6. WHERE DOES RESPONSIBILITY FOR IMPROVEMENT LIE? KEY FACTORS AFFECTING STUDENT PERFORMANCE IN HIGHER EDUCATION

The issue of where responsibility for the improvement of higher education output lies is complex and contested. There is no comprehensive research on attitudes to this matter in South African universities, but the fact that sector-wide longitudinal performance data have only recently become available suggests that focusing on the collective output of the sector has historically not been a priority. Although awareness of throughput rates has been raised since the introduction of the new higher education funding framework and through the DoE's recent requirement for institutional enrolment and graduation targets, the focus has been predominantly on individual institutions.

It is worth asking why the institutions have not thus far been more proactive in establishing collective output goals as a key contribution to development, and what stands in the way of such a commitment. Part of the answer may come from a traditional view in higher education that the key factors determining student performance are beyond the sector's control. It is of interest that, when the broad findings of the DoE's 2000 cohort study appeared in the press, virtually all of the reported responses attributed the high attrition rates to 'money and poor schooling' (Mail & Guardian 2006a) – that is, to factors external to the sector.

That such external factors have a major bearing on student performance in higher education is not in dispute. However, two questions arise:

- Are the external influences likely to change to the extent that substantial improvement in higher education performance will result, and if so in what time scale?

- Are there factors within the higher education sector's control that can substantially affect student success and hence graduate output?

Responses to these questions are central to establishing what can be done to improve higher education performance, and where responsibility for different aspects of development might lie. While this paper does not set out to offer comprehensive answers to the questions, the following sections outline some key factors that are seen as beyond or within the sector's control, with a view to framing a developmental agenda.

6.1 SOME KEY FACTORS BEYOND THE SECTOR'S CONTROL

6.1.1 The school sector: output and prospects

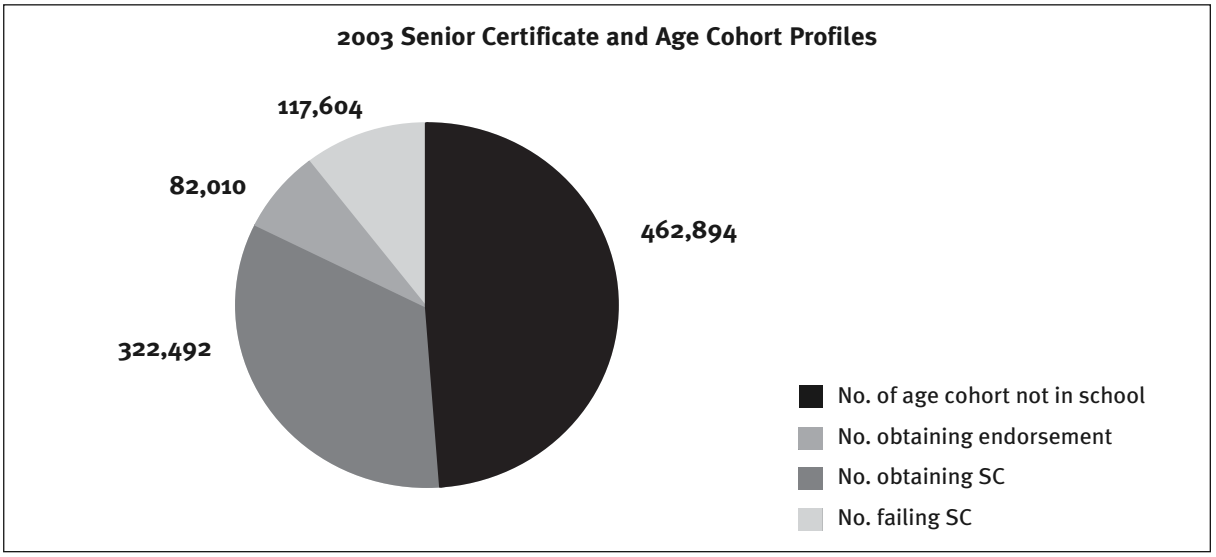
Many in higher education attribute the unsatisfactory performance of the sector to the shortcomings of the school system, and it is common cause that the legacy of inequalities has had a profound effect on the quality as well as the shape of its output. However, if improvement of the school system is

