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Can a Core Skills Test at Grade 6 level improve the quality of teaching and learning in primary schooling and so assist in preparing students more effectively for the rigours of middle schooling?

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Can a Core Skills Test at Grade 6 level improve the quality of teaching and learning in primary schooling and so assist in preparing students more effectively for the rigours of middle schooling?

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Abstract

The IEB Grade 6 Core Skills Test provides a benchmarking moment in the learning pathway in South African schools. It determines whether year 6 students have attained sufficient cognitive academic proficiency to engage with the demands of the following years.

The Test is non-curriculum-based. It assesses the level of achievement generally expected of students at this age in key generic skills, particularly those thinking skills that should be developed through a well-delivered curriculum, but which are not specifically articulated or assessed in the current curriculum in South Africa. In short, the focus is on the skills required for effective operation in life and society. These relevant skills are located in the fields of literacy (including visual literacy) and numeracy (including relevant aspects of mathematical literacy).

The entire pen and paper test is based in a real-life context that is appropriate for grade 6 learners and through which they are required to demonstrate their abilities. It is designed and the students are assessed using a four level taxonomy of cognitive ability.

The results are reported using a question by question analysis of individual student performance. This provides a profile of the cognitive level of ability of each student in the various skill areas that are tested. The profile thus identifies strengths and weaknesses of learner performance in relation to these skills and provides valuable diagnostic information that can be used to inform future curriculum planning and delivery.

In its third year of implementation, the positive impact of the test on whole school curriculum planning, the attitudes of teachers and students towards learning, teaching methodologies, and assessment practices is already evident.

Background

The new National Senior Certificate was introduced into South African schools in grade 10 in 2006. It is a three year qualification that presents considerably greater cognitive demands on students than the previous grade 12 qualification. These increased demands are related to the imperative to prepare students adequately for the requirements of tertiary education, the world of work and the 21st century landscape in

general. In our work with high school educators, increasing concern has been expressed by teachers and school managers that students entering high school show insufficient cognitive academic acumen to cope with the rigours of the new curriculum.

The IEB Grade 6 Core Skills Test was developed to determine whether year 6 students, at the end of the intermediate phase of schooling, have attained sufficient cognitive academic proficiency to engage with the demands of the following years. It provides a benchmarking moment in the learning pathway where its formative, diagnostic intention is to have a positive, qualitative impact on teaching, learning and assessment. Therefore it is purposefully designed as 'a tail to wag the dog'.

The design of the test

The Test is non-curriculum-based. It assesses the level of achievement generally expected of students at this age in key generic skills, particularly those thinking skills that should be developed through a well-delivered curriculum, but which are not specifically articulated or assessed in the current primary school curriculum in South Africa. In short, the focus is on the skills required for effective operation in life and society that are expressed through the Critical and Developmental Outcomes of the National Qualifications Framework in South Africa. These relevant skills are located in the fields of literacy and numeracy and include visual literacy, articulation of own voice, reading for meaning, reading for inference, problem solving, graphicacy, measurement, text to text transfer and manipulation of data.

The entire pen and paper test is designed as two one-hour papers. It is based in a real-life context that is appropriate for grade 6 learners and through which they are required to demonstrate their abilities. It is designed using a four level taxonomy of cognitive ability:

Table 1: Design Levels

Taxonomy Level	Description	Examples of skills demonstrated
4	The ability to: Make judgements based on certain criteria. Put elements together to form a new whole. Break down a whole into its component parts. Elements embedded in a whole are identified and the relations among the elements are recognised. Access, process and use information in any context, even an abstract one.	Compare and discriminate between ideas; assess the value of theories, presentations; make choices based on reasoned arguments; verify the value of evidence; recognise subjectivity. Use old ideas to create new ones; generalize from given facts; relate knowledge from several areas; predict; draw conclusions. Seeing patterns; organisation of parts; recognition of hidden meanings; identification of components.
3	The ability to: Use (or apply) information in new situations. Access, process and use information in a variety of applications.	Use information; use methods, concepts and theories in new situations; solve problems using required skills or knowledge.
2	The ability to: Recall and understand information; describe meaning. Access and process information in a simple, unidimensional context.	Understanding information; grasp meaning; translate knowledge into other familiar/simple contexts; interpret facts; compare; contrast; order; group; infer causes; predict consequences.
1	Act of remembering facts. Recall. Able to access information in discrete bits only.	Observation and recall of information.

