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AN EVALUATION OF THE ZOOLOGY 1 ACADEMIC SUPPORT PROGRAMME AT THE UNIVERSITY OF THE WITWATERSRAND

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A Research Project Submitted to the Faculty of Education, University of the Witwatersrand, Johannesburg, in Part Fulfilment of the Requirements for the Degree of Master of Education

Johannesburg, 1986

DECLARATION

I hereby declare

(i) that this research project is my own work

(ii) that this research project has not been submitted to any other university



M R Sanders

ABSTRACT

This investigation looks at the appearance of the high-risk student, and the compensatory education programmes which developed to try and help cope with this problem. It examines the issues and findings of almost three decades of American research into the matter, as well as the more recent South African investigations. Factors affecting evaluations of education programmes, and which could contribute to the lack of concensus about the worth of these programmes, are discussed. Finally attention is focussed on the evaluation of a specific Zoology Academic Support Programme. The evaluation, based on Patton's paradigm of choices, includes both summative and formative aspects. It is hoped that the former will assist the reader to make an informed decision about the worth of this programme. The latter illuminate some of the issues affecting the programme's success, in the hope that a better understanding of these will allow for modifications to improve the effectiveness of this programme.

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CHAPTER 1: INTRODUCTION

BACKGROUND TO THE PROBLEM

The emergence of an attrition problem at university was recognised in South Africa as far back as 1962 when, as a result of data showing that only fifty-five per cent of first-year students at South African universities completed their degrees in the minimum period plus two years, the Joint Matriculation Board commented on "the alarming extent of failures of students at universities" (Van As, 1983, 1). They advised that the matter merited "the earnest attention of all the bodies concerned" (ibid, 1). Fourteen years later the Van Wyk de Vries report (1974, 233) stated that "the findings of the 1962 statistical study still apply to conditions connected with the high rate of failure at the universities in recent times". With special reference to science students, only forty-eight per cent obtained a degree in the minimum period plus two years.

The problem not only persists in the 1980's, but has worsened. An ad hoc committee investigating the progress of science students at the University of the Witwatersrand reported that forty-five per cent of the three-year curriculum students who registered for the first time at the University of the Witwatersrand in 1980 cancelled their registrations without completing a B. Sc. Forty-four per cent graduated and ten per cent were "limping but still active" after three years (Howard et al, 1984, 4). Of those science students doing a three-year curriculum, "only about fifty-four per cent of those who started in 1980 may eventually graduate with a B. Sc." (ibid, 4). The picture for the high-risk students, who are accepted conditionally for a four-year curriculum, is even more gloomy. After three years seventy-three per cent had cancelled, thirteen per cent had graduated, and twelve per cent

were limping towards a degree. "Only twenty-five per cent of those that started in 1980 may eventually graduate with a B. Sc. degree." (ibid, 9).

Among South African university entrants each year is a group of students who are likely to fail, not necessarily because of their poor academic background, but because of other factors such as inadequate study and learning skills; language difficulties; accommodation, transport and finance problems; and social problems caused by cultural differences. Because these students have a higher probability of failing they are termed "high-risk".

In 1980 the Harry Oppenheimer Study Fund to the value of one million rand was established at the University of the Witwatersrand, for a five-year period. Its aim was to "develop and implement programmes to prepare educationally disadvantaged people for university courses and/or to assist people in such courses" (Hunter, 1982, 1). This grant made possible the initiation of an Academic Support Programme at this university. The concern of the programme is to assist students who are unprepared for university not because of their lack of ability or effort, but because of the inadequate schooling they received. The Academic Support Programme (ASP) addresses the issue of students who arrive at university lacking the skills which would enable them to cope with the different demands made on them by their changed life-style at university.

It is recognised that the low per capita expenditure on black education (about one seventh of that spent on whites, according to the 1984 Survey of Race Relations) means that black pupils are especially disadvantaged, and are therefore a particularly high-risk group. However, "while the programme is obviously primarily directed at Black students, it was recognised at the outset that it would be inappropriate to confine it to that group" (Hunter, 1982, 3).

