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AN EXAMINATION OF PROBLEMS ASSOCIATED WITH THE TRAINING OF BLACK MEDICAL AND ENGINEERING STUDENTS AT THE UNIVERSITY OF NATAL DURBAN

Elda Morran

July 1984

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Centre for Applied Social Sciences
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INTRODUCTION

The following brief report arose from a request from the Anglo American Corporation Cadet Scheme to look at problems associated with the training of black Medical and Engineering students at the University of Natal, Durban.

Part of the reason for the investigation was to ascertain whether the problems of black students are the same regardless of whether they are studying Engineering or Medicine. In addition, the investigation was to establish some of the reasons for the relative underperformance of black, particularly African, Medical and Engineering students at the University of Natal, Durban.

INTERVIEWS WITH MEDICAL SCHOOL AND ENGINEERING FACULTY

Interviews were conducted with lecturers at Medical School, lecturers in various departments in the Engineering Faculty, students in the Engineering Faculty and the warden of Allan Taylor Residence. What follows is a summary of these interviews plus an attempt to identify common themes. It is important to note that it was obvious during interviews that the ideological perspectives of the lecturers strongly influenced their descriptions of the problems and the causes attributed to them.

Entry qualifications and screening procedures

Medical School

The entry qualifications are a matric exemption with Maths and Biology/Physical Science as subjects. Students are selected purely according to academic merit (ie the top matric students are chosen) but a quota system operates for the various racial groups. Demand for places is high. At the beginning of 1984 for example there were 1100 applicants for 136 seats (80 1st year and 56 2nd year places).

Engineering Faculty

Students are generally selected on the basis of their matric results. The Swedish formula (a weighting of Maths, Science and English) is used and students are accepted if their marks are good enough. If their marks are inadequate they are interviewed and accepted or rejected on the basis of this interview.

Academic support

Academic Support Services at UND provide academic support to individuals from any faculty who request or are recommended for assistance. In addition to tutoring in particular subjects there appears to be a strong emphasis on 'environmental support', ie assistance with transport, accommodation, book loans, financial loans etc.

In addition Academic Support Services monitors all bursary students which effectively covers most black Engineering students. As a consequence of this monitoring Academic Support Services claims that there is a 80% pass rate for bursary students most of whom take a year longer than average to do a degree.

The effectiveness of all academic support appears to be measured by looking at exam results of students who have received academic support compared with exam results of students who have not received academic support.

Medical School

First year students attend a compulsory course called Community Health which incorporates study skills and communication. The Dept of General Linguistics and Communication provides the lecturers for the communication section of the course.

Another service which is offered to medical students by Academic Support Services is small-group tutoring which students attend on a voluntary basis. This was instituted because 1982 saw an incredible midyear failure rate for 1st year medical students. Consequently in 1983 small-group tutoring in subject specific study skills was offered to first year medical students and the midyear failure rate dropped dramatically. This year biological sciences based tutoring is being offered to students in small groups and study skills tutoring to quite large groups on a once weekly basis.

Medical School now has its own Academic Support Officer whose primary job is considered to be environmental support.

Engineering Faculty

Although Academic Support Services do not organise any specific tutoring for Engineering students, the Engineering Faculty has requested Academic Support Services to design an academic support course for Engineering Design and Engineering Drawing. Individual students can and do receive tutoring in specific subjects.

General

An interesting point made by Academic Support Services is that students' expectations of how well they need to do are not high (ie just over the pass mark) which makes it difficult for interviewers to assess, on the basis of these self-reports, when students need timely intervention.

It was suggested by Engineering lecturers that part of the reason why students are reluctant to admit to not coping is that they do not want to admit deficiencies so pretend to themselves and to others that they are just lazy and could do better with more effort: laziness is acceptable , lack of intelligence is not.

Pass rate of black students

Engineering Faculty

Figures were unavailable for black Engineering students as the faculty does not utilise racial categories for any purposes. All students are however excluded if they cannot complete first year in 2 years, second year in 3 years and the four year degree in 6 years.

Academic Support Services estimate that it takes black Engineering students a year longer than average to complete the degree.

