EXPERIENCES OF BLACK ENGINEERING
STUDENTS IN A WHITE UNIVERSITY

T.S. Wella

July 1984
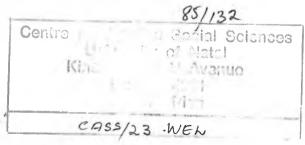
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CENTRE FOR APPLIED SOCIAL SCIENCES
UNIVERSITY OF NATAL
DURBAN

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1. INTRODUCTION

Before any form of evaluation, the writer feels it necessary to summarise the description, implementation and the rationale for the scheme which assist a number of black engineering students at Wits.

Description of the Undergraduate Cadet Scheme

"It is a career oriented programme, which by involving a number of environments including the university, commercial, industrial and mining environments attempts to bring young black matriculants to a point of equal competition with their white counterparts."[1]

Implementation of the Scheme

The scheme started in January, 1980. Through a nation-wide advertising campaign, it recruits black matriculants who are then trained for five years. The intention is that after the period of training the cadet will be able to compete with other graduates for middle-management positions in the engineering or accounting fields. The recruits are a highly selected group —— every one of whom is capable of getting a degree, as evidenced by good matriculation examination results and by superior performance in a range of aptitude tests.

In the pre-university year the cadet spends his time in two places —— on the site with his mentor[2] and at the Wedge[3] at the University of the Witwatersrand. This means that while the cadet is on site with his[4] mentor, he has correspondence lessons in Science, Maths and English; and when he is at the Wedge, he still sees his mentor every Friday.

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1) Adler, D. "Background to the setting up of the under-graduate Cadet Scheme and the Principles Incorporated into its Development." Unpublished manuscript: Anglo American Corporation, Johannesburg, 25th November, 1982.

2) A friend who is a wise and trusted advisor

3) A university building where the Cadets attend lectures.

4) Cadets are all males.

In spite of the relatively high quality of the participants in the scheme and the support systems available to them (like the availability of mentors and extra tutorials), the performance of cadets and black engineering students as a whole is poor. Surprisingly the performance of cadets during the first two years[1] is very good with almost 100 percent pass rate, but during the second and third years of study their performance drops very markedly. Although it is known that failure rate among all engineering students is high in second and third years, the one for black students still confuses both the university and the company. Concern about this problem made the organisations involved ask an outside researcher to look into the possible problems black engineering students could be faced with.

Rationale for the Cadet Scheme

Adler (1983)[2] discusses factors which work negatively on black people. These are as follows:

- academic schooling with authoritarian teaching which thus encourages rote learning;

- segregated educational systems which discourages true understanding across race;

- exclusion of blacks from the prevailing technological and commercial systems;

- a working environment which is not conducive to positive learning and development for a black person.

In order for the reader to better understand the reasons for the scheme, the writer will highlight the socio-political factors affecting a black student.

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1) Pre-university and first year.
2) Adler, D. "Unilever Presentation". Unpublished manuscript (3752A) Anglo American Corporation, Johannesburg, June 23rd.

In a complex multi-ethnic society, the dominant group (in terms of power and control) establishes the norms and standards of behaviour that will be reinforced or rewarded. This means that the behaviour of all members of that society is measured and evaluated by these standards. It also means that to be successful in terms of achieving the societal rewards for which members strive is to conform to the appropriate societal norms. The norm in this report will refer to standards of reference by which behaviour is judged and approved or disapproved (Williams, 1968, p.204)[1].

Much of the socialisation process is directed at teaching societal members the appropriate norms and responses and rewards or payoff for compliance. Membership in the dominant group tends to increase the probability of learning the appropriate norms. In this report, the minority group will refer to a group of people of physical characteristics, behaviour or heritage under the control of a dominant group (Green and Davis 1983)[2].

One may then find that because of the socio-political factors in South Africa which expose different racial groups to different situations, the understanding of salient concepts relating to work could differ. For instance the meaning given to the concept "authority" by a black and white colleague may differ. For example, the black home may encourage unconditional obedience to authority and the teachers, 85 percent of whom do not have matric[3], may encourage the same, because this may be sanctioned by the school system. The many restrictive laws to which black people are subjected may also encourage submission. The same practices may not affect the white child the same as they do the black one. White students may be encouraged to be critical and analytical to situations from childhood.

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1) Williams, R.M. quoted by Green et al 1983. "Biculturalism and Black Advancement." (Paper presented at the Conference on "Strategies for Improving the Status of Blacks in Post-Secondary Education."

2) Ibid.

3) Randall, P. (Ed.) Survey of Race Relations in South Africa, Johannesburg, January 1983.