In reviewing the problem of high-risk students we can probably learn from existing experiences and research in America, where a similar situation developed during the last two decades, although for different reasons. They found, especially in the junior and community colleges, that liberal "open-door" policies appear to have resulted in an influx of poorly qualified students and substantial increases in failure and attrition rates (Bard, 1975; Handleman, 1979; Kraetsch, 1980; Masters and Masters, 1982; White and Bigham, 1982; and Bailey, 1983). Even the larger universities entered the fierce competition to recruit students, and this resulted in the acceptance of entrants of lesser abilities and achievement. Among this new resevoir of students are those described by various researchers and authors as "new", "non-traditional", "deprived", "disadvantaged", or "at risk". In order to prevent the open door becoming a revolving door, the colleges and universities realised that something would have to be done to remedy deficiencies in the basic skills which were prerequisites for survival at university. Many tertiary institutions therefore instituted compensatory, remedial or developmental programmes to assist these students cope with college life-style and work.

That Britain has not experienced similar problems is probably the result of cut-backs in government expenditure, and a decrease in the number of students attempting to attend university (Thomas, 1983). The universities can, therefore, afford to be more selective about the quality of students they accept, thus eliminating potential high-risk students. The extra year spent at school doing "A"-levels is probably a further factor which helps to eliminate high-risk students at tertiary institutions.

In South Africa the universities started reacting to the problem in the late 1970's. Unlike the American situation, where minority population and non-traditional student groups became the target population for academic support, it was anticipated that most South African high-risk students would come from the majority

population group, the blacks. And while the American problem arose chiefly as a result of an effort to boost student numbers, although social pressures concerning moral issues were also involved (Hechinger, 1979), it has been acknowledged that the problem in South Africa has resulted chiefly from efforts to solve a moral issue (Du Plessis, 1983), by admitting more black students into the universities.

The early 1980's saw the development of "bridging" or support programmes at the larger South African universities and many of the smaller ones soon followed suit.

STATEMENT OF THE PROBLEM

1984 saw the end of the initial five-year sponsored period of the Academic Support Programmes (ASP) at this university. It is important for the decision-makers to have sufficient evaluative information concerning the achievements of ASP to enable them to decide whether or not it is worth continuing with such programmes.

The value of academic support programmes cannot be determined merely by reviewing the literature, for although evaluative studies concerning support programmes in America abound, "virtually none of the results are replicated over time and at different locations" (Mullin and Summers, 1983, 339). As a result few generalizations have been made concerning the success of such programmes. Several authors have claimed that special academic support programmes have no appreciable effect on the academic achievement of the participants (Wagner, 1976; Pedrini and Pedrini, 1978; White and Bigham's literature survey, 1982; and Van As, 1983). Others believe that certain conditions are necessary for success and that the programme will fail unless these conditions are met. Jorgensen (1980) claimed that the programme would fail unless it was student-centred; Sullivan and Wilson (1980) stated that their programme worked for art students but not for those

doing science; Haynes and Johnson (1983) showed that only students with high self-expectancy benefitted from their programme. Many authors have provided evidence that student support programmes are successful (Miller, Antenen and Duncan, 1971; Stenner and Mueller, 1973; Bard, 1975; Brown and Ervin, 1978; Hampton, 1979a; Hill-Scott and Grigsby, 1979; Driskell and Kelly, 1980; Greenberg and Lieberman, 1981; Ornstein, 1982; Perfect and Robinson, 1983; and Mullin and Summers, 1983).

In South Africa there is a paucity of published literature on research and evaluation of Academic Support Programmes. In spite of the lack of published information, seminars, workshops and conferences have resulted in an increased sharing of experiences and ideas among those working in the field of academic support. Much of the South African work reported in this study comes from unpublished material. As a result it could be criticised on the grounds that it would not stand up to rigorous scrutiny as regards research design, reliability and validity. Nevertheless, it does reflect the perceived state of the field of ASP in this country.