Medical School

Medical School makes racial breakdowns of end of year pass rates but these are prior to supplementary examinations and thus merely serve to show the relative success of African, Indian and Coloured students (see attached results sheet).

Note that African students perform consistently and noticeably

more badly than Indian and Coloured students. Some years are worse than others: the extremely bad results in 1982 1st year are attributed to the fact that in 1981 matric papers were leaked and students boycotted classes; in 1983 the 1st year results were substantially better for African students because recruitment through high schools was more systematic and efficient thus drawing better applicants. (See also reasons given by Academic Support Services.)

Characteristics of students who fail

Medical School

Respondents were reluctant to generalise on this question saying that it was dependant on a number of factors notably the particular high school education which had been received and the type of background a student had come from (a more educated family background was, for example, considered conducive to passing). Alcoholism and drug dependence were stated as characteristics of students who fail but this is clearly symptomatic behaviour.

Engineering Faculty

Lecturers were also reluctant to generalise on this question but offered some suggestions. There is a transition in the curriculum from 80% pure science in first year to 80% applied work in 3rd and 4th year. Different students find this transition difficult or beneficial and may start failing or excelling depending on their particular abilities.

An inability to synthesise information and take a decision without a recipe, an inability to sort things out independently, and an inability to cope with freedom were named as characteristics of students who fail. According to the lecturers, a person who does not work as hard as his/her intelligence requires will fail.

Skills needed to pass

Lecturers and students found this question a lot easier to answer than the previous one. An interesting difference between the two faculties was that Engineering lecturers were far more specific than Medical School. Perhaps this indicates that Engineering requires more specific abilities than Medicine.

Common to both faculties was the belief that English language and communication ability were crucial as was proficiency in Maths and Science.

Medical School

Students should be 'bright' and quick to grasp things. They should have the ability to apply theory to practice, a basic understanding of scientific method, problem-solving ability, the ability to question and a reasonably good memory.

Engineering Faculty

Students should have the ability to sift information and apply logical processes to a problem and to evaluate the solution. They should have the ability to conceptualise and synthesise, the ability to be analytical in mathematical skills, the ability to visualise and translate from 3D to 2D.

In addition students should have the ability to question and, most importantly have the confidence in their own judgment to take decisions and take responsibility for those decisions. They need to be able to confidently present a project orally and need to be able to cope in a pressurised competitive environment.

The most illuminating information as far as this interviewer and this question are concerned came from talking to a few senior Engineering students. Firstly, they said, one needed the ability to work consistently or be extremely brilliant. Next, particularly in the earlier years, the ability to organise and consolidate information is crucial. "It is a huge exercise in self-organisation and self-discipline. The biggest strain of the whole day is sorting out lectures, instructions and pending assignments and some people just don't do it." The feeling was that black students have difficulties in this aspect of organisation.

It is most important to attend tuts as it is tacitly accepted that if you know how to 'do' the tuts you will pass as they consist of the application of theory to practical problems.

The ability to take notes in lectures is also regarded as very important and this presents a problem for black students in 2 respects (according to the Engineering students interviewed):

- understanding what lecturers are saying because they talk fast and do not modify their language level for second language students.
- sifting information and selecting the most important material.

Finally, the ability to constantly analyse and ask the question, "Will it work - yes or no?" is essential.

Informal factors which facilitate student success

Medical school

Students run their own informal study groups, especially at Allan Taylor Res and in addition there is the usual discussion of coursework, exams, cases etc. The biggest advantage of Allan Taylor Res is that the medical students are concentrated here and can thus establish a medical student environment or subculture. Medical students at UND are highly socially and politically motivated and involved in student affairs, national politics and community services. As this occurs chiefly with senior students it is unlikely that this is a vital factor in student success because by third year students are considered to be 'on the road' and unlikely to fail. This group solidarity and identity must

however be a facilitating factor in engendering feelings of control and power which must facilitate student performance.

Engineering Faculty

The biggest informal factor facilitating student success is cooperation in residences in solving homework problems. Black Engineering students are denied that network through being in a separate residence where it is unlikely that there will be more than a couple of students doing the same subjects or even from the same Engineering Dept. White non-residence students keep in the informal network by way of the telephone, an access which is clearly unavailable to most black students in residence or living in the townships.