Due to the relatively low per capita expenditure on black education —— R192 for a black pupil as against R1 385 for a white pupil[1], the black student may have schooled where there were no laboratories. If there were any, there might have been no laboratory apparatus. As a result, he or she might have been taught to imagine experiments or learn them by heart. This means that the student may meet with and see the apparatus for the first time at university. The author here views the socio-political and the educational backgrounds of black students as placing them at a disadvantaged position compared with white counterparts. What may exacerbate the situation for a black matriculant or cadet is that there are few role models of engineers in black communities. The situation may be like a "nightmare" for him when he finds himself in a new situation (for example a white university) during his adolescence or later stages in life. The new situation may be a highly technological and managerially orientated one. The situation may demand or expect him to compete on the same level as a white colleague. He may be expected to be an independent analytical thinker and doer. He may have to think in terms of computers. It must be remembered at this point that the first two years in the development of an infant are very important. Any deprivation emotionally, socially, physically and mentally shows up negatively in the later phases of life: in fact it could be irreparable. Researchers state that the delicate but necessary interplay between adequate diet and environmental stimulation in the first two years of life is crucial. During this critical period, the brain's potential has to be reached, or it's too late[2]. This means that an infant deprived of nutrition or stimulation will never develop to full mental capacity. The implications for this are however frightening. Because blacks come from a relatively deprived environment[3] socially and educationally compared with their white colleagues, the Anglo American Cadet Scheme tries to bridge the gap in the understanding of the technological world between black and white students in the Engineering as well as commercial fields.

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1) Randall, P. (Ed.) Survey of Race Relations in South Africa, 1982, Johannesburg, January, 1983.

2) Selected Readings (1975). Reprinted by permission of Psychology Today Magazine.

3) In terms of the physical environment in the townships and rural areas vis-a-vis the white environment, the per capita allocation on education and the entire school environment.

This report highlights the strengths and weaknesses of the Cadet Scheme and/or life of being black at a white university in the engineering faculty.

2. OBJECTIVES

The main objectives of this research were as follows:

- To look into the life of black engineering students at the University of the Witwatersrand.

- To look into the problems, if any, associated with life in a white university and the under-graduate cadet scheme.

- How black students cope with such problems.

- The type of academic support systems which are provided by the university. Also if black students find these useful or not.

- The type of support black students aspire to.

3. METHODOLOGY

3.1 Sampling procedure

In the absence of the researcher, the warden of Glynn Thomas[1] invited all students who appeared on the list for group discussion. The aims of the discussion were outlined in very general terms. This was to give the researcher enough scope to give the explanation in her own words. The engineering student society was subdivided into five groups —— first year students; second year students; third year students; fourth year students, and cadets. All respondents are male students at the University of the Witwatersrand. In order to be able to better control the discussion, the researcher had to set the upper limit to five.[2] Table 1 shows the sample breakdown.

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1) Residence for black Wits University students which is roughly fourteen kilometers away from the University campus.

2) Any student who came in for discussion after the first five had arrived, was politely told about the required number (upper limit) and thus excused. Only a few were affected.

TABLE 1

SAMPLE BREAKDOWN

Year of study	No. of respondents	Total number of Engineering Inmates at Glynn Thomas
First year	5	10
Second year	5	8
Third year	1	1
Fourth year	3	4
Cadets	4	7
TOTAL	18	30

3.2 Research technique

Group discussions were held with students. The researcher met four different groups differentiated according to year of study and a separate cadet group (see Table 1). Of the thirty who had been approached, eighteen attended. The role of the researcher was that of the facilitator and to take notes. Ten focus areas were covered in the discussion.[1] For the first year, second year, third year as well as fourth year students, the same areas were covered in the discussion. Each discussion ranged between two and a half to three hours.

For the cadet group, different areas were covered —— areas relating more to the scheme itself. The discussion took two hours.

3.3 Timing

Research was conducted between the 11th and the 15th of March 1984.

4. SUMMARY OF THE FINDINGS

This section will summarise the responses of the respondents

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1. See attached interview schedule at the back.
2. Ibid.

ranging from the first to the fourth academic year of study.   Note that these respondents do not include cadets.   Any group differences and similarities will be treated as trends.

4.1 What students think they are expected to do in order to succeed at the University of the Witwatersrand

Respondents felt that they were expected to do the following:

- work hard (attend as many tutorials as possible; make use of the library facilities; study at hostels; keep up to date with the work);

- have a positive attitude to their work and life in general.   A positive attitude to lecturers is seen as of vital importance as this is strongly and directly linked to one's success. Whilst on the one hand a positive attitude toward a lecturer is perceived as increasing one's chances of passing the examination papers of a particular lecturer, on the other hand a negative attitude on the part of a student decreases them.

Senior students (third and fourth year students) feel that analytical and critical reasoning concerning situations is a very important expectation.   As they put it "the whats, hows and whys must operate in problem solving theoretically as well as practically".

4.2 Perceived reasons for a high failure rate at Wits

4.2.1 English language is a problem.   Respondents reported to lack confidence in the language.   They talk slowly and believe that they bore some white colleagues because of this.   Because of lack of confidence in the language they find themselves not asking questions in class.   It is as if lecturers know about these problems.   For example when a black student "slowly" asks a question he finds the lecturer, possibly sympathetically, completing the sentence for him/her. Respondents quite appreciated the lecturers' sympathy but hastened to say that in most instances by completing the sentence the intended meaning gets distorted.

The language problem and consequently lack or poor understanding of the subject matter for a black student is further aggravated by the fact that not all white lecturers are English speaking; some of them also have an English language problem. The combination of these problems makes it difficult for a black student to know much about what went on during the lecture. Because the student does not have the background to the problem it becomes difficult for him to ask for help from the tutor. This is because the problem must be communicated clearly to the tutor so that the tutor knows exactly what it is and sees how he can help. The problem becomes difficult to state if one did not understand the whole purpose of the lecture. Voices of some lecturers are also low. Other lecturers, although fluent in English, talk too fast for the students' comprehension.