THE PURPOSE OF THIS STUDY

The purpose of this study is to conduct an evaluation of the Zoology 1 Academic Support Programme at the University of the Witwatersrand, to try to ascertain to what extent it is successful. In view of the fact that criteria for success are difficult to identify, isolate and measure, an evaluation approach has been used which endeavors to ascertain by several methods, from various sources, objective and subjective data which can be used to determine the worth of the programme.

THE IMPORTANCE OF THE STUDY

A summative evaluation of what has been achieved by the Zoology ASP is needed so that the decision-makers have sufficient evidence on which to base decisions about the continuation of these programmes. Although 1984 marked the end of financial support for ASP using the original grant, judicious use of the funds has meant that ASP was able to continue for another year on the existing funds. However, the decision about the future of ASP becomes more important as the original funds run out and new financial backing has to be sought.

A formative evaluation of the programme is also essential if it is to continue, as it is only by the evolution of such a course that mistakes and omissions in existing practices can be remedied so that the programme can come closer to achieving its goals. Furthermore such an evaluation may even identify the need to modify some of these goals. The programme may become a vital factor in increasing the number of SUCCESSFUL students enrolled at this university, which has become an important consideration since the new government subsidy formula was introduced in 1985.

Although many evaluative studies of academic support programmes have been conducted, the conflicting results reported and the lack of replicability of results in time and place make it imperative that such a study be conducted in this specific context, in order to evaluate the worth of the Zoology 1 Academic Support Programme at the University of the Witwatersrand.

DEFINITION OF TERMS

ACADEMIC SUPPORT PROGRAMME (ASP): This has come to be used as an umbrella term to include what were formerly several distinct types of services. These include:-

1. Compensatory education programmes, which offer increased educational opportunities for groups

disadvantaged in terms of socio-economic status, culture, education etc., in an effort to make up for what they have missed.

2. Remedial education programmes, which assume a deficiency concept which must be made up before students are ready to do regular university work. The deficiencies are often in basic skills such as reading and maths, and the students must be brought to an equivilance with their peers at university.
3. Developmental programmes, a term which is starting to replace "remedial". Such programmes attempt to take students from where they are to where they want to go, and include both the academic skills and the human skills needed to achieve this. They are designed to give confidence as well as knowledge (Roueche and Snow, 1978).

BLACK STUDENTS: This term will be used to include all students who are not classified as "white", i.e. Black, Coloured, Indian and Asian students.

"HIGH-RISK" OR "AT-RISK" STUDENTS: Students who, because of deficiencies in basic and learning skills, are likely to fail to graduate from the university in the minimum time period allowed them.

UNIVERSITY LIFE-STYLE: This is the way in which a student at university functions, and it incorporates his study habits, social interactions, transport and financial issues, and home life, all of which may become substantially altered after he enters university.

WHITE UNIVERSITIES: Universities whose Rectors or Vice-Chancellors are full members of the Committee of University Principals (C.U.P.) and where historically the student body has been predominantly white.

RESEARCH QUESTIONS

An initial investigation into the day-to-day realities

of the Zoology 1 Academic Support Programme resulted in the identification of four problem areas which seemed to require further investigation in order to answer the following questions:-

1. ARE THE IDENTIFICATION AND RECRUITMENT PROCEDURES FOR ASP STUDENTS SATISFACTORY? Can we identify those students in need of ASP? Can we isolate those with potential and then eliminate those who would be unlikely to benefit from ASP? Can we convince those who would benefit from the course to commit themselves to it?
2. IS THE CONTENT OF THE PROGRAMME ADEQUATE? Should ASP be limited to the teaching of basic skills (such as language, communicatior and computational abilities), study skills, and assistance with content matter of academic courses? Should student counselling be an integral part of such a programme? Should the courses be subject-related or should they be general skills courses?
3. IS THE ADMINISTRATION OF THE PROGRAMME SATISFACTORY? What administrative drawbacks exist?
4. DOES THE PROGRAMME WORK? What are the objectives of the programme? Are they being achieved? How can the "success" of the programme be measured?