Other informal areas of cooperation occur during practicals and labwork when students talk to more senior students and collaborate with peers. The Engineering students interviewed said that students always talk to other students before approaching lecturers because the problem might be trivial and "you don't want to look stupid."

It became clear from talking to lecturers and students that black students are not well-integrated into this informal facilitatory network and must consequently suffer. Reasons given for this ranged from the more practical issues raised above, to feelings that black and white students are too different from each other due to 'cultural factors' for the real friendships necessary for informal interaction to develop.

Although racism was rarely given as a reason for black students either being excluded or excluding themselves, a couple of lecturers mentioned that some 'Rhodesian' students were racist and were reluctant to participate in groups with black students. One lecturer said that white Zimbabwean students had specifically come to him to say that they would not work with black students in the lecturer-selected groups. The opinion was ventured that The reason why the situation is controllable is that black students still constitute a small percentage of Engineering students in general and that if the numbers increase conflict and tension will arise.

It was commonly mentioned that black students "stick together" and that in self-selected groups black students generally tend to be in the last stray 'hangers-on' groups. In more senior years inter-racial interaction is not considered to be a problem because as one lecturer said, "students know and respect one another by then."

It was clear generally that lecturers were reluctant to discuss the issue of racism and tended to be evasive about the problems mentioned above.

Involvement in other activities

As has already been mentioned, medical students at UND have a reputation for being socially and politically involved: in student organisations, political organisations and community projects and organisations. The medical students themselves run a tutoring scheme for groups of matric students on Saturday mornings and many are involved in community health projects.

By contrast, Engineering students at UND have a reputation for being apolitical if not politically conservative. Lecturers said that their students were "too busy" to get involved with politics. This appears to be as indicative of the lecturers' viewpoints as of the students'. Whether this also applies to black Engineering students is unclear. It seems likely that living at Allan Taylor and being in close contact with medical students would make black Engineering students more like black Medical students than like white Engineering students although they would have to suppress their sentiments when on campus.

Attitudes of black students

Interviewees were asked about the attitudes of black students in terms of motivation, effort, attendance at tutorials, conscientiousness, questioning and passivity vs activity.

Generally lecturers in both faculties were loath to generalise, saying that individual differences were as varied amongst black

students as amongst white students. More extreme viewpoints ranged from saying that black students were more motivated and put in more effort because of the financial sacrifices involved in being there, to saying that black medical students tended to rest on their laurels because they thought that getting into medical school was enough.

There was consensus from lecturers in both faculties concerning questioning and passivity.

Medical school

Lecturers here said that in the early years African students particularly have difficulty in questioning especially in framing questions in an insightful way and tend to be very passive. This gradually changes as students progress to the more senior years.

Engineering

African students tend to be more passive (one lecturer said that this extended to obsequiousness) and more reluctant to ask questions in lectures but the feeling was that black students are just as prepared to approach lecturers privately as white students are.

Psychological problems which black students experience

Bearing in mind that psychological and social problems are seldom distinguishable, some psychological problems did emerge. Numbers

in the Engineering Faculty do not warrant generalisation, nor is any single individual sufficiently familiar with black Engineering students as a group. Engineering lecturers were consequently reluctant to generalise on this question. What follows therefore pertains mainly to medical students although inferences can be made about other black students.

The most common psychological problem with which medical students present is acute anxiety. Symptoms are sleeplessness, lack of concentration and inability to study. Students are either referred to the Dept of Psychiatry or refer themselves, and often present the symptoms with little insight into their causes (as is often the case with any psychological problem.) The tendency is often for students to complain of physical symptoms like headaches rather than perceived anxiety. According to 1 lecturer the more urbanised students present as depressed and verbalise their experience as such.

The causes of these acute anxiety states are regarded as being reactions to extreme pressure from family and/or sponsors to achieve, financial pressures (bursaries are often insufficient to cover living expenses adequately and students are sometimes literally malnourished), compounded with the stress of being unable to cope with the volume and quality of work expected at university.