4.2.2 <u>Lack of continuity between what one was taught at school as against the engineering curriculum</u> is perceived as a problem. This is aggravated by a lack of models in black communities from whom to learn. As a result engineering concepts are "alien" to a black student.

Respondents also reported poor or no relationship between the first year course material (Science orientated), and engineering ones (engineering orientated). They perceived the gap in knowledge and understanding as well as time wasted in trying to bridge the gap on the part of the students, as giving rise to a high failure rate at second year level. Worse, no academic support systems for engineering subjects were reported.

4.2.3 <u>Living far away from facilities is also a problem.</u> Library as well as computer facilities were cited as examples. The consequences of living away from co-students exacerbates the situation for black students. For example on a certain day all students were given problems to solve at home, the solutions to which were to be presented the following day. When the black co-students arrived the following day, they found the white co-students already had the right solutions. In fact the white co-students said they had access to these the previous day at the hostels. They therefore took less time in problem solving

than the respondents who had to struggle without any aid. And because the black students did not know where the white co-students got the solutions from, might reinforce the feeling of distrust for the environment (white university). As they put it, "there are two possibilities concerning where white colleagues got the solutions from

- they might have got them from the lecturer himself because sometimes lecturers are their relatives, or

- they might have got them from white senior students who did the same problems previously".

4.2.4 <u>Poor transport facilities to and from university is a problem.</u>
The last bus from university to the hostel leaves at 5.30 p.m. which was perceived to be rather too early. The combination of the nature of transport facilities for respondents and time of hostel meals forces them to be in their hostels by 6 p.m. in the evening.

4.2.5 <u>The heaviness of the course.</u> The engineering course is viewed to be a heavy one. At first year level a student takes five courses; at second year eight to nine courses; at third year level, nine to ten courses and the same at fourth year level. On top of this (at Wits) if a student fails one major course he/she is expected to repeat all the courses.

4.2.6 <u>Respondents felt that the interval between tests is too wide.</u>
Tests are written quarterly and all of them contribute to the year mark. Respondents feel that it would be better if there were monthly class tests. Such tests would fall between the quarterly ones, and would thus help in assessing themselves in the process of preparation for the quarterly ones.

4.2.7 <u>Lack of commitment to the course.</u> Respondents themselves are not serious with their work, they put more emphasis on the social-informal than the formal aspect of university life. If one does this, work keeps on piling up till one finds it very difficult to cope with the work demands. This is partly due to the nature of the engineering curriculum. Because with minimum effort students pass so well at first year level,

they report to develop an inflated view of their own abilities. Students reported that if as a result they did not devote more time to the work demands (formal) during the later years of study it would become difficult for them to cope with the work demands.

4.2.8 Racial problems

4.2.7.1 Attitudes of white lecturers were described as either negative or extremely positive and thus confusing to black students. Whilst the extreme negative attitude was reported to be shared by all students irrespective of race, only black students were affected by extreme positivity. Such extreme positivity which revealed itself in spoon-feeding, spoiled the students during the course of the year.* This made black students in some instances feel that they were special and precious and thus different from their white co-students. In other instances black students would feel the same as their co-students. It is the discontinuity which could pose a problem for black students to adapt. Confusion about how to react could make them lose control of the situation.

4.2.7.2. Condescending relationship between black and white. Students expressed the feeling that whites treat them condescendingly and avoid interaction with them. For example, sometimes colleagues are asked to work in pairs. The black students usually have problems in getting a partner —— if he is the only black in the group. Students report that it is the last person without a partner that comes to the black student. Even when they work together, the condescending type of communication prevails. In fact respondents feel that to pair with a black student is perceived by the white colleagues as a burden.

4.2.7.3 The faculty of engineering is known to be one of the most conservative ones at Wits. What aggravates the situation is that the course content does not encourage self-reflection or self-awareness or attitude change. To respondents, this means that if a person comes

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* It must however be noted that spoon-feeding was reported at first year level. Also, not all lecturers at this level spoon-feed. This only applies to black students.

into the faculty conservative there is little chance of his attitudes being modified.

4.3 Type of help or support black engineering students aspire to

4.3.1 Students recommended a compulsory tutorial system, whose tutorials are marked on time and fed back to students.   The advantages of such a scheme were seen as twofold:

- making the tutorial scheme compulsory would help force the student to attend;

- marking the tutorials on-time would assist the student in making an objective assessment of him/herself on time.   If he/she does badly in the tutorials, he/she may put . more effort into preparing for the quarterly tests.

4.3.2 Extra practical courses at work were also recommended. Traditionally students have their practicals during the June - July holidays.   There was a general feeling from respondents that they did not benefit much from these practical lessons.   This was due to the fact that they fell at the time when the respondents had written two major quarterly tests.   In order that respondents benefit from practicals, it was recommended that practicals be given quarterly to help them to have a better understanding of the theory and consequently improve in tutorials.

4.3.3 It was recommended that during vacation training, transport should be provided for all students who needed it.   Respondents reported having to walk long distances up to (15 kilometers) on foot to companies where they were placed for practicals.   This was because such places in most instances were far away from public transport.   As a result they found themselves relatively tired in practicals and thus not gaining much.