METHOD OF INVESTIGATION

Over the last one-and-a-half decades evaluation has developed into a complex field incorporating many competing and conflicting models. The philosophies underlying the various evaluation paradigms, the methods used in each, and the value of the results they provide, have been the subjects of heated debate. In deciding on the evaluative strategy to be used in this study the various paradigms were first carefully considered. A further discussion of the issues involved may be found in chapter 3.

Qualitative and quantitative data have been used in an effort to provide a holistic picture of the reality of the ASP programme. It is hoped that one drawback of subjective data (the difficulty of establishing reliability) has been controlled by triangulation involving statistical analysis of measurements, opinions of students, and opinions of staff. The data were collected from several sources (biographical information, past academic results, and student, staff, and administrators' opinions), in a variety of ways (interviews, questionaires and surveys).

Measurements of the 1983 and 1984 four-year curriculum students' academic achievements in matric, their diagnostic tests, and in all their Zoology 1 tests and exams are presented. Comparisons are made between the ASP students and a group of students with comparable Matric Ratings but who did not attend ASP, in order to detect whether or not any significant difference exists between the two groups, both before and after the one group attended ASP. The criteria used to judge the programme's worth include a comparison between the ASP and non-ASP group of:-

1. the group means (using a t-test to ascertain the significance of the difference);
2. the percentage pass rates;
3. the achievement of individual students within the two groups;
4. improvements in certain abilities and basic skills (using the means for certain diagnostic pre- and post-tests);
5. the fate of the students.

A sixth factor, subjective data concerning expectations and perceptations of the course, as well as judgements of its worth, were collected from the course administrators, staff and students.

Correlation studies (using the Pearson r correlation co-efficient) were conducted between Matric Ratings and diagnostic test scores, and between each of these and the final Zoology 1 results, in order to ascertain if

there was a correlation, and if it was great enough to justify these scores being used to select ASP students.

LIMITATIONS OF THIS STUDY

1. The effectiveness of support programmes is difficult to measure. The first problem is that it is difficult to identify criteria for success. A second problem was recognised by Hill-Scott and Grigsby (1979, 444) who state that the "overarching problem is that compensatory education programs are services first and a national experiment second". As a result "most programs are not experimentally designed to permit empirical assessment of the effects of specific independent variables" (Williams, 1969, 287).

2. The fact that the evaluator of the programme was also the tutor for 1983 and 1984 is felt to be a drawback, not only because of possible bias due to involvement in the course but because it might have influenced feedback from the students. However, the views of the 1981/1982 and the 1985 tutors were also investigated. It is felt that agreement by all the tutors on any issue probably indicates an increased reliability of the data.

3. Population growth and mortality make it very difficult to identify ONE ASP group, and this certainly affects the results of the study.

4. Doubts exist about the extent to which the findings may be valid for other academic support programmes even at this university, let alone elsewhere, as the replicability of such evaluations can be low.

CONCLUDING REMARKS

In spite of these drawbacks it is hoped that this study will provide some information about the academic

achievements of some of the students who have participated in the Zoology 1 Academic Support Programme at this university. In addition, the perceptions and feelings of all participants concerning the advantages and drawbacks of the existing course should prove invaluable in making an effort to improve the course, so that it comes closer to achieving its goals. By opening the system to appraisal and criticism the goals themselves may be examined in detail, and perhaps modified.

Although the nature of this research project necessarily limits the scope of this study, it is hoped that some of what is discovered will contribute to our understanding of the complex issues concerning academic support programmes. This increased understanding could be used as a basis for further investigative studies and course improvements within the Zoology department, in other departments in this university, and at other universities in this country.