One lecturer suggested that part of the pressure and anxiety of not coping is due to students' perception of themselves, based on

school performance, as high achievers. When this self-perception is challenged and shaken, a great deal of tension results. Stress in African students particularly is regarded as being caused by having to battle against "insuperable odds" and by conscious feelings of inadequacy which African students experience when they compare themselves with their fellow Indian and Coloured students who have had relatively far better access to a decent school education. It was suggested that African students are highly conscious of missed opportunities and consequently bitter and stressed because of this.

The warden of Allan Taylor said that symptoms of not coping were: drinking to drown inadequacies especially during the day and during the week, students staying in their rooms in residence at awkward times when they clearly should have been at lectures, and students being withdrawn from other students and from activities.

Social problems which black students experience

Drinking appears to be the most common social problem. It was felt by people interviewed that drinking was a function of stress/anxiety (anxiety states often lead to abuse of alcohol and dagga) as well as being associated with the nature of the residence facilities.

Another problem behaviour is anti-social, so-called 'acting out' behaviour. Allan Taylor Residence has experienced a number of

serious assault and rape cases recently. The cause of this is seen as being partly due to coping with freedom after over-rigid control in the home and school situation, but far more as a result of the nature of the residence itself.

People interviewed generally and consistently cited Allan Taylor Residence as a problem for black students. It houses approximately 500 students, 200 of whom are non-medical students, although it is only meant to cater for 450 at 2 students to a room. Overcrowding is thus a basic problem with up to 5 people per room (including visitors - see below). Each year the problem occurs where too many students arrive at the residence despite the fact that it is intended as a res for medical students and that students are told beforehand that they will only be housed if there is sufficient space. Because of the chronic shortage of accommodation in the townships, Allan Taylor residents have voluntarily reduced common-room space so that more students can be accommodated.

In addition to the overcrowding by students, there is scant control of visitors who may end up staying for 6 months. One lecturer estimated that up to 1000 people are living at Allan Taylor at any one time. Apart from the obvious disadvantages to students in terms of privacy, noise levels and distraction by non-students, thefts are unable to be controlled and meal subsidies are affected.

Allan Taylor has few sporting and recreation facilities or

common-room areas and the res is isolated and quite unsuitable. It is far from the city and other forms of recreation and entertainment, and is situated in an unsafe area of Wentworth rife with gang warfare. Coupled with inadequate public transport and university transport which stops in the early evening, students are confronted not only with a highly unsatisfactory social life but are unable to make use of university facilities in the evenings. This has a detrimental effect, especially on senior Engineering students who are often required to spend time in the departments after hours.

It is believed that the appalling conditions at Allan Taylor compound the stresses and problems facing black students.

Particular academic problems that black students experience

Engineering

In the entire Engineering Faculty, Engineering Design and Engineering Drawing are the 2 subjects in which black students perform particularly and consistently badly. By contrast, Drawing is considered to be one of the easier subjects by and for white students. (The failure rate for 1st year Maths is 35% compared with 5% for 1st year Drawing.)

When questioned about possible reasons for these problem areas the following comments emerged. Design requires confidence to develop the first experimental solution even if it is rejected ar

a later stage. Lecturers suggest that black students lack the confidence to take the plunge and make the first bold step of "going for" one approach and at least trying it out. This step also requires that the student takes a decision and takes responsibility for getting something wrong. The later stages of Design, ie development and evaluation, do not present nearly as many problems for black students, it was felt.

In addition Design Evaluation requires oral presentation and the ability to respond verbally during the evaluation to questions and critical comments. Lack of confidence and fluency in spoken English exacerbates the problem of lack of confidence in the design choice itself. Engineering students interviewed said that lecturers keep stopping black students during presentation and saying, "Pardon," because they cannot understand what the students are saying. This becomes embarrassing and inhibiting for all concerned.

Drawing requires the ability to visualise and see things from different perspectives. It was suggested by a number of lecturers that black students have difficulty in translating from 3D to 2D.

Medical School

Lack of fluency in English leads to African students being afraid of using and referring to textbooks. As a result, lectures have to introduce subjects and give standard basic requirements before students have the confidence to consult textbooks.

A common effect of English problems is an extremely high level of anxiety in oral examinations. Lecturers spend a great deal of time and effort in ensuring that questions have been understood and that the second language problem is not the issue. Lack of fluency and confidence in English is a contributory factor in reluctance to ask questions as students fear being misunderstood, inadequately heard or incorrectly pre-empted.

Underlying reasons for underperformance of black students

Lecturers consistently named poor basic education, particularly in the field of English, Maths and Science, as the chief cause of underperformance of black students. Apart from the content of courses the authoritarian method of teaching discourages active participation and questioning.

It was suggested that the home environment of most black students is also authoritarian, thus compounding the school problem and resulting in lack of confidence in decision-making and lack of development of critical thinking.

One Medical School lecturer suggested that part of the reason for underperformance is that students believe that because they have got to Medical School they have "made it" and don't have to work, even though they may have been told that selection criteria are different for the different race groups.

Engineering lecturers suggested that the reasons why black students "come apart" in Design and Drawing is that they are used to having a recipe without which they cannot cope. The authoritarian and rote methods of teaching have crushed initiative and confidence in decisions made, both crucial in Engineering Design particularly.

In addition it was stated that the non-technological environment, even of black urban dwellers, makes design problems extremely difficult for black students. Black children do not have the opportunities to familiarise themselves with properties of materials and to experiment with the physical world and its components. This is thought to affect the ability of students to visualise a design, to translate from 3D to 2D and to view objects from different perspectives.

An interesting point to note is that white female Engineering students are seen as experiencing some of the same problems as black Engineering students though not to the same extent. The root causes are regarded as being similar but white females cope better because their straight Science and Maths ability is on average higher.

Suggested remedies

Most lecturers suggested that the remedies belong at the school and domestic environmental level. Apart from a general upgrading

of English, Maths and Science teaching in particular, there should be a concentration on the application of Maths, Physics and Chemistry and their everyday bearing on technology. Just as crucial is an encouragement of critical and independent thinking at school level.

Engineering lecturers suggested that at school children need to become more familiar with tools and materials of construction and need to be allowed to experiment and be creative rather than mechanically doing handwork or woodwork.

Apart from these suggestions lecturers, especially Engineering lecturers appeared to have a rather helpless attitude towards the problems which black students experience. The impression was gained that because numbers are still relatively small, the problem can be evaded for a little longer.

Medical School lecturers on the other hand have no alternative but to confront at least some of these problems and find solutions. For example, Medical School lecturers are told to consciously accommodate their language to the level of the students, and probably do this intuitively in response to the majority of their audience who are second language speakers.

This simplification of language is not regarded as handicapping the students in any way, it being regarded as a clarifying and disciplining exercise for lecturers as well. Exam questions are

explicit so that students know exactly what is required of them. If a question is at all ambiguous due to linguistic rather than conceptual reasons, the head of department will not allow it. During oral exams questions are asked and perhaps even reformulated to ensure that the question is understood.

According to interviews conducted and limited results available, African medical students are relatively as disadvantaged as African Engineering students. Medical School has however found certain solutions due to force of numbers which the Engineering Faculty has not yet been forced to confront. It may be useful for Engineering Departments to consider these solutions.

For example, Medical School has overcome the stigma associated with academic support by incorporating study skills and language and communication into their first year course on Community Health. To some extent language difficulties have been overcome through conscious utilisation of simpler, schematic lectures in the junior years without sacrificing content or quality.

By their own admission, however, Medical School has still a long way to go before overcoming the numerous problems besetting their students, particularly their African students. A few lecturers mentioned that the best thing that the private sector could do for black students was to provide residences that are closer to campus and provide the much-needed privacy, amenities and facilities essential for well-being and successful study.

How and whether the university can remedy language, confidence and critical thinking deficits remains a headache for some, a confirmation of racist conceptions for others and a non-issue for the rest.