4.3.4 A black engineering consultant was recommended to assist black students who need extra academic help.   Students felt that because they had problems of communicating the intended meaning of situations and problems to lecturers and tutors and because of limited time the tutors had with them, they wasted too much time trying to make themselves heard

and understood by other students as well as tutors and lecturers. As a consequence, a black engineering professional was perceived to have potential in helping them out of their academic problems even if the university/Anglo American Company employs this person on a part-time basis.

4.4 Academic support available to engineering students

In this area, the following academic support systems were mentioned:

- English for academic purposes
- Study skills
- Chemistry
- Mathematics and statistics
- Vacation course for engineering skills

Respondents felt that out of the above academic systems, only two were useful to them —— the vacation course for engineering skills and English for academic purposes. Unfortunately the course runs only for three weeks during the July vacation and only for first year students. Respondents do not use other academic support systems (study skills, Chemistry, Mathematics and Statistics) because they feel they do not have problems in these areas. Respondents would have liked more courses relating to engineering.

4.5(a) School preparation for the university life

All respondents felt that their school did not help prepare them much to cope with university life. The choice of subjects is so limited that most subjects taken at school except for Science subjects, the available subjects have no relationship with university engineering ones. Even on the Science subjects, poor laboratory facilities and teaching mean that the student has to adapt a lot to the knowledge and understanding of apparatus used in experiments at university. Lack of career knowledge and guidance among black students was reported to give rise to ignorance about the expectations of the engineering profession and its demands. This was only discovered at university.

4.5(b)   Difficult situations which each respondent had to handle

(i)   Permit problem

Some respondents had problems in getting permits to study in a white university.   Whilst the university admitted them without permits, during the period when they were waiting for the permit, it became quite difficult for them to study.   This means that the permit acted as an obstacle to effective study.   The students worried about what would happen if they did not get a permit.   They thus found themselves having an approach - avoidance conflict to study.   Liaison with the university administration did not prove fruitful.   The matter kept on "receiving attention" for almost a year.   The problem was only resolved when respondents decided on their own to go to Pretoria for permits which they came back with.

Respondents strongly felt that permit requirement disorganised them a lot in their studies because as they put it "being thrown off balance during the first two months of study at university is a great loss."

(ii)   Accommodation problem

A number of respondents reported to have encountered such problems with accommodation.   This was because they did not have enough money to pay for both university of hostel accommodation.   Some respondents reported to have been squatting in townships, sleeping in a friend's car and so on.   Such a problem was temporarily resolved by raising the required money from colleagues.   The problem resolution was temporary because whilst on one hand they were successful in raising the money, on the other hand they did not know how and when they would be able to pay the money back.

(iii)   Racial problem

One respondent reported that one day he and his co-students were working on a problem-solving project.   Each group had to

decide on an option for a solution, discuss it with the group, and together evaluate available options and finally decide which the best option was and why.   In this particular instance, the respondent's option was not chosen.   The respondent tried to show the group the worth of his choice but still it was ignored.   What the respondent did was individually to write down his own option which he justified.   In other words, he submitted his own decision.   His option happened to be the right one.

Respondents reported that usually when they get to lectures, they take a seat in a row.   They find that the whole row is avoided by white co-students even if only one seat is occupied in a row.

Occasionally when most students have a problem in understanding, the lecturer usually refers them to a student who has mastered the problem. If the knowledgeable student is a black student, white co-students refuse to consult with him.

(iv) Problems relating to self

Some junior respondents reported having problems in self-discipline.   For example on a Friday, they would find themselves whilst on the one hand, having a lot of work, on the other hand deciding to ignore the work and attend a party.   This crippled. them a lot because they found it difficult to make up for lost time.

4.6 Informal relations with other students

While respondents generally reported mixing freely with other black students informally, junior students (first and second years) avoid mixing across faculties.   These respondents felt such mixing "retarded their progress" because most of the time they found themselves criticising one another's disciplines.   As a result they recommended mixing within a discipline.   Surprisingly for senior students (third and fourth years) mixing across discipline was encouraged by themselves.   The senior respondents tended to mix with serious students —— students who are hard workers and open-minded irrespective of their discipline.

No respondents seemed to mix informally with white students. This was due to a number of reasons. They live away from white co-students plus the social environment is not conducive to realistic informal mixing. Respondents reported having tried to "reach out" to white colleagues for instance by using the same facilities like swimming pools. When they did so, they met with disappointment. White colleagues who were already swimming went out of the pool. Such incidents discourage respondents from reaching out to white colleagues.

4.7 Role of mixing with other students

Mixing with other students is perceived as helping to resolve academic problems on the one hand, while on the other hand reinforcing the perceived social and political problems. Because when most students are together their discussions revolve around politics, they report to become more aware of the underlying factors leading to social as well as political problems without having the solutions to such problems. As a result, black students feel that mixing with other students to most of them brings more frustration than relief.

4.8 Reaction to challenge

When respondents were asked how they would react to a lecturer who was not happy with their work, some said they would ask the lecturer to elaborate on what he said. This was so that they know exactly what the lecturer meant. After the elaboration they would try to study hard. Others however said that it depended who the communicator was. For instance there were lecturers who were known to hate women and blacks. To those, respondents would just keep quiet and try to improve in their work. This was because their questioning would not help them, instead it would exacerbate the situation for them.