CHAPTER 2: SURVEY OF THE LITERATURE

While the problem of high-risk students at universities appeared more or less at the same time in the USA and South Africa, the Americans responded to the issues far earlier than the South Africans, both by initiating special support programmes and in their investigative and evaluative research. Much insight into ASP can be gained by examining the issues and findings reported in the American literature. It is particularly important that use is made of this opportunity because of the paucity of published material concerning South African support programmes.

2.1 HISTORICAL DEVELOPMENT OF THE HIGH-RISK PROBLEM

The Americans recognised that the problem of high-risk students began in the early 1960's when the government was willing and able to support educational expansion and innovation, and at a time when they and the public rarely questioned the educational philosophy or management of educational institutions (Handleman, 1979). Enrolments at community colleges increased at phenomenal rates as tertiary education came to be seen as a right rather than a privilege (Hechinger, 1979). Further descriptions of the historical development of the situation are given by Roueche and Snow, 1977; Nisbet et al, 1982; Ornstein, 1982; White and Bigham, 1982; and Reed and Hudepohl, 1983. They concur that social pressures as well as economic issues led to the colleges and universities opening their doors to students who had until then been excluded from entering. The result was that many non-traditional students entered college and there was an alarming increase in failure and attrition rates.

The historical development of the problem in South Africa is described by Van As (1983). It should be noted that

while high university failure rates were already recorded in the early 1960's little was done then to address this problem. Furthermore failure rates increased long before the white universities had significant numbers of black students. It has been recently acknowledged that while educational disadvantage is experienced mainly by the black students in South African universities it is not confined to that group (Gering and Zietsman, 1983; University of the Witwatersrand, 1983).

The 1970's saw a realisation that student failure and attrition were becoming a major problem. In America a disillusioned and more critical public and a financially restricted government both started questioning many of the curricular changes which had occurred in the previous decade. Certain groups of students were soon identified as particularly linked to these problems, and were labelled by various workers in the field with terms such as "high-risk", "non-traditional", and "disadvantaged" or "deprived" in cultural, socio-economic or educational background.

Several authors have made an effort to discover what it is these students have in common in terms of personal and background characteristics. Jorgensen (1980), Kraetsch (1980), and White and Bigham (1982) provide extensive lists of these features. Apart from discrimination (for example on racial or sex grounds) these include:-

1. Economic, social, cultural or race factors often related to deprived family and school background, such as low income, large families, high incidence of ill-health, lack of parental encouragement, poor education and small chance of employment.

2. Psychological and emotional characteristics such as a lack of confidence, poor self image, lack of motivation, a high degree of dependency, and a sense of powerlessness over oneself and ones environment.

3. Factors related to intellectual skills and abilities,

such as low academic achievement, inadequate mastery of basic skills, poor study habits, and interests and leisure activities which are non-academic.

As a result of these factors, high-risk students are usually found in the lowest third of the class academically, fail to put forth their best effort, are nervous and tense in class, stop listening to lectures, and tend to drop out of traditional educational institutions.

Ornstein (1982) points out that these students also have several positive characteristics and lists some of those mentioned by Reissman in 1962. These include a hidden verbal ability and creative potential; informality, frankness and a sense of humour; group cohesiveness; and an ability to manipulate others.

McDermott et al (1980a) examined the characteristics of high-risk science students in particular. They point out that these students lack the experience on which to build the abstractions of science, have a weakness in maths and verbal skills, lack confidence in their reasoning and problem-solving skills, and have low standards of academic achievement. Any one of these deficiencies adversely affects the learning of science. Together they almost certainly ensure that a student will be high-risk.

After his search for common characteristics among high-risk students Jorgensen observed that "the most interesting characteristic of students in developmental programs is the lack of homogeneity" (Jorgensen, 1980, 181). He concluded that "the one common denominator is that they have not performed well academically" (ibid, 181).