The assessment instrument includes a range of question types, each question targeting a specific skill/cognitive activity at one of the four design levels. The assessment of the students' responses indicates achievement against a taxonomy of skills rather than through marks. This means that a question can be pitched at a specific design level and the students' responses assessed against a set of criteria for that level, or a question can be posed that could be answered at a number of different levels, with a set of criteria for each level against which to judge the quality of the learners' responses.

The descriptions of performance relate to four operational levels:

Table 2: Performance levels

OPERATIONAL LEVEL	DESCRIPTOR
1	The response is not at the level expected for Grade 6
2	The response is some way towards matching the level expected for Grade 6
3	The response is at the level expected for Grade 6
4	The response has exceeded the level expected for Grade 6.

An extract from the design grid of one of the papers follows:

Table 3: Extract from CST 2007 Paper 2

3. ELEPHANT TRAVEL ADVERT				
Question	Skills assessed	Cognitive level	Operational level	Strand*
1	Reading for information	2	1, 2 & 3	V
2	Reading for meaning	3	1, 2 & 3	L, T
3	Recognition of terminology	1	1 & 3	L
4	Interpreting images to convey a message	4	1 - 4	L, T
5	Understanding meaning	3	1, 2 & 3	L

* V= visual literacy L= language T = thinking

[Refer to Appendix 1 for related questions and marking guidelines]

The conduct of the test

The test is written by all students on the same day under controlled conditions, with a 15 minute break between papers 1 and 2. At regional venues, the test is marked by the educators and moderated by IEB moderators. This centralised marking model provides an opportunity for professional development; educators are able to debate and discuss issues such as assessment design, analysing and interpreting learner evidence, judging performance against level descriptors and curriculum delivery. The results are reported using a question by question analysis of individual student performance as well as the whole cohort who wrote the paper. This provides a profile of the cognitive level of ability

of each student in the various skill areas that are tested and a profile of the group as a whole. The profile thus identifies strengths and weaknesses of learner performance in relation to the skills and provides valuable diagnostic information that can be used to inform future curriculum planning and delivery.

Is the tail wagging the dog?

Feedback on the value of the test is gathered through a detailed feedback questionnaire and interviews, and anecdotally at the marking sessions. In its third year of implementation, the positive impact of the test on whole school curriculum planning, the attitudes of educators and students towards learning, teaching methodologies, and assessment practices is already evident.

Many educators confess to coming from a culture where the learning areas and grades, for the most part, plan and deliver curriculum in isolation from each other, creating gaps, mismatches and inconsistencies in learning expectations and cognitive demand.

Educators often focus intently on the content and outcomes of individual learning areas and seldom step back to identify, in an intentional way, the common cross curricular skills which their students are expected to demonstrate, or create opportunities for their students to transfer these skills from one context to another. For example, educators expect students to construct, read and interpret graphs, design adverts and write cohesively and logically in several learning areas but they do not intentionally ensure common conceptual understanding of these skills or agree on the level of performance expected across disciplines and across grades. As a result of participating in the test, they enthusiastically express the realisation that curriculum planning needs to be collaborative and integrated, both in the teaching and learning and in the assessment. Educators see the need to collectively establish upfront what must be learned and at what level and then to decide who should teach what and when, and how to give opportunities for students to integrate and apply their knowledge and skills across learning areas. Educators are excited by the ideas the test gives them about how to plan modules of learning and the kinds of activities students can be exposed to. *“This exercise was VERY valuable – it has been of huge benefit in getting us to change how*

we think about learning and therefore how we teach, for the whole school not just the grade sixes”.