4.9 Life in the hostels

For entertainment respondents enjoy themselves by swimming, watching television, listening to music, sport and visiting friends. On top of this, the junior respondents go to parties, drink liquor and

wander in the townships.   Senior students reported to attend meetings.
This to them is the form of recreation they enjoyed the most.   For
junior respondents however, visiting friends was enjoyed the most.

No insomnia was reported by either group, instead the junior
students reported to sleep a lot (10 hours plus).   Senior students
reported having no time for drinking alcohol.   Heated arguments were
reported to be common amongst junior respondents but absent in senior
ones.   Respondents linked drinking alcohol and sleeping a lot to
boredom arising from repetitious courses.

No problems of forgetfulness and health were reported.   It
appeared as if noise was disturbing to all respondents.   They felt
noisy hostels made it quite difficult for them to study.   They, however,
reported their hostels to be relatively quiet later in the evenings.
This was appreciated by respondents.   This was linked with a strong
disciplinary committee, which had recently dismissed two students for
noise making in hostels.

4.10   Perceptions of the Undergraduate Cadet Scheme

Respondents had a lukewarm attitude towards the under-graduate
cadet scheme.

4.10.1   Merits of the Undergraduate Cadet Scheme

4.10.1.1   The black students felt that the scheme helps because most of
what is covered at university first year, is covered by the scheme, which
means that the scheme provides some continuity from school to university.

4.10.1.2   Specifically the scheme was seen to be helpful in covering
engineering analysis and design course.

4.10.1.3   Also during the pre-university year cadets came into contact with
some lecturers.

4.10.1.4 Because of the nature of the interaction between lecturer
and student during the pre-university year (informal and personal)
by the time the student starts at university he/she knows some lecturers
at personal level.

4.10.1.5 The scheme helps the cadets with bursaries.

4.10.2 Demerits of the Undergraduate Cadet Scheme

The following were perceived as demerits of the scheme:

4.10.2.1 Because at first year university level there is repetition
of course material given at pre-university level, the scheme encourages
a wrong perception of one's self. This is because all students pass
with very high marks due to familiar material.

4.10.2.2 The distorted self-image which results from repetition and
high marks becomes a problem in the later years of study. In this
case the scheme is perceived to spoil the cadets.

4.10.2.3 The pre-university year is taught by lecturers who have no
engineering background. The consequence of this is that even when it
comes to choosing jobs for cadets they choose "wrong" ones in terms of
value for an engineering student —— jobs that are meaningless and not
stimulating and challenging to an engineering student.

4.10.2.4 The scheme gives a false sense of security. This is because
whilst on one hand money gives one some security, on the other hand
failure does not. This is because the scheme is perceived to
encourage a failure by giving a cadet a false self-image, thus encouraging
the cadet to take things easy and not work hard. Because there is
repetition with minimum effort cadets pass well during the first two
years of study.

4.10.2.5 The scheme places more of an emphasis on Science subjects which
are not a problem to black engineering students.

5. HOW CADETS PERCEIVE THE UNDER-GRADUATE CADET SCHEME

This section will highlight the image the cadets have of the scheme.

5.1 Expectations about the Scheme

Respondents reported that their expectations were raised by what they were promised. The following are what the cadets were promised and thus their expectations about the scheme:

5.1.1 After joining the scheme cadets expected automatically to get to the top and make it at pre-university;

5.1.2 They expected the scheme to help more in individual problems than group problems;

5.1.3 They expected the scheme to "redress" the historical imbalances by pushing blacks to academic careers then managerial positions. Because of this cadets expected the scheme to help them throughout their academic career not only at pre-university level. For instance a 60 percent pass is a requirement for a mid-year test. Otherwise one has to attend tutorials on Saturdays at the university. If one fails at the end of the year, the service is terminated no matter what other contributing factors there are. Whilst on the one hand cadets have to cope with problems of failure, on the other hand they have to cope with those of exclusion from university and withdrawal of the bursary. This they say, threatens their self-image more especially when they have never failed before;

5.1.4 They expected the scheme to help them compete on the same levels as other racial groups at work;

5.1.5 They expected the scheme to meet skilled manpower shortages.

5.2 & 3 Purpose of the Scheme

Respondents had a lukewarm attitude towards the purpose of

the scheme.   They strongly felt that the purpose of the scheme was
initially to deal with skilled manpower shortages.   They were, however,
quite sceptical about this purpose when they looked at the numbers
that were taken each year (twelve).   Since there are very few black
engineers in South Africa, the respondents feel that twelve cadets
each year may not help much to solve the manpower shortage problem.

To a lesser extent respondents felt that another aim was to
help them to be able to compete with other racial groups from the
same level.   They felt it would take a long time before this goal
was achieved in view of the damage done by social-educational segregation
according to race thus having different racial groups with different
world views.   The educational pre-university course only for blacks
made respondents feel this was the purpose of the scheme.

5.4   Particular Cadet problems created by the Scheme

These were as follows:

5.4.1 Vacation jobs are not relevant to the engineering profession.
This is because the choice of jobs is made by a person who does not have
an engineering background.   As a result in the places of placement,
there is no scope for advancement through placements.

5.4.2 Cadets not consulted about decisions regarding placement.
Placement is imposed on them.   For example, one respondent reported
to have been placed at a place where superiors and colleagues resented
his presence.   Life was miserable for him but nothing was done about
his misery.   Because of his presence, white colleagues threatened a
nation-wide boycott.   It was only then that he was asked to leave
the area.   Again he was not asked to decide on whether to leave or
not.

5.4.3 Respondents disliked treatment as a group.   They maintained
that as different individuals they had different difficulties, likes
and dislikes.   Treatment in groups left the majority without assistance
at all to alleviate the difficulties they have.

5.5 Merits of the Scheme

Financial assistance: Respondents felt that most black matriculants do not proceed further not because they do not have the potential to make it at university level but mainly because of lack of finances to help them through to university. The bursary scheme thus helped them to realise their potential.

It was, however, surprising that respondents gave only one merit of the scheme.

5.6 Where respondents think they will be placed after graduation

Respondents think they will be placed in the mines and dislike the idea. Fears are that of death as well as uncompromising negative attitudes of white colleagues. They see no scope for development in the mines more especially with the type of superiors they would work under. Most respondents would like to be employed by small companies. They feel there is wider scope for one's advancement in smaller companies than big ones. Anglo American is grouped by the students under the big ones. They believe that in big companies one works under a technician or a foreman and one must maintain what is designed by other people. When there is a crisis outside specialists are called in for help. In contrast in small companies there is some specialisation and sharing of ideas from within the company. It is mostly this sharing of ideas that is perceived as conducive to one's development.

5.7 Difficulties in working in the mines

5.7.1   isolation from one's friends and relatives;

5.7.2   rejection by white conservative colleagues whose chances of modifying their attitudes for the better are remote;

5.7.3   narrow scope for one's advancement because of the type of superiors plus the repetitious nature of the job that one would be doing. Respondents do not forsee the possibility of being promoted above the white technicians and foremen employed in the Mines because this group is the most conservative and has resented their presence even before;

5.7.4   the cadet scheme expects too much from the cadet after placement.
        For instance when cadets are placed during December holidays most
        employees in the Mines are on holiday. As a result because
        superiors are on holiday there is nobody to give them work.
        As a consequence, the cadet does only that which he/she thinks
        needs to be done. This is in conflict with the demands of the
        scheme. The scheme looks for a comprehensive report regarding
        the tasks and activities on-the-job. Because there is not much
        that is done, the report becomes short and sometimes vague.

6. DISCUSSION

At this stage, the author feels it pertinent to restate the
objectives of the investigation. These were as follows:

- To look into the life of black engineering students at the
  University of the Witwatersrand.

- To look into problems if any which are associated with life in
  a white university, and the undergraduate cadet scheme.

- How black students cope with such problems.

- The types of academic support systems which are provided by the
  university. Also if black students find these useful or not and why.

- The type of support black students aspire to.

This report reveals life with problems for black students. These
problems are mainly a manifestation of the South African socio-political
conditions. The main problems follow in their priority order.

6.1 English use as a second language

Respondents have problems making themselves clearly heard and
understood by their white co-students as well as superiors. They also
have problems in understanding the lecturers. The latter problem is due
to the fact that some lecturers talk quickly and have low voices. Others
also have problems of English as a second language. The problem as
experienced by respondents seems to link up with a number of other problems.
These are as follows:

- during lectures, black students end up having little communicated
  information, some of which is misunderstood;

- white co-students may be reluctant to work as partners with a
  black student because they could find it easier and faster to
  work and communicate with a co-student who does not have a
  language problem;

- even when a black student contributes to a group of white co-
  students, his/her contribution may not be appreciated no matter
  how valuable it is, the reason being that it may not be put
  forward clearly;

- poor interactions between black and white students could also be
  due to the English language problem.

Despite different interpretations which could be given by black
and white students, English language use remains a problem for a black
student in a white university.

6.2 Development of an unrealistic self-image

Respondents described the subject matter at first year level to be
mostly a repetition of matric work except for the engineering design
analysis course. Cadets find themselves repeating matric work both at
pre-university as well as first year level. As a result, they find
themselves having a lot of time, bored with life and they resort to
liquor intake. Science courses were reported not to be a problem, an
understandable factor when one considers the fact that black students in
the faculty of engineering got high marks in Science subjects at matric
level. Ability to pass well with minimum effort because of repetition,
could give rise to an unrealistic self-image. Black students involved
may find themselves during the later demanding and challenging academic
years, taking things for granted and not working hard. As a consequence
they may fail. Acceptance of failure as a reality could be more
problematic for a person who has never failed before than for a person
who has experienced it. It is the unrealistic self-image that could pose as
a problem to enable the victim to accept failure, try and cope with it and
prevent it from happening again, in future. With an unrealistic self-image
the possible reaction to failure is to blame the environment. This has
disastrous results because it will be the environment that will be expected
to change and not the self.

This means that an unrealistic self-image which is as a result
of repetition in courses, gives rise to a number of problems which in

turn could give rise to a feeling of helplessness, liquor intake, poor performance and high failure rate during the later challenging and highly demanding years.

6.3 Heaviness of the course

The engineering curriculum was described as a heavy one with about thirty-four courses. What exercabates the situation for a black student is that the engineering concepts are alien to him/her. The university however, only provides some academic support for first year students. This means that from the second to the fourth years of study there are no engineering academic support systems: the years which were reported as the most difficult ones. Such years are characterised by analytical and critical reasoning. The areas that are covered during these years are mostly engineering ones as against Science ones.

The author here perceives the black engineering student after the first year of study whilst on one hand struggling with a heavy course, on the other hand not having engineering academic support to fall back on for assistance.