In South Africa a growing social awareness at the universities in the 1970's led to increasing numbers of black students enrolling at "white" universities. By the late 1970's sufficient numbers of black students

were classified as high-risk to give cause for concern. In an investigation into the problems of black, first-year, South African university students, Penny (1984) found problems similar to those identified in American studies as far as home and school background, personal anxieties and deficiencies, and intellectual abilities and skills were concerned. He found in particular that many of their problems related to choosing wrong subjects, coping with testing and assessment procedures, making social and academic adjustments from school to university, and in their perceptions of staff attitudes.

There was an immediate response in America to assist these students by offering them special help in various types of support programmes. The terms "remedial", "compensatory" and "developmental" are defined in chapter 1. The remedial programmes which appeared in the 1970's implied that the students had various skill deficiencies, which had to be brought to equivalence with their peers. The developmental programmes which replaced them tried to develop the diverse talents, the strengths as well as the weaknesses, and to reinforce self-concept as well as the academic performance of the students involved (White and Bigham, 1982). As the appearance of ASP in the late 1970's in South Africa had much to do with the social conscience of the universities, the type of programme which developed seemed to be of the "compensatory" type. They arose as a result of moral issues to compensate for social, economic, political and educational deprivation and disadvantage. Du Plessis (1983) particularly emphasised that such programmes were compensatory and not remedial.

The problem of high-risk university students has worsened in the 1980's and almost every United States university is now addressing the issue (Reed and Hudepohl, 1983), as is the case in South Africa.

2.2 CAUSES OF THE HIGH-RISK STUDENT PROBLEM

A mass of American literature soon appeared on the causes of the problem. Many authors laid the blame at the door of the university administrators who had indiscriminately opened their doors to increase student numbers, thus admitting academically inferior students (Handelman, 1979; Hechinger, 1979; Kraetsch, 1980). Even in South Africa it has been recognised that financial factors, such as the subsidy formula, affect admission policies (Paterson, 1980), and that as a result academically unprepared students are being admitted to university. In America Hechinger (1979) accused the administrators of then using "cultural disadvantage" as the rationale (or excuse) for the remedial programmes that became necessary as a result of their policies.

Several authors see "cultural disadvantage" being used as an excuse to explain the need for ASP (Thompson, 1983). However, White and Bigham (1982) show that it is not just the economically deprived but one third of all secondary school children who need attention, and in South Africa Muller (1983) observes that the problem is more universal among school children and students than just those from disadvantaged groups. Similar trends are also apparent at tertiary level.

However, many believe that the question which should be asked is no longer why these students are admitted to university, but why they are unable to cope once they get there. In spite of much speculation and research, there is no agreement as to why these students don't succeed. In a survey conducted by Handleman in 1979, seventy-five per cent of the teachers surveyed felt that pupils were unable to cope with the rate of innovation and radical change that had occurred in education. Apart from this explanation, factors affecting the students can be divided into three basic groups:-

1. Environmental deficiencies: Cultural or socio-economic

factors have been blamed for depriving certain children of the concrete experiences which are essential for acquiring intellectual skills and abilities (Gounden, 1978/9; Norman, 1979; Paterson, 1980; Ornstein, 1982).

2. Personal deficiencies: Student perceptions and attitudes to their work, lack of motivation and poor study habits have been shown to affect the academic achievement of high-risk students. (McDermott et al, 1980a; Losak et al, 1983). Several authors agree that the students themselves may be to blame. Perhaps their severest critic is Wagner (1976) who deplores students who "don't bother" and condemns the way in which educationists are bowing to the demands of belligerent students. Although Gray (1978) and Kopperman (1978) criticise his misapplied examples and highly imaginative report, many people agree that personal deficiencies are often to blame for students' inability to cope at university.