The question by question analysis of performance provided for each student identifies the areas of strength where educators are ‘getting it right’. However, the profile also reveals weaknesses where educators need to strategise on interventions across the school. Because planning of this nature requires time, team effort and regular review, it forces a focus on what learning is really important in the curriculum. In many schools these collective conversations are happening in a purposeful way for the first time. They are stimulating and challenging to educators and signify a shift to a more learner-centred approach.

The vast majority of students enjoy the test. They like the variety and nature of the questions, the fact that that they do not have to ‘swot’ for the test and that the questions are challenging and relevant to them. They are generally positive about the test being different from what they are used to and that there are no marks awarded.

“My top achievers didn’t fare as well as I thought they would - made me really think about what a good student is and whether I’m developing thinking skills!”

Educators are surprised that the students they judge the most able are often not the ones that fare best in the test, while many of their perceived ‘weaker’ students do better. They also remark that ‘quirky’ learners who can think laterally seem to do better. When this observation is probed, several issues emerge that may account for this.

Educators usually assess a section of work they have just taught, resulting in a string of marks in their mark book that arise from the ongoing assessment of relatively small chunks of skills and knowledge over time. For example, fractions are taught and the students then sit for a test on fractions and their mark for the test is recorded. Students who grasp the concept, work hard and practice the skill usually do well. The Core Skills Test requires students to use and integrate a range of knowledge, skills, attitudes and values gained over time in unrehearsed/unfamiliar contexts. Students often do not realise that the context requires them to work with fractions. Educators acknowledge

that the test challenges them to expose their students regularly to this demand for applied competence and that this develops and consolidates their learners' cognitive skills.

Another point raised by educators is that they tend to pose questions in tests for which there is only one correct answer; they feel uncomfortable asking open-ended questions because they are not sure how to assess the students' responses. The test has exposed them to ways of questioning and assessing that they find both exciting and educationally valuable. They are learning to ask questions that cater for all cognitive levels, enabling them to identify the ability levels of their learners more effectively. *"The old question was: What pages must I learn for the test? Now one needs to know the basic concepts and be able to apply them to familiar and unfamiliar situations. I also need to teach a variety of perspectives and enable my learners to think critically and give informed opinions."*

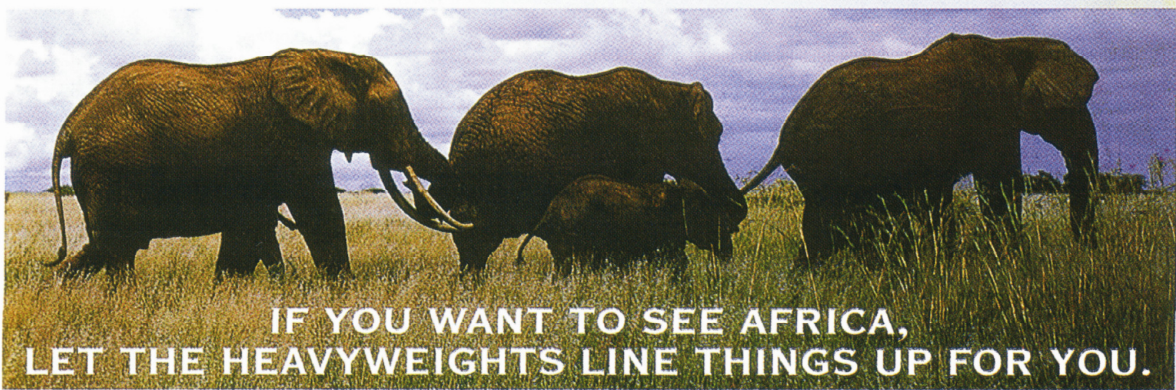
When assessing, educators reveal that they normally set questions related to the content of the curriculum to establish the degree to which their students have mastered it, devise the 'model answer', and then decide how many marks to award for the answer. Other common practice is to pose a question that on the surface seems to require critical thinking skills, such as decoding information and encoding a creative or original response. However in marking the response, rather than measuring the degree to which the student has responded to the instruction of the question and awarding marks accordingly, educators search through the response for any sign of understanding and award whatever marks they can find, irrespective of the fact that the students are not on the correct path at all. The Core Skills Test has presented them with a different way of assessing which they find challenging and much more meaningful. They are thinking more carefully about the purpose of each question they pose in terms of what learning it is actually intended to measure. They are thinking more carefully about the cognitive level at which each question is pitched so that their assessments cater for all levels of ability. They are thinking more carefully about the quality of response they expect from their students and how to describe this quality so that it matches the intent of the question.