Tutorials from which the student could assess him/herself are not marked on time. This aggravates the situation for a black student.

6.4 Segregation problem

Because the laws of the country do not allow different racial groups to live together, students of different racial groups live separately. Whilst the hostels for white students are within the campus, those for black students are 14 kilometers away from campus and facilities like computers and libraries. The implication of this is that black students study in their hostels after 5.30 p.m. —— the time for the last bus to their residence. The author thus expects no access to computer/library facilities to frustrate black students. This is in line with their acceptance of the following:

- that engineering concepts are alien to them

- that the engineering profession is a heavy one

- that a hostel is not conducive to study because there are
  other activities that go on like music and television shows,
  besides studying.

Sometimes black students have problems in getting accommodation
at the hostel that is earmarked for them. This means that there are more
students admitted into university than rooms available at the hostel.
As a result a number of black students are reported to be squatting in
black townships, or sleeping in their friends' car. As may be known,
conditions in black townships are not conducive to studying either.

The author feels that the library is the best possible place
at which a student can study meaningfully.

6.5 Racial problem

Supervisors and colleagues on placement, are reported as
conservative and having negative attitudes concerning blacks. They
use obscene language which annoys respondents on placement.

White co-students are also reported to have racist actions
and attitudes. They are, for instance, reported to avoid the row in
which a black student is seated in lecture theatres. They would
rather move to far away rows where it would be difficult even to hear
what the lecturer says than occupy the one with a black student seated
in it.

It is quite likely that the motive behind such actions is
not a racist one but just preference to be together: all whites in a
row. The catch is however, the interpretation given by the out-group
member: the black co-student. This could be interpreted as rejection
and thus make it difficult for one to feel part of the group.

A few students reported to have once been embarrassed by
white co-students at a multi-racial swimming pool. When respondents
entered the swimming pool, the white co-students who were already
in the pool left the water. Two possibilities stand out here:

- it is quite likely that when the respondents entered the
  pool, the white co-students had already decided to get out.
  It could have been merely accidental that their decision and
  action coincided with the entrance of the respondents;
- it could also be that the white co-students left the swimming
  pool because they did not want to share it with the respondents.

Normally leaving the swimming pool when an individual from the
same racial group enters is not interpreted in the same way as when the
same thing happens to people who belong to different racial groups. This
is more pronounced in the broader apartheid South African society.
Participants within such a society are quick to fall back on negative
stereotypes.

The result of such reaction was that respondents no longer use
the swimming pool.

Both black and white students will have to understand the South
African situation and try and interact in a manner that will not reinforce
the negative stereoptypes from either side. For instance getting out
of the swimming pool at the time when respondents entered raised some
suspicion in respondents and consequently they reacted by protecting
themselves from further humiliation by not using the swimming pool: they
        losers. I could have been better if the respondents had attempted
the same exercise again*, just to prove the point in which case they would
be sure of their interpretation of racist behaviour by their white
co-students.

It seems as if when respondents do not understand the behaviour
of their white co-students, they tend to explain it along racial lines.
For instance, when respondents did not have access to the solutions to
problems but white co-students had, respondents felt that co-students
got solutions from white lecturers or senior students who are their
relatives.

* Use the swimming pool.

In the author's opinion, the possibility to get solutions from
senior white students could be there but that of lecturers related
to co-students sounds a doubtful one. Normally, a parent or relative
is more strict on his/her relative than any other person he/she interacts
with. This happens more often with children of a school-going age. This
is because a parent or relative is expected by the community to be
exemplary to the young ones.

The impediments to success on the part of the respondents as
outlined in this report seem real and practical, but it seems as if
there are some underlying factors that have been overlooked. Wandering
around in the townships, taking of liquor and fighting amongst themselves
are signs of boredom and depression. Respondents seem to feel in low
spirits, gloomy, helpless and dejected. This is also revealed in their
complaints about not having parental figures around. They wished to have
people who would take the role of a parent to them. This could be a
sign of having not developed such independence to stand on one's own. Such
behavioural patterns may also reveal some signs of immaturity.

Surprisingly, it is the group with such tendencies to immaturity
that do well at university. The more senior group that was perceived by
the author to have developed a relative amount of independence as evidenced
in the way they interact with their co-students and lecturers do not do well.
This group reported to be involved in quite a number of organisations, to
be helping matric students in the nearby high schools and so on. Probably
such a group scatter their energy too much still to be able to cope with
work demands which are of course, much more severe than the demands of the
juniors at post and secondary year level.

What puzzles the author is the absence of an exception to the rule.
One would expect in a group of students of such a high calibre in terms of
mental ability to yield one or two students who overcome their
impediments and perform exceptionally well.

The author therefore feels that there are some factors that may
not have been precisely identified. These could be attitudinal in nature or
may involve a shared perception. The influence that students of any
racial group may have on one another, must also not be overlooked. Such
influence spreads like an infection within the group. If the influence
happens to be a positive one it is to the benefit of the group, but if
such an influence is a negative one, it may have quite disastrous effects
on the whole group. The possibility of some deeply-laid attitudinal factor
having powerful blanket effect on the black student group as a whole needs
further investigation.

7. RECOMMENDATIONS

In this section, the author will base the recommendations on
the problems as revealed by the research findings.

7.1. English for academic use - Black students will have to use this
academic support system and take it seriously.

7.2 Contact between black and white students will have to improve.

7.3 Employment of a black engineering consultant

Such a consultant could be employed by Anglo American Corporation
even on a part-time basis to avail himself to black students during
certain times of each day. Such a professional, because of a similar
field of experience as well as world views, could be in a better position
to understand both the students' social and academic problems. For them
mere exposure to a black professional who has made it in life may be
both therapeutic and supportive. The author here is not trying to be
racialistic but facing the realities of life when one is black in a
white world. This is because all lecturers in the faculty of eningeering
are white at this university. This recommendation is also in line with
poor eningeering academic support systems. The names suggested in this
regard were Mr. K. Moahludi and Mr. T. Soga who both live on the Reef.

7.4 Improvement of ·transport facilities

There will have to be some buses that come back from Glynn Thomas to the campus after supper during the weekdays. This service would enable any student who is serious with his/her work to use university facilities after hours.

7.5 Adequate preparation of the environment on the site

White supervisors and technicians seem to resent the presence of black students on the site. This could partly be due to poor preparation if any and conditioning about the coming of blacks. Feelings of insecurity and being threatened could be an understandable factor on their part if they find the situation forcing them to work with blacks at senior level having never done so before. Their negative reactions could be a defensive, aimed at protecting their positions.

7.6 More interactions between mentors and trainers in tyring to alleviate the problems of black engineering students.

7.7 More efforts to meet individual needs than group needs

It would be appreciated if tutors would regularly and timeously mark the tutorials and feed the information back to students. Such a practice would help the students realistically to assess themselves in preparation for the quarterly tests.

The author feels that if all these recommendations are taken seriously, the major problems as revealed in the findings will be alleviated. Some problems may be difficult to resolve overnight (like living apart as colleagues) but others are manageable ones.

T.S. WELLA
RESEARCHERS.

29.5.1984

APPENDIX

FOCUS AREAS FOR GROUP DISCUSSION

INTRODUCTION

There are a number of educational upgrading programmes that are run by various private companies in South Africa. To name a few companies: Career Information Centre, Shell South Africa, Anglo American, Mobil S.A., Barclays Bank and Standard Bank.

Being a university we are interested in the assessment of all these programmes.

The researcher has previously been involved in the Career Information Centre's programme. The next target company is Anglo American.

1(a) First of all what do you think you are expected to do in order to succeed at Wits?
What else..............etc.

(b) What particular skills or approach is required to succeed?

2. Many people are concerned about high failure rate at universities. What do you see as reasons for students' failure at Wits? Please give concrete examples.

What else?
(NOTE if the following areas are not mentioned probe for them
- How do you feel about academic staff attitudes
- Environmental factors
- How do you feel about studying in English as a medium for instruction
- Attitudes of white students
- Student advisors
- Tutor system)

3. Could you please suggest to me the type of help or support you would like to have. The one you have in mind which you feel could be most useful to you.

4. Now let us have a look at the academic support available to you.
What special support do you think you need, if any?
Why/Why not

  (a) which ones are available to you?
  (b) which is most helpful to you and why?
  (c) which one do you use?
  (d) Why?
  (e) To what extent do you use it?
  (f) Which one(s) don't you use?
  (g) Why don't you use it (them)?

5(a) Certain things about schooling can either create difficulties or
make schooling more rewarding. How have your school experiences
helped you at university?
How might they have hindered you or given problems?

  (b) (i) In your particular case, please tell me of difficult situations
you have had to deal with in your university life. Please tell
me what happened.

    (ii) How did you handle these?

  (iii) Were there any other ways in which you could have handled them?
    (iv) What stopped you from handling them this way?

  (c) (i) Where do you see your main problems as students in general?
    (ii) How do you visualise overcoming them?

6(a) As regards mixing with other students informally - what have been
your general experiences? What do you discuss?

  (b) As regards mixing with white students informally - what have been your
general experiences? How often do you mix with them? What do you
discuss?

7. As regards contacts with students - have they or have they <u>not</u>
helped you in dealing with
  - social problems   - How?
  - study problems   - How?

8.   Say a lecturer tells you that you are not shaping as a student.
He is very blunt and seems quite harsh.
How do you feel?
What will you try to do about it?
What difficulties will you have in trying to react?

9.   Now I would like to have a "feel" of your life in hostels.
- what forms of relaxation do you do?
- what do you enjoy most?
- do you ever have problems in sleep (insomnia) or not?
- do you ever have health problems - even minor ones?
- do you often become forgetful or not?
- do you often have heated arguments or not? - what about?
- does noise in hostels worry you or not?

10.   About the Undergraduate Cadet Scheme in general.
- what are its merits as you see them?
- what are its weaknesses?

FOR CADETS ONLY

1. What were your expectations about the cadet scheme?   What did you expect the scheme to do for you?

2. What do you think the purpose of the scheme is - why did Anglo launch it?

3. What about the scheme makes you think that is its purpose?

4. What particular problems do you think the cadet scheme creates for the cadets?

5. What are the particular merits of the scheme?

6. Where do you think you will be working after graduating?
   - How do you feel about it?
   - What are your prospects of progress?
   - Why?

7. Which type of organisation would you like to work for?

   Do you see any particular difficulties of working in the mines or not?

   What are the difficulties?

   What else?

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