3. Instructional deficiencies: Maynard (1980) agrees that a student should be responsible for his own learning, but points out that high-risk students need constant feedback to diagnose and remediate their weaknesses. This is the job of the teacher. Several authors believe that the problem develops, and should be dealt with, at school level (Miller et al, 1971; Tamir et al, 1980; Losak et al, 1983). But instructional deficiencies occur at both school and university level. They lead to students being poorly equipped in cognitive abilities such as learning and study skills, as well as in the personal abilities which would allow them to cope with the life-style at university. Reed and Hudepohl (1983) go so far as to claim that deficiencies in instructional design place even the average student at risk. Masters and Masters (1982) feel that the problem is more serious. They believe that teachers and programmes must change to respond to the silent rebellion of the students. It is not just that they must teach their student the necessary skills

but it is their responsibility to find out what turns the students on to learning.

Other American authors dealing with causes of the high-risk problem include Abbott, 1978; Walton, 1979; and Willner, 1980. Bereiter (1985, 538) concludes that "the nature of educational disadvantagement remains a much-disputed issue, beclouded by ideological and epistemological confusions".

South African authors tend to agree that it is social, political and economic deprivation and serious educational disadvantage (experienced mainly by the black students) which are responsible for students being unable to cope academically or socially with the university life-style (Hunter, 1983; Glennie, 1984; and Zietsman and Gering, 1985). However Muller (1983) points out that the problem of high-risk students occurs among all population groups. He believes that in South Africa the problem is a school one, and states that urgent school reform is essential. And while Du Plessis (1983) agrees, he states that this is unlikely to happen in the next twenty years, and that the universities must do something about the problem now.

2.3 ACADEMIC SUPPORT PROGRAMMES: ISSUES AND FINDINGS

Soon literature began to appear on the efforts being made to solve the problem. Types of programmes offered varied from those developing academic skills through remediation, to those encouraging growth in a variety of academic, social and career-related areas (Friedlander, 1980). While much of the literature was based on theoretical arguments, personal experience and gut-feeling, a growing body of empirical research has developed. It is important to remember that evaluations should be based on objective reviews of the evidence, rather than relying on ideological rhetoric or uncritical acceptance of the latest study as being a revelation of the truth (Mullin and Summers, 1983).

The vital question soon being asked by the government, programme funders and the public was "are academic support programmes working?" The literature exhibits a distressing lack of concensus on this question, which in itself has become an issue. The evaluation problem is discussed in the review of the debate on ASP evaluation given in Chapter 3.

One of the possible factors contributing to this lack of agreement is the variety of criteria being used to determine the success of such programmes. At one end of the measuring scale on criteria for success are many authors agreeing with Robinson, who, in 1950 already, had stated that "academic performance is clearly the sine qua non for the validation of remedial courses" and that "in the final analysis remedial instruction must necessarily stand or fall on the basis of this single criterion" (Kulik et al, 1983, 398). These authors take this line of argument to its extreme by conducting a meta-analysis of academic support programmes in which they statistically analyse sixty programmes after combining their results (in spite of the fact that they differ drastically in the philosophy on which they were based, their objectives, their nature, their students, and their students' problems) and conclude that ASP works!

Some authors agree that academic criteria should be used to measure success, but add certain conditions. Bard (1975) believes that even if only fifteen per cent of those who would not have managed without it do succeed, the programme should be judged a success. David and Pelavin (1978) give a mathematical formula for success, but point out that achievement must be sustained before the programme can be labelled a success.

However, many authors believe that less emphasis should be placed on credits and more on the actual outcomes of teaching and learning (Bailey, 1983). Jensen (1985, 555) states that "the fact that the bona fide benefits of

compensatory education have not been primarily cognitive in nature and are not strongly reflected in academic achievement *per se* should not detract from the social importance of these gains". Milander and Simmons (1971) place emphasis on the individual student's improvement. Kulik *et al* (1983, 408) crystallize the feelings of many authors. "By the usual standards of social science research these are small effects not visible to the naked eye without special measuring help. But for the high-risk students... the benefits might seem real enough". At this end of the measuring scale on criteria for success are researchers who believe that many students may benefit and develop in spite of failