

SOUTH AFRICA: Shocking results from university tests

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South African vice-chancellors warned the government last week to expect more students to drop out, as the shocking results of pilot national benchmark tests revealed that only 7% of first-year students are proficient in mathematics, only a quarter are fully quantitatively literate and fewer than half have the academic literacy skills needed to succeed without support.

"The challenge faced by higher education institutions in relation to mathematics is clearly enormous," according to a draft report produced for the vice-chancellors' association Higher Education South Africa (HESA) by the National Benchmark Tests Project.

"With the current emphasis on the production of graduates in scarce skills areas such as engineering and science, the need for curriculum responsiveness and remediation in this area is urgent," said the report, obtained by *University World News*, which is still to be considered by HESA.

Last week HESA chairman, Professor Theuns Eloff, told parliament's higher education committee that most first-year students could not adequately read, write or comprehend - and universities that conduct regular competency tests have reported a decline in standards.

While undergraduate enrolments had been growing by about 5% a year, and black students now comprised 63% of enrolment, there was concern about high drop out (around 50%) and low graduation rates, especially among black students. Only a third of students obtain their degrees within five years.

HESA's findings from the benchmark project make it clear that South Africa's school system is continuing to fail its pupils and the country, and that universities will need to do a lot more to tackle what appear to be growing proficiency gaps.

One reason for declining educational performance, Eloff argued, was flaws in the country's outcomes based education system. "You don't learn to spell and comprehend, and that's nonsense," he said. *The Times* newspaper commented: "So far, the only outcome from the outcomes-based education system is university students who can't read and write."

The National Benchmark Tests Project was commissioned in 2005 by HESA, to provide criterion-referenced information to supplement new national school-leaving examinations based on a new school curriculum. Its principle investigator was Professor Nan Yeld, dean of the Centre for Higher Education Development at the University of Cape Town.

The objectives were to assess the entry-level literacy and mathematics proficiency of students, to probe the relationship between university entry requirements and school exit outcomes, to provide universities with extra information to help in placing students, and to assist with curriculum development (particularly for foundation courses).

The benchmarking tests were developed, and extensively tested and reviewed, from 2006-08, with quality assurance by Assessment Systems Corporation in Michigan and assistance from psychometricians at the Educational Testing Services at Princeton.

Further development and trials took place earlier this year, and the tests will be implemented from mid-2009. More than 300 academics, from all institutions, participated in the project - an involvement that "immensely" benefited both the project and the academics, said the draft report.

The system sets two three-hour tests. The first gauges academic and quantitative literacy and tests the ability of students to engage successfully with the demands of academic study, and to manage situations or solve problems using basic quantitative information. The second test measures students' ability to grasp mathematical concepts taught in the school curriculum.

In February more than 13,000 students - from across disciplinary areas and institutional types - wrote the final test pilots. This was the earliest possible time, as the first group of pupils to complete the new curriculum wrote school-leaving exams at the end of 2008.

The students at the universities of Cape Town, KwaZulu-Natal, Rhodes, Stellenbosch and the Witwatersrand, and Mangosuthu University of Technology, were spread across commerce, education, engineering, the health sciences, humanities, law and science.

Just over half of the students were female and half were black, 27% white, 14% Indian and 8% coloured (mixed race), making the student sample broadly representative. Half were African first-language speakers, 42% primarily English and 8% Afrikaans-speaking.

In terms of academic literacy, the tests showed that 47% of the students were proficient in English, the dominant language of higher education. But almost the same proportion - 46% - fell into the 'intermediate' category while 7% had only 'basic' academic literacy.

"Difficulties with the medium of instruction are undoubtedly a contributing factor to poor performance, and impact on success and throughput rates," said the draft report. Student performance strongly suggests that universities need to provide "extensive support in language development - not only for a small minority of registered students, but for almost half of them."

The challenges facing students were even greater in quantitative literacy and mathematics.

Only a quarter of students were proficient in quantitative literacy, while half attained intermediate and 25% 'basic' levels. This low achievement suggested that the new school curriculum "has a long way to go", said the report.

"Few universities make any structured provision for developing student knowledge and skills in this domain, despite its central place in most disciplines, where students are required to interpret tables, understand percentages, basic proportions and trends, and so forth. Meeting needs in this domain would clearly require a fundamental mind-shift for many institutions."

Most frightening of all were the mathematics results. Only 7% of students were found to be proficient in the tests, which measured the skills needed to study first-year maths. Some 73% had intermediate skills and would need assistance to pass, while 20% had basic skills and would need long term support.

The project stressed that the maths test assessed students' manifest rather than innate ability related to mathematical concepts in the new school curriculum. Possible interpretations of the results were that: the benchmarking test was unrealistically difficult; the school-leaving exam was at too low a level; or the new curriculum is not being taught properly in schools.

Whatever, "higher education is facing a very serious problem in respect of the mathematics knowledge and manifest ability of its entering classes."

Testing dates and centres will be set up across South Africa from September and information about the tests disseminated widely. Participating universities or faculties will ask applicants to write the tests, from September, and workshops will be held on how to interpret the results.

"Extensive use will be made of mobile phone technology (for example, to register students to write the tests and to deliver their results. Easy pay, with its extensive national paypoints, will be used to collect the test fees," said the draft report.

Students will receive their results, as well as institutions to which they applied. Institutions will also be provided with reports on the profiles of entering students as a group, per faculty, to help them ensure they are able to cater adequately for students' educational needs.

The draft report proposed that the National Benchmarking Tests Project in future be governed and operated by an advisory group including experts from the Centre for Higher Education Development at the University of Cape Town and representatives of HESA.