to be relied on for solving key performance problems in higher education, there needs to be a rigorous assessment of the prospects of this. Questions that need to be addressed include (a) to what extent the system will be able to produce a sufficient supply of well-prepared candidates for higher education, (b) the extent to which this supply will be representative of the population, and (c) how long the improvement process is likely to take. In the absence of such an assessment, there is a danger that improvement of the output of higher education will rest on a hope that will not materialise, at least in the medium term. Should this be the case, and should other approaches to improving higher education not have been pursued, there will be significant consequences for national development.

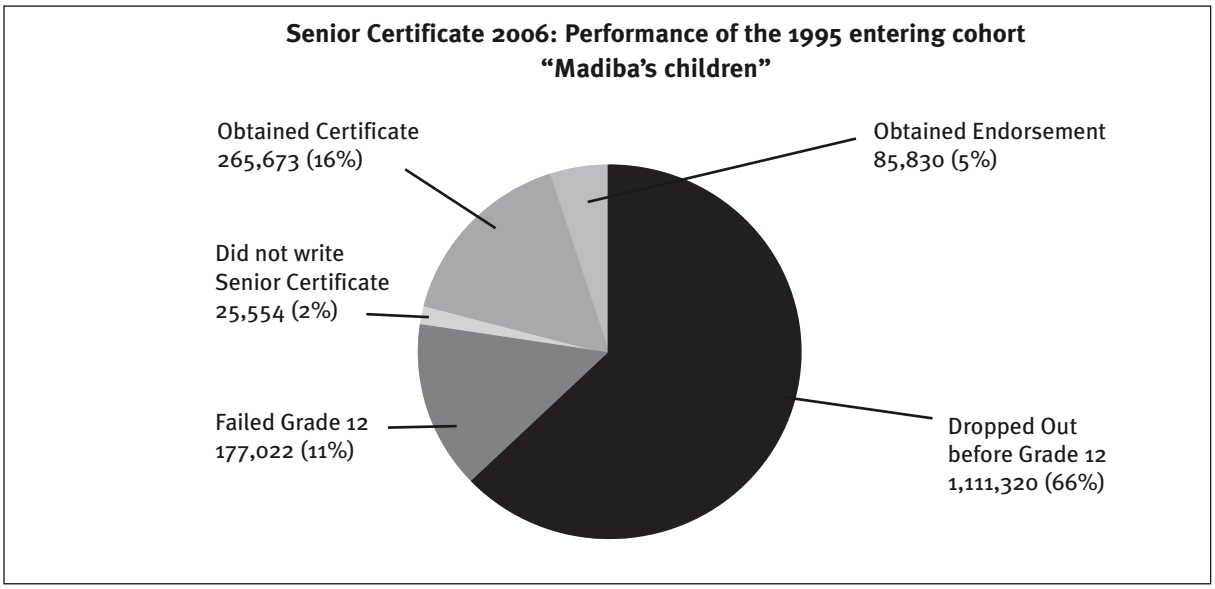
A full assessment of the prospects of the school system will be a substantial undertaking. In the meantime, the following is an outline of some salient aspects of the situation.

Unsurprisingly, the history of the country has ensured that performance on the Senior Certificate is highly skewed in terms of 'race', and generally very poor. Several examples are offered to illustrate the seriousness of the schooling challenge.