Educators confess their initial struggle in assessing performance without awarding marks. However, once they learn not to look for marks but to rather read the learner's response against level descriptors and decide on best fit, they begin to understand how a question and its marking guidelines hang together in measuring learning effectively. This transforms the way they design their own assessments and award marks for their student's performance.


Conclusion


The rich feedback received from educators of the almost 4000 grade 6 students who have written the Core Skills Test in each of the last two years acknowledges the positive impact of the test. Educators have been jolted into a better cognitive process through the realisation that, having spent all their time conscientiously teaching curriculum content, the cognitive skills of their students are generally not well developed; students are still trapped in the 'learn off by heart' mode. The Core Skills Test has made educators think seriously about what their students are actually learning, and consequently examine the effectiveness of their own teaching and assessment practices.

APPENDIX 1:



**IF YOU WANT TO SEE AFRICA,
LET THE HEAVYWEIGHTS LINE THINGS UP FOR YOU.**

 If you've decided on Africa, it makes sense to plan the trip with people who really know the terrain. The team that does it all superbly. South African Airways and African Wildlife Safaris. You get a specialist, country-dedicated travel service with years of experience plus Africa's premier airline. Phone South African Airways or African Wildlife Safaris.

 **SOUTH
AFRICAN
AIRWAYS**
Africa's Warmest Welcome

QUESTION 3: ELEPHANT TRAVEL ADVERTISEMENT

Look at the travel advertisement on page 3 of your newspaper.

- 3.1 What companies is the advertisement promoting?
- 3.2 Who would be interested in reading this advertisement and responding to it?
- 3.3 What sport does the word "heavyweights" usually refer to?
- 3.4 Why do you think elephants have been used to promote these particular companies?
- 3.5 "South African Airways. Africa's warmest welcome." Give two meanings for the word "warmest" in this slogan.

QUESTION 3: ELEPHANT TRAVEL ADVERTISEMENT

Answers and Operational Levels of Achievement:

- 3.1 African Wildlife Safaris and South African Airways (or SAA)
*To achieve operational level 3, **both** companies have been correctly named (and spelled).
To achieve operational level 2, one of the correct companies has been named or both have been named but not completely.
To achieve operational level 1, the learner has not fulfilled the requirements of level 2.*

- 3.2 people planning to visit countries in Africa (not just SA)
To achieve operational level 3, the answer is correct.
To achieve operational level 2, South Africa has been named, but other countries in Africa not mentioned. (Tourists/travellers acceptable here – foreign or other)
To achieve operational level 1, the learner has not fulfilled the requirements of level 2.
- 3.3 boxing, wrestling, weight lifting, body building (it must be described as a SPORT)
To achieve operational level 3, the answer is correct.
To achieve operational level 1, the answer is not correct.
- 3.4 You can't miss elephants (eye catching/large) and SAA and African Wildlife Safaris want to let you know they are both as visible, dominant, etc. as elephants in the wild. They want to be considered as one of the "Big Five" or most important in tourism. "Jumbos"
*To achieve operational level 4, the learner must make a strong connection between the **significance** of the elephant **and both products** and explain this connection clearly.*
*To achieve operational level 3, the learner makes a connection between the **significance** of the elephants and the companies, but it is not clearly expressed.*
*To achieve operational level 2, the learner has some idea of the **significance** of an elephant but can't make the connection to the companies.*
To achieve operational level 1, the learner has not fulfilled the requirements of level 2.
- 3.5 **Friendliest** and also based in a **warm climate**
To achieve operational level 3, both answers have been given.
To achieve operational level 2, only one of the answers has been given.
To achieve operational level 1, the learner has not fulfilled the requirements of level 2.