RESULTS SHEET

MEDICAL STUDENTS
1ST YEAR (Nov Exams excl Supps)

	No Enrolled for Exams				No Failing 1 Subject				No Failing 2 Subjects			
	A	I	C	Total	A	I	C	Total	A	I	C	Total
81	35 (46.7%)	39 (52.0%)	1 (1.3%)	75	2 (25.0%)	6 (75.0%)	-	8	6 (85.7%)	1 (14.3%)	-	7
82	30 (38.9%)	42 (54.5%)	5 (6.6%)	77	4 (57.1%)	2 (28.6%)	1 (14.3%)	7	3 (100%)	-	-	3
83	41 (48.2%)	42 (49.4%)	2 (2.4%)	85	5 (83.3%)	1 (16.7%)	-	6	3 (75%)	1 (25%)	-	4

No Failing 3 Subjects				No Failing 4 Subjects.				OVERALL
A	I	C	Total	A	I	C	Total	
4 (80%)	1 (20%)	-	5	5 (100%)	-	-	5	48.6% Africans 20.5% Indians 33.3% of Class failed one or more
9 (100%)	-	-	9	3 (100%)	-	-	3	63.3% Africans 4.8% Indians 20.0% Cols 28.6% of Class failed one or more
2 (100%)	-	-	2	5 (100%)	-	-	5	36.6% Africans 4.8% Indians 20.0% of Class failed one or mor

MEDICAL STUDENTS
2ND YEAR (Nov Exams excl Supps)

	No. Enrolled for Exams				No. Failing Only Anatomy				No. Failing Only Physio.				No. Failing Both Subjects				OVERALL
	A	I	C	Total	A	I	C	Total	A	I	C	Total	A	I	C	Total	
1981	50 (34.2%)	91 (62.3%)	5 (3.5%)	146	-	3 (100%)	-	3	7 (63.6%)	4 (36.4%)	-	11	16 (50%)	14 (43.8%)	2 (6.2%)	32	46% Africans 23% Indians 40% Coloureds 31.5% of Class failed one or more subjects
1982	50 (36.5%)	79 (57.7%)	8 (5.8%)	137	-	3 (100%)	-	3	4 (66.7%)	1 (16.7%)	1 (16.6%)	6	14 (38.9%)	19 (52.8%)	3 (8.3%)	36	36% Africans 29.1% Indians 50% Coloureds 32.8% of Class failed one or more subjects
1983	38 (27.3%)	92 (66.2%)	9 (6.5%)	139	2 (66.7%)	1 (33.3%)	-	3	10 (41.7%)	14 (58.3%)	-	24	9 (26.5%)	23 (67.6%)	2 (5.9%)	34	55.3% Africans 41.3% Indians 22.2% Coloureds 43.9% of Class failed one or more subjects

MEDICAL STUDENTS
3RD YEAR (Excl Behav & Soc Sci) (Nov Exams excl Supps)

	No. Enrolled for Exams				No. Failing 1 subject				No. Failing 2 Subjects				No. Failing 3 Subjects				OVERALL.
	A	I	C	Total	A	I	C	Total	A	I	C	Total	A	I	C	Total	
1981	31 (28.4%)	71 (65.1%)	7 (6.5%)	109	5 (33.3%)	10 (66.7%)	-	15	5 (62.5%)	2 (25.0%)	1 (12.5%)	8	5 (35.7%)	8 (57.1%)	1 (7.2%)	14	48.4% Africans 28.2% Indians 28.6% Coloureds 33.9% of Class failed one or more
1982	38 (30.4%)	82 (65.6%)	5 (4.0%)	125	7 (35.0%)	13 (65.0%)	-	20	6 (75.0%)	2 (25.0%)		8	5 (62.5%)	2 (25.0%)	1 (12.5%)	8	47.4% Africans 20.7% Indians 20.0% Coloureds 28.8% of Class failed one or more
1983	43 (39.4%)	59 (54.1%)	7 (6.5%)	109	6 (42.9%)	5 (35.7%)	3 (21.4%)	14	5 (50%)	5 (50%)	-	10	8 (72.7%)	2 (18.2%)	1 (9.1%)	11	44.2% Africans 20.3% Indians 57.1% Coloureds 32.1% of Class failed one or more