2001 to 2010); Senior Marker on Portfolios; NCS English Home Language marking: Original Writing including moderation as cluster leader; Literature Paper senior marker; Language Paper senior marker. She has worked with Umalusi on various research projects from 2010 to 2013.
- **Dr Sopelekae Maithufi** holds a MA and PhD. He is a Reviews Editor: *The English Academy Review* (Peer-reviewed and DOE accredited). He is currently a senior lecturer: English Studies Department, Unisa. Previously Dr Maithufi held positions as lecturer: Department of English, Pretoria University; lecturer: Department of English, Vista University, Mamelodi; and junior lecturer: Department of English, University of the North. He has worked with Umalusi on various research projects from 2008 to 2013.
- **Mrs Liesel Kloppers** has been the HOD English and Head of Grade, Port Shepstone High School and is currently the HOD English, Pretoria Boys High School. She has also been a marker, Paper 3: Writing: Natal Education Department Marking Division Matric exams; senior marker, Paper 2: Literature KZN Education Department Marking Division Matric exams; regional moderator, oral and portfolio: KZN Education Department; and Cluster leader and moderator: oral exam GDE, Tshwane. She has worked with Umalusi on various research projects from 2010 to 2013.
- **Mrs Fathima Suliman** is currently a subject adviser for English HL & FAL in the FET Phase at Sedibeng East District, Gauteng. She is also a NCS Developer of training manuals, national trainer and provincial trainer of the NCS in Gauteng Province – FET educators; compiler of the CAPS document: English FET and GET Phases; provincial trainer for CAPS implementation: Grades 10-12 educators; Gauteng Provincial Examiner for English First Language HG & SG Papers 2 and 3 – 2005 to 2012; marker, senior marker, Deputy Chief Marker, Chief Marker and Internal Moderator - English HL Papers 2 and 3– November, Supplementary and Senior Certificate examinations; SBA Moderator – English First Language; Chief SBA Moderator English HL – Gauteng Province. She has worked with Umalusi on various moderation projects from 2008 to

2013. Previously she held positions as an educator of English (Grades 10-12) for 16 years; Head of Department (English) for 7 years and Deputy Principal for 4 years.

- **Mrs Linda Mae Cilliers** is the HOD English HL at Pretoria Technical High School. She is also the senior marker English Home Language; examiner Common Paper English Home Language; Grade 10 Paper 1 – District; examiner Common Paper English 1st Language; Grade 11 Higher Grade; prescribed Matric network book review committee (2002). She has worked with Umalusi on various research projects from 2011 to 2013.
- **Ms Taryn Bernard** is a lecturer and course-coordinator in the General Linguistics Department, Stellenbosch University. She is nearing completion of a doctorate degree in Applied Linguistics. Taryn's research frequently draws on theories of critical applied linguistics (CAL), critical discourse analysis (CDA) and systemic functional linguistics (SFL), particularly as they relate to academic literacy development but also to sustainability and corporate social responsibility discourses.

GEOGRAPHY

- **Dr Susan Cohen** is a senior lecturer, Curriculum Division, University of the Witwatersrand) holds a BA Honours degree in Geography, a PGCE, an M Ed in Curriculum Analysis and Design and a PhD. Her work has focused on teacher development and support, through teaching and leadership positions held in pre-service teacher education institutions in rural and urban settings, research, and the development of both print and digital resources. She was a member of the C2005 Human and Social Sciences curriculum design team, and has also engaged actively with subsequent curriculum development processes. She has been a member of the Umalusi Maintaining Standards team for several years.
- **Prof Joan Fairhurst** is Professor Emeritus at the University of Pretoria. She holds a DPhil in Geography, a Secondary Teacher's Diploma and a Higher Education Diploma. Geography in Education has featured prominently throughout her teaching career at schools, teacher training colleges and universities, continuing in a range of post-retirement activities. During the post-1994 debates at the NRF and when serving on the South African Qualifications National Standards Body for Human and Social Studies she sought to ensure that Geography's identity remained intact. In the year of her retirement she received the Society of South African Geographers Gold Medal Award for an outstanding contribution to Geography.
- **Mrs Allison Lamb** is the Head of Department: Assessment at Pretoria High School for Girls. She has a BA Ed degree and an Honours degree in Geography. She has been a Geography teacher and Head of Department, Humanities, and while still teaching Geography, she was the Mapwork examiner and chief marker for the Gauteng DoE in 1996 and 1997. She has also co-authored a Grade 8 Geography textbook.

- **Ms Angela Phocas** is the Head of Geography at Redhill School. She has a BA degree in Geography a BA Honours degree in Biblical Studies and a University Education Diploma. She has taught GCSE and A Level Geography in Malawi as well as Geography at FET level in South Africa. Since 2010 she has been a regional moderator for the Independent examination Board (IEB) and also an IEB examiner for Adult Basic Education in Human and Social Sciences. In 2011, she joined the IEB's National Moderation team for Grade 12 Geography Portfolios. She has been head of Administration for Saheti schools.
- **Mr Glenn Samaai** holds BA and BA (Hons) degrees and a Secondary Teacher's Diploma. He has taught Geography, and was the Head of Department at Klein Nederburg Secondary School, where he served for 29 years. After this, he was appointed as a lecturer at Athlone College of Education. He was appointed as Geography Curriculum Advisor at the Cape Winelands Education Department (WECD). He is the Geography presenter of the Telematic teaching project, an initiative of the Western Cape Education Department (WCED). He has also served the WCED as internal moderator and chief marker in the Senior Certificate Examinations for many years. He has co-authored a number of current textbook publications for the NCS and the CAPS FET phase. He is a Geography curriculum advisor in the WCED.
- **Mrs Zamaanyuswa Shabalala** is a Geography subject advisor responsible for schools in Uthungulu District with ten years' experience of teaching at FET level, nine years' experience as a Geography college lecturer and twelve years as Geography subject advisor. She holds a BA Hons in Geography, a B Ed, HED and a Diploma in Tourism Development and Management. She has also co-authored, Geography, Life Skills and isiZulu textbooks. She has been the Geography External Moderator since 2006, and was a member of the Umalusi Maintaining Standards team in 2008 - 2009.

HISTORY

- **Mr Edward Smuts** has a Master's degree in Education Management and Educational Support, and an Advanced Diploma in Educational Development (Primary History and the Curriculum). He started teaching in 1971 and became a Senior Curriculum Adviser in History in 1982. He was since 2010 actively involved in an advisory and training capacity with the introduction of CAPS in the Western Cape. For the last 36 years he has been involved with matriculation examinations as examiner, chief examiner and moderator at WCED and DBE. He became external moderator at Umalusi in 2005. He is presently also moderator of the DBE competency test for History markers. A key focus of his work since 1998 was the involvement in the intensive transformation regarding the assessment of History within the Western Cape and nationally. He is currently a curriculum and assessment consultant and moderator in History.

- **Dr Gengatharen Pillay** has a BA, a UHDE and a BA History (Honours) degree. He obtained a B Ed and an MA (History). His Doctoral thesis focused on the implementation of the NCS. Dr Pillay began his teaching career in 1988 and taught at various schools. This was followed by three years of lecturing in History at Springfield College of Education and Edgewood College of Education. In 1998 he was promoted as Deputy Principal. In 2000 he was appointed as FET History Curriculum Advisor, in the KZN DoE, a position he currently holds. Dr Pillay has been involved with Grade 12 NSC examinations from 2002 as examiner, chief examiner and moderator both at the KZN DoE and the DBE. In addition, he has been involved with the training of curriculum advisors across provinces with regard to the roll-out of the NCS and CAPS. His publications include articles as well as co-authoring and editing several approved History school textbooks in the FET Phase. He is currently a History curriculum specialist in KZN DoE and moderator of NSC History papers.
- **Mr Simon Haw** has a BA (Hons), a UED and later a B Ed. He taught from 1970 to 1989, first at Wartburg-Kirchdorff and subsequently at Maritzburg College, where he was the head of the History Department. From 1990 to 1996 he worked as an educational researcher at the head office of the Natal Education Department. From 1996 to 2007, he was a History subject advisor, based in Pietermaritzburg. He retired at the end of 2007, but has subsequently been involved in running courses for advisors with the DBE. He has published three books on the histories of institutions, has written textbooks for Curriculum 2005 and the NCS. Most recently he has been involved with textbook writing for the CAPS curriculum from Grade 5 to Grade 12. He has been a team member of the Umalusi Post Exam Analysis team.
- **Mr Brian Mathews** is a senior education specialist for History (FET Phase) in the Port Elizabeth District. He obtained his degree in 1989 and his HDE in 1990. He started his teaching career in 1990 in the Eastern Cape DoE. His creative and dynamic approach to the teaching of History have been admired and appreciated by both his students and his colleagues. He is the current examiner for History Paper 1 in the Eastern Cape DoE as well as the marking moderator for the same subject. This is complemented by his vast experience as a deputy and senior marker during the end of year NSC examinations for the past 20 years. Mr Mathews is also a member of the Umalusi Post Exam Analysis team. He currently occupies the position of Senior Education Specialist with the Eastern Cape DoE (Port Elizabeth District).
- **Dr Carol Bertram** is a senior lecturer in the School of Education at UKZN. She studied for a Social Science degree majoring in History and Psychology, which was followed by an HDE. She has since completed a B Ed, M Ed and a PhD. Her PhD tracked the changes in the FET History curriculum from the NATED curriculum to the NCS in 2005 and 2006, and she has published journal articles in the field of History curriculum and teaching. She began working for a local educational non-government organisation in 1994 where she developed learning material support for teachers, followed by part time tutoring for the University of Natal on the B Ed (Hons) degree, and

became a full time lecturer in 1998. She currently lectures in the field of curriculum, teacher learning and research methods. She has been the History team leader for the Umalusi Maintaining Standards project since 2009.

LIFE SCIENCES

- **Dr Edith Dempster** has a PhD in Zoology and is a senior research associate in the School of Education at UKZN. She has twenty years' experience as a lecturer in science teacher education, and has contributed to several textbooks in Natural Science and Life Sciences. She has participated in many Umalusi research projects over the past ten years. She is actively engaged in research in science education, with interests in Biology curriculum, assessment and learning. She has published extensively in Zoology and Science Education.
- **Ms Susan Wiese** holds a BSc (Ed) and B Ed (Hons) degree in Education Management and is the Deputy Chief Education Specialist for Life Sciences and Agricultural subjects in the FET Curriculum Development and Support Directorate in the Gauteng DoE. Her experience in education spans 15 years as a Biology and Physical Sciences teacher, 3 years as a HOD, 3 years as a curriculum advisor and 5 years as a curriculum coordinator. Her responsibilities include the training of subject advisors and teachers in NCS and the CAPS, monitoring of curriculum implementation and providing teacher and learner support. She has also co-authored a Grade 12 Life Sciences textbook and other resource material. Her participation in the Umalusi Standard Setting project started in 2008. She is currently an external moderator for Life Sciences for Umalusi.
- **Mrs Elizabeth Cilliers** holds a BSc (Agric) Honours degree in Animal Breeding and a Higher Diploma in Education. She has been a Natural Sciences and Life Sciences educator for 20 years. She is currently an HOD for Life Sciences, Physical Sciences and Natural Sciences at Hoërskool Staatspresident C. R. Swart in Gauteng. She is Internal Moderator for SACAI and Umalusi Moderator for verifying the marking process. Since 2008 she has been involved in the Umalusi Life Sciences evaluation team in various curriculum and examination analysis projects.
- **Ms Prabha Pillay** holds a B Paed (Science); B Ed (Hons) in Curriculum Development and ABET) and is in the process of completing an M Ed. During the 30 years in the profession she taught Biology, was HOD for Sciences and assists in teacher support. She is currently a senior education specialist (Subject Advisor) for Life Sciences in KZN in the Ilembe District (a very rural district). She is also Internal Moderator for Grade 12 Life Sciences Common Tests in KZN and NATED 550 Biology Paper 1, National moderator for the SBA and has written Grade 12 SBA exemplar tasks for the DBE. Ms Pillay is the secretary of the KZN Life Sciences Advisors Forum, co-authored a Life Sciences textbook and is chief marker (KZN) and on-site moderator in different provinces for the DBE.

- **Mrs Kathryn Johnson** has a Master's degree in Education, in which she tracked the changes in the South African Biology/Life Sciences curriculum between 1994 and 2009. A qualified Biology and English teacher with an Honours degree in Botany and Environmental Education and an HDE, she taught Life Science, Natural Science, Mathematics and English in high schools in Cape Town and Pietermaritzburg. She lectured the Biology component of the Science Foundation project at the University of Natal in 2000 and 2003 and the Life Sciences teaching method component of the PGCE course at UKZN in 2008 and 2011-12. She has been involved with the production of course material for the Life Sciences component of the Advanced Certificate in Education offered by UKZN and a Life Sciences study guide for Pearson Education, and edited translations of various biological texts. She has also assisted with teacher-training workshops (Introduction to CAPS).
- **Ms Phumzile Majozi** holds a BSc degree, HDE and B Ed degree. She was a Biology/Life Sciences teacher for 10 years at Secondary level and is currently a senior education specialist for Life Sciences in Umgungundlovu District, KZN. She has been managing and coordinating Biology/Life Sciences teachers for the past 20 years and was involved in Matric marking as marker, senior marker, chief marker and internal moderator for over 20 years. Ms Majozi was in a panel of National Examiners for 3 years. She is involved in writing Life Sciences textbooks and is currently an external moderator in Life Sciences for Umalusi.

MATHEMATICAL LITERACY

- **Mrs Joan Houston** has taught Mathematics at high school and university over a period of 40 years. She has been a Mathematical Literacy textbook author and is currently a Mathematical Literacy education and research consultant. She has been the Team Leader of the Umalusi Post Examination Analysis for Mathematical Literacy from 2009 and has led the research team on Mathematical Literacy curriculum issues. She is at present on the working group for the development of a curriculum for Mathematical Literacy for the National Senior Certificate for Adults (NASCA) as well as the author of a Grade 9 Mental Maths book due to be published before the end of 2014 for a school textbook publisher in South Africa.
- **Ms Solante Hough** has a B Ed has taught Mathematics and Mathematical Literacy for 17 and 6 years respectively. She has also been a member of Umalusi's post-exam evaluation team for the last three years. She is the author of Grade 11 and 12 Mathematical Literacy textbooks as screened and approved by the DBE as well as the Grade 10, 11 and 12 Mathematical Literacy e-books for Shuter & Shooter.
- **Dr Rakesh Singh** holds a PhD in Mathematics Education. Other qualifications include B Com (Hons) and an M Ed. He is presently Head of Department of Mathematics and Mathematical Literacy at Al-Falaah College, Durban. He has been

involved in teaching Mathematics at Secondary level for 29 years and lectured In-Service Mathematics and Mathematical Literacy teachers at UKZN for 6 years. He has been the Umalusi National External Moderator for Mathematical Literacy from 2010 to present. He developed curriculum materials for CASME, Masifundisane and wrote the Grade 12 guide 'Helping Hands' for the Eastern Cape. Dr Singh has been a Mathematics marker for 15 years and senior marker for 8 years. He is also a University examiner for Mathematical Literacy.

- **Mr Simangele Philemon Ntenza** has an M Ed (UKZN) in Mathematics Education. He taught secondary school Mathematics for many years before joining CASME (Centre for the Advancement of Science and Mathematics Education at UKZN), then joined the School of Education at UKZN as a Mathematics Education Lecturer, teaching undergraduate courses and at Honours and Masters level, before leaving at the end of 2009. He has been involved with Umalusi post-examination analysis and other research projects since 2009. He has authored and co-authored Mathematical Literacy textbooks for Grades 10-12 which are currently recommended textbooks for CAPS. He is also currently a Mathematics Education and Mathematical Literacy Consultant for JET Education Services working and mentoring FET teachers in various projects throughout South Africa.

MATHEMATICS

- **Dr Lynn Bowie** has a PhD in Mathematics Education. She has experience at a number of different levels in Mathematics Education. She has taught Mathematics at university level both in South Africa and the USA, worked with both high school and primary school mathematics learners and has developed and taught pre-service and in-service courses for Mathematics teachers at the University of Witwatersrand. She led the Mathematics research team for Umalusi in its curriculum analysis of curricula underpinning the SC and NSC as well as the National Senior Certificate (NSC) Mathematics examinations from 2008-2012. She currently works for Olico, a community-based organisation investigating and developing online, open-source material to support Mathematics learning at the Grades 7 – 9 level.
- **Dr Zain Davis** has a PhD in Mathematics Education and is Senior Lecturer in Mathematics Education in the School of Education at UCT. He taught secondary school Mathematics for a number of years before joining the Mathematics Education Project at UCT, and then the School of Education.
- **Mr Hector Nxumalo** is a Deputy Chief Education Specialist in the Zululand District (KZN), has taught Mathematics at High School level both in South Africa and the USA (State of California). He has been part of the NSC Grade 12 assessment panel member as well as an Internal Analytical Moderator for Mathematics from 2008 to March 2011. Presently he is teaching Mathematics Grades 10 and 12 part-time for Star School KZN Campus.

- **Prof Poobhalan Pillay** is an Emeritus Professor of Mathematics at UKZN, where he taught for 40 years before retiring in 2006. He has taught all pure Mathematics undergraduate courses, as well as courses at Honours and Masters levels. He has authored or co-authored the following books: *Love of Mathematics* (Olympiad problems and solutions, Grades 10, 11, 12), *Mathematics X Kit* (First year University text), *Classification of Commutative FPF Rings* (a Graduate Text in Mathematics suitable for researchers). He has been an Umalusi moderator Grade 12 Mathematics (1994-present) and moderator Grade 12 Additional Mathematics (UKZN 1994-2007). Presently he is academic coordinator for the Siyanqoba Project of the South African Mathematics Foundation, which has eleven centres across the country, helping learners to participate in the National Mathematics Olympiad competitions. He has addressed over 80 meetings of Grade 12 teachers on various aspects on Grade 12 Mathematics.
- **Ms Leigh C Pleass** holds an MSc in Mathematics Education. She is at present Master Teacher of Mathematics for the South African Board of Jewish Education (SABJE) which includes driving the vision of Mathematics within the Group for Grade R to 12. She also sees to training and development of all Mathematic Staff in the Group. She also holds the position of National Portfolio Moderator for the Independent Examination Board (IEB). She has taught Mathematics extensively in high schools for 31 years. Leigh also teaches for Mindset television, presenting live sessions on Grade 12 topics.
- **Ms Mariamma Raju** holds BSc and B Ed degrees. She has taught Mathematics in Secondary schools in Kenya as well as South Africa. She has worked as a lecturer in a Teacher Training College in the Eastern Cape. She was a team member in the Umalusi NCS research project and the NSC Mathematics examination analysis from 2008 – 2010. She has been a NSC senior marker for the past 4 years and a provincial senior moderator for Continuous Assessment (CASS) for the past 3 years. She has been involved with the training of educators in NCS and the CAPS from grades 10 to 12. She is currently working as a FET senior education specialist in the Eastern Cape.

PHYSICAL SCIENCES

- **Dr Sharon Grussendorff** has a PhD in Physics, and a Higher Diploma in Education. She lectured at the UKZN Science Foundation Program for ten years, and has since been working as a private consultant in science education where she has been involved in various projects related to education research, teacher development, writing of educational materials and learner support. Since 2008 she has been involved in the Umalusi Physical Science evaluation team in various curriculum and examination analysis projects.
- **Ms Nompumelelo Zuma** has an Honours degree in Chemistry and a Secondary Teachers' Diploma. She has been a Physical Sciences educator for 11 years, and

has since been working as a Senior Education Specialist. She is helping and supporting Physical Sciences educators in the Zululand district in KZN. Since 2012 she has been involved in the Umalusi Physical Science evaluation team in the analysis of the Grade 12 examinations.

- **Mrs Mmapaseka Stephen** has an Honours degree in Natural Sciences Education. She taught Natural Sciences and Physical Sciences for 10 years, and was an HOD for 4 of those years. She was involved in the Umalusi Physical Science evaluation team in a previous curriculum and examination analysis project in 2009. For the past four years she has been a Physical Sciences subject specialist in the Tshwane South district in Gauteng.
- **Ms Akeda Isaacs** has a Master's degree in Education, and a Higher Diploma in Education. She was a Physical Science teacher for 18 years, a curriculum advisor for Physical Sciences for eight years in Metropole South District, Western Cape DoE. She is also an Institutional Management and Governance Manager in the same district for the past five years. She is involved in learner support, teacher development and management support and training. Since 2008 she has been involved in the Umalusi Physical Science evaluation team in various curriculum and examination analysis projects.
- **Dr André van der Hoven** has a PhD in Immunology. She lectured in Chemistry at the UKZN Science Foundation Program for 12 years until her retirement in 2010. Since 2008 she has been involved in the Umalusi Physical Science evaluation team in various curriculum and examination analysis projects.

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