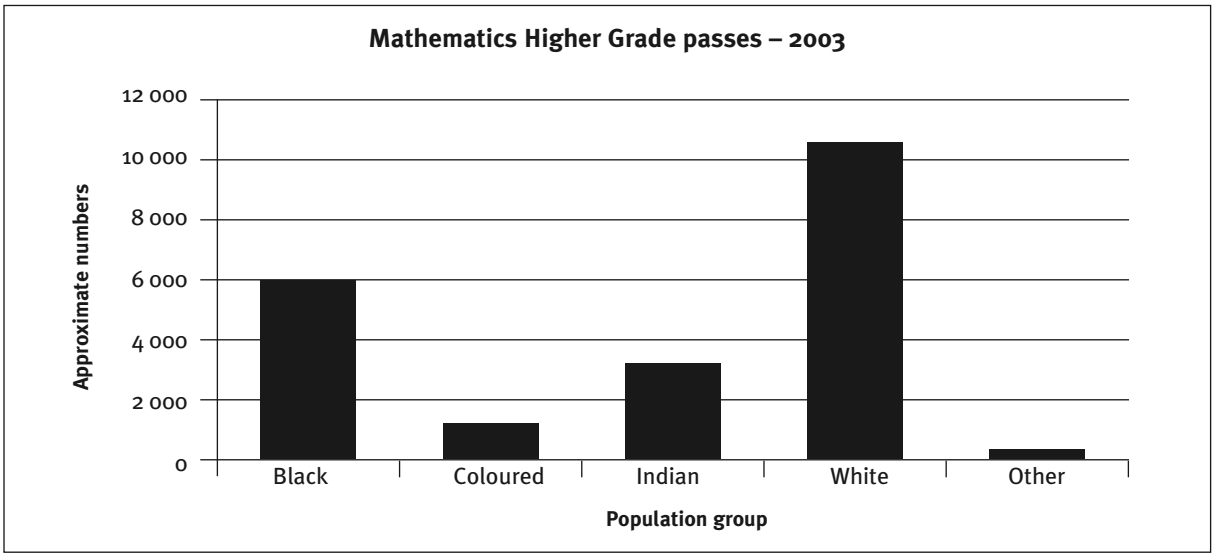
The first example concerns the low numbers of students in school, as well as the low numbers passing the Senior Certificate. The pie graph below shows how few students in the appropriate age cohort (n = 985,000) of 18 year-olds in 2003 were in school (van der Berg 2004). It also shows the very small number who obtained a matriculation endorsement and were thus eligible for consideration for degree study: only about 15.7% (82,010) of the 522,106 SC candidates, representing less than 8% of the age cohort. Only 5.2% of black candidates gained endorsements.



Data from the most recent Senior Certificate examination cycle (2006) confirm the gravity of the situation. The graph below illustrates the educational progress of the cohort dubbed by the media 'Madiba's children' – the cohort that entered schooling in 1995, immediately after the advent of



democracy in 1994. Of the over 1.6 million learners who entered Grade 1 in 1995, 66% dropped out before reaching Grade 12. Only 21.1% of the cohort obtained a Senior Certificate, and only 5% (85,830) of the cohort obtained a Senior Certificate endorsement (the statutory requirement for entry to degree study), making the national target of a 20% participation rate in higher education seem difficult to reach.



The second example relates to the numbers of school students writing and succeeding in Mathematics and Science, often viewed as an indicator of the quality of an educational system. The graph above shows the very troubling situation in respect of Mathematics, a key gateway subject for higher education (Perry 2005).[11] It is of particular concern that although black South Africans comprise approximately 78% of the population, they account for only 26.8% of the successful Mathematics group.

11 It should be noted that Mathematics is currently offered at two levels: Higher Grade, commonly required for entry to such disciplines as Engineering and Science, and Standard Grade.

There have been several costly and well-meaning efforts to address this situation. Examples include the establishment of the Dinaledi schools, the earmarking of more than R400m for the promotion of Science, Mathematics and Technology (SMT) with emphasis on the development of SMT education strategic plans by the provinces, targeting of schools specialising in Mathematics and Science education (for example by funding school projects), a R600m allocation of 'scarce-skills' allowances for teachers of Mathematics and Science, youth camps for Mathematics and Science, and early talent spotting (Masehela 2005). Despite these initiatives, results have not been promising. The poor results have been confirmed by such studies as TIMSS (Trends in International Mathematics and Science Study), in which South Africa did as badly in 2003 as it did in 1999. In 2003 it came last in grade 8 Science and Mathematics out of 50 countries (these 50 included five other African countries).

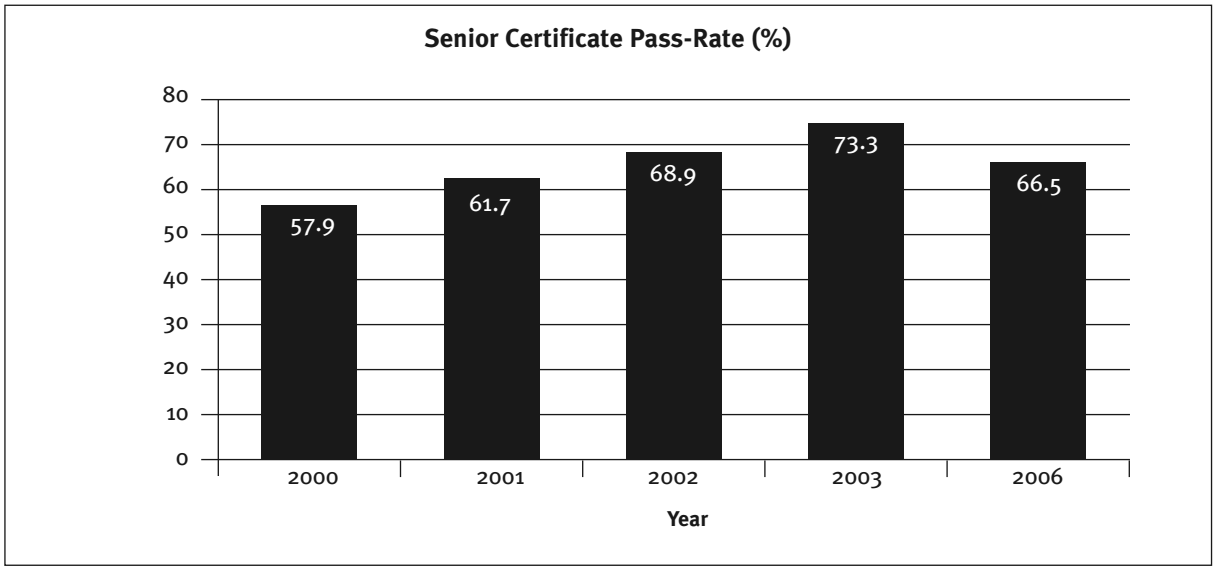
Besides revealing generally very low levels of performance, the 2003 study indicated the inequitable nature of South African schooling. The data below derive from the average scores generated for learners attending schools in the South African TIMSS sample, categorised according to the former racially based Departments of Education (Reddy 2003).

TIMSS 2003: Scores by Former Racially Based Departments

	Maths score	Science score
Former DET schools	227	200
Former Model C schools	456	468
National Average	264	244
International Average	467	474

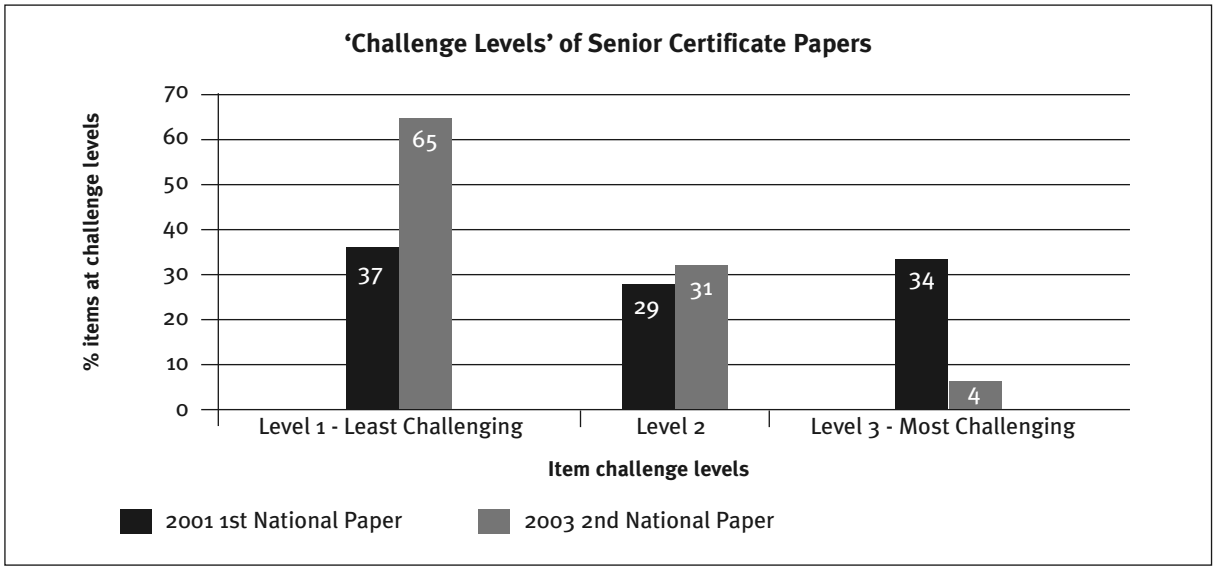
The table shows that average performance in Science and Mathematics in former white schools is slightly below the international average. This is in itself an outcome of concern, since these schools represent the apex of achievement for the system and consume a disproportionate share of resources. The shockingly low average performance level in former DET (black) schools – half of the average in formerly white schools – goes a long way to explaining some of the performance data contained in section 3.3 above.

The third example concerns the recent decline in quality and challenge in the Senior Certificate examination, and associated decline in schooling. During the tenure of previous Minister of Education Professor Kader Asmal, the pass-rate in the examination rose sharply. It can be seen in the figure below that under Minister Naledi Pandor, the pass-rate is slowly declining, reflecting slightly more realistic levels of attainment (the upward trend was halted in 2004), and – perhaps – a gradual improvement in the standard of the examination papers.



Increasing public alarm about 'grade inflation', as well as concerns about accountability, prompted Umalusi,[12] the Quality Assurance agency for General and Further Education and Training, to commission a study in 2004 '… to assess the validity of public claims that the Senior Certificate examination in 2003 represented a drop in "standards" – i.e. that the rising pass-rates in recent years (and most strikingly in the last two years) were due to easier examination papers rather than a dramatic improvement in schooling' (Yeld, Grobler and Sekwane 2004:1).

In addition to curriculum coverage, the researchers assessed 'conceptual challenge' levels in the national papers, assigning three levels of challenge. The researchers in the subject with the largest number of registrations, English Second Language Higher Grade (with 355,377 candidates in 2003), concluded that 'the nationally set paper in the subject is becoming easier – or, in the jargon of the examiners, becoming "more accessible"' (op cit:15). This conclusion was based on



12 The name is derived from the Nguni word 'uMalusi' which means 'shepherd'.

the decline in the number of questions designed to operate at more challenging levels. This is illustrated above in the dramatic drop in the number of relatively challenging items from 2001 to 2003. In 2001, 34% of the items were judged as challenging, and 37% as very easy. In 2003, however, only 4% of the items were judged as challenging, and 65% as very easy.

These findings were largely confirmed by the research groups dealing with the other national papers. The seriousness of the situation needs to be emphasised: in a context of under-qualified teachers, poorly resourced learning environments and syllabus stagnation, examinations tend to define the curriculum, and to set the standards. That students are expected to perform at increasingly easy ('accessible') levels in the only external examination they write in their school careers explains many of the difficulties they face with higher education study. This is particularly serious in relation to English, which plays a crucial role in South African education, where it is both a target of and a vehicle for learning for the majority of the country's school students. It also does not bode well for the introduction of the new National Senior Certificate in 2008 which, however desirable and necessary in the long run, will inherit this context of inflated indicators of performance at the same time as having to grapple with a poorly understood and unevenly implemented new curriculum.

Those aspects of literacy required by contexts of learning and teaching that are highly dependent on reading and writing as vehicles for meaning construction, and whose context is customarily that of formal education, have become known as Academic Literacy.[13] A concise outline of these aspects of literacy is offered below. In a higher education context, students are required to:

- make meaning from what they read;
- understand and interpret conceptual and metaphorical language;
- identify and track academic argument;
- follow discourse structure in text;
- make inferences about and extrapolate from what they read;
- demonstrate familiarity with and understanding of the conventions of visual and multimodal literacies, such as reading and interpreting graphs, pictures, flow-charts and diagrams; and
- cope with basic numeracy (Cliff, Hanslo and Visser 2003).

Meeting these requirements is a challenge for all students, and the difficulties faced in adjusting to independent study at this level are well known. For students from poor educational backgrounds, however, getting to grips with these requirements is seriously impeded by approaches to texts and epistemic practices such as those put forward by Slonimsky and Shalem (2005: 86):

- a propensity towards verbatim reproduction or plagiarism in essays;
- a propensity to describe rather than analyse, and to offer tautologies in place of justification;
- a propensity to focus on examples (tokens) rather than on principles (types) and the relation between them;
- a propensity to write from a highly subjective viewpoint without depersonalising;
- a propensity to be prescriptive or normative when asked to be analytic.

13 There is a prolific, ever-growing, and fairly argumentative literature on academic literacy, which is not reviewed here. The theoretical underpinnings of contrasting views of literacy and literacy practices differ markedly, as might be expected, and are found in different understandings of knowing and learning. Similarly, research on learning and cognition covers a vast field, and has a relatively long history. It has not, however, after decades of development and activity, '… settled into a single theoretical account' (Greeno, Pearson and Schoenfeld 1996:5) of understanding and learning.

In a comprehensive empirical study, Yeld (2003) reports on the performance of students entering higher education at institutions across the country. Nine institutions, including Historically Disadvantaged Institutions (HDIs), technikons and universities, were included in the study. The results strongly support the difficulties outlined above. The study concludes thus: 'The data … give a chilling picture of the very low levels of preparation in incoming students to South African higher education institutions' (Yeld 2003:46).

Slonimsky and Shalem (2005) give a vivid and instructive account of what it takes for students to develop more effective approaches to the kinds of learning demands posed by formal education. The point being made here is that the extent of educational disadvantage and consequent underpreparedness evident in South Africa's school-leavers is so serious that Higher Education cannot cope simply by 'teaching better' within current structural arrangements. Implications for higher education curriculum frameworks and teaching approaches are discussed in section 7 below.

Analyses of the school sector, of which the studies cited above are some examples, have implications for the higher education sector, particularly in relation to the first question raised in this section, viz. 'Are the external influences likely to change to the extent that substantial improvement in higher education performance will result, and if so in what time scale?' The implications include the following:

- Concerns in the higher education sector about the level of preparedness of many school-leavers are borne out by a range of evidence.

- Recent developments in the school sector, not least of which is the imminent introduction of an ambitious new curriculum and school-leaving examination (the National Senior Certificate), suggest that significant increase in the output of well-prepared candidates for higher education is unlikely to be achieved in the short to medium term.

- Improvements in the school sector cannot be relied on as a primary means of achieving the necessary substantial improvement in graduate output and equity of outcomes.

This paper argues that it is consequently incumbent on higher education to improve its own capacity to address this situation and thus to share responsibility for dealing with South Africa's historical inequalities. We argue that this can be achieved, but not by just doing 'more of the same', as discussed in section 6.2.2 below.

6.1.2 Material conditions: socio-economic conditions and student finance

Few would dispute that socio-economic factors have a profound influence on performance in higher education. Socio-economic inequalities in South Africa are among the most severe in the world. It is not within the scope of this paper to attempt to enumerate or quantify the ways in which shortage of material resources affects people's chances of becoming a candidate for higher education, of gaining access (not least to a programme of one's choice), and of completing a qualification. It is important, however, to recognise the impact of socio-economic factors and to intensify efforts to address them, as a central element of any higher education improvement strategy.

Particularly because most South African universities do not have access to large endowments, institutional contributions to student financial aid are generally very limited. However, Government has made major efforts in this area through the establishment of the National Student Financial Aid Scheme (NSFAS), which has benefited from substantial injections of funds in recent years. Financial aid available through NSFAS is expected to total over R1.3 billion in 2007. Nevertheless, need constantly exceeds the available resources, and there are regular appeals by student bodies as well as institutions for increased funding. As noted earlier, financial problems are commonly cited by students as a reason for dropping out.

The extent of existing Government investment in NSFAS calls for regular evaluation of the effectiveness of the approach. The kind of data used in this paper may provide a basis for analysing the effectiveness of student financial aid from a somewhat different perspective, focusing for example on the extent to which financial aid translates into graduate output. The current performance patterns raise the question of the extent to which it could be expected that further substantial investment in NSFAS would in itself result in improved output. Given that the majority of socio-economically disadvantaged students are black, it is evident that the cost-effectiveness of NSFAS is linked particularly to equity of outcomes. Researching the relationship between student funding and academic success in the South African context is complex but could make a major contribution to effective use of resources.

Uncertainty about the extent to which external influences will produce improvement in graduate output within reasonable time draw attention to the second question raised in section 6, namely 'Are there factors within the higher education sector's control that can substantially affect student success and hence graduate output?' This is discussed below.

6.2 KEY FACTORS WITHIN THE SECTOR'S CONTROL

This paper argues that there are key factors within higher education – structures, conditions and practices – that have a major effect on student performance and that universities and the sector as a whole can choose to address. While a range of such factors can be identified, it is suggested that they may be considered under two broad headings: (a) affective factors, particularly those arising from institutional culture; and (b) the teaching and learning processes followed in higher education institutions.

6.2.1 Affective factors and institutional cultures

It is widely recognised that affective factors influence students' academic performance. In South Africa, Academic Development experience has indicated that the benefits of well designed educational interventions can be neutralised by lack of motivation, anxiety about personal or financial circumstances, or alienation from the institution. While some affective factors are beyond the institution's control, others – such as aspects of students' material conditions, life skills and relationship with the institution – are at least partly within it. Given South Africa's past, it is not surprising that institutional culture has emerged as a key issue, and a number of institutions have recognised the importance of taking action to change the dominance of their traditional institutional culture in favour of more inclusive approaches.

The relationship between affective factors and academic performance is likely to be iterative, however, so the other side of the coin is that students' confidence, motivation and general wellness may be compromised by inability to cope with the educational process they find themselves in. In the South African context, underpreparedness for traditional higher education provision, resulting from inequalities in schooling and general socio-economic conditions, may be a key cause of attrition not only through academic exclusion but as a result of demoralisation and eventual drop-out. The interaction between affective factors and academic performance in influencing 'voluntary' withdrawal is an under-researched area that warrants particular attention in any comprehensive approach to improving graduate output.

However, with no intention to minimise the significance of non-academic factors, this paper focuses on aspects of the formal educational process which can substantially affect student performance and over which the higher education sector can wholly or partly exercise control.

6.2.2 Improving the effectiveness of the educational process in higher education

The term 'educational process' is used in this paper to mean not only teaching approaches but all aspects of the formal system, including the curriculum framework, the design of its component parts, assessment, and student support. By the 'effectiveness' of the educational process we mean its capacity to facilitate the success – that is, the attainment of the learning outcomes specified for recognised programmes – of the student body that the higher education sector needs to accommodate. The effectiveness of the sector thus encompasses its capacity to address equity, efficiency and appropriateness of outcomes as well as quality and standards.

The issue of factors and conditions affecting the quality of student learning has attracted attention internationally in recent decades, producing a growing body of literature. A notable theme is the complexity of factors that affect learning. Apart from personal circumstances, these include a range of cognitive factors, including 'learning style' and orientation, and different understandings of purpose and the requirements of the learning process. In South Africa key issues include the nature of prior educational experience as well as the level of achieved performance, and language background in relation to the medium of instruction. A salient point is that different educational processes suit different students. However, notwithstanding individual differences, structured teaching and learning generally takes place in groups, for practical and educational reasons. The question then arises of how best to constitute these groups: what (differential) teaching-and-learning arrangements should be made, within available resources, that will facilitate success for the greatest number of students in the intake?

This question has implications for improving the effectiveness of the educational process in individual institutions and across the higher education sector, including the following:

- The diversity of the student body in the sector as a whole has increased dramatically since the 1980s, particularly in terms of race, language, nationality and educational background. Diversity is embraced in national and institutional vision statements, and diversity in culture and life-experience is widely accepted as enriching. Diversity in educational background,

however, is largely rooted in continuing socio-economic inequalities, is manifested in wide differentials in preparedness for higher education, and is an obstacle to equity and development.[14]

Despite this, the educational processes in higher education have not changed significantly to take account of the major changes in the student intake. The value of innovations that have been introduced in specific areas should not be underestimated, but by and large traditional educational structures and teaching approaches remain predominant across the sector. The question of who is benefiting from the retention of the status quo is a key consideration.

- The changing student intake, with resultant increase in diversity and underpreparedness, is also a key issue at institutional level. In some cases, growth has led to a substantial shift in the profile of the student body as a whole, which has not been matched by institution-wide modification of educational approaches. In others, there has been significant increase in the diversity of the intake, in individual programmes as well as the institution as a whole. A consequence of the recent institutional mergers has been a marked increase in the range of preparedness in the student intake in many programmes as offerings from campuses with very different histories have been combined. This may have been a policy intention but is nevertheless not simple to manage.

  As in the case of the sector as a whole, these shifts raise questions about the adequacy of institutions' traditional educational practices for their changing circumstances, at institutional, faculty and programme level.

As demonstrated in the performance patterns outlined earlier, current educational processes are not working effectively for the majority of the current student intake. While there may be significant variance within the sector, the DoE's 2000 cohort study shows that few if any individual institutions are producing the graduate output they would be happy with (Mail & Guardian 2006a). Given that future growth in the student intake will result in greater diversity, the limitations of traditional approaches in the South African context are likely to be amplified.

Aligning the educational processes in higher education with the diverse realities and needs of the student intake is within the control of the sector and, we argue, should be part of its professional responsibility and competence. Particularly in view of the persistence of inequalities in schooling, implementing educational strategies that foster greater success across the student spectrum – without sacrificing the quality and standards of qualifications – is a necessary condition for improving graduate output, and should consequently be accepted by the higher education sector as a central challenge and developmental obligation. The development of such strategies is discussed in the following section.

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14 Caveats about assuming diversity to be a self-evident good are evident in research undertaken in the USA in particular. In brief, the studies conducted fall into two main groups.
- Studies which support diversity on the grounds that it enriches students by exposing them to different life experiences, thereby challenging them intellectually and facilitating the development of mutual respect (e.g. Chang 1999, Tierney 1997, Moses 1994).
- Studies which argue that diversity contributes to a dilution and distortion of academic standards, on the grounds that black students are more likely to be educationally disadvantaged, or to have been admitted with lower scores (e.g. Stowell 1992), and that many so-called integrated campuses are in fact racially polarised. This polarisation, it is argued, tends to confirm stereotypes (Steele 1990, Thernstrom & Thernstrom 1997) rather than to facilitate positive experiences.

What both camps would agree on, however, is that simply mixing students from different racial or cultural groups is not guaranteed to produce educational benefits. On the contrary, research strongly suggests that '…when efforts to improve diversity are taken seriously and done well …' (Chang 1999:379), the educational environment for all students will yield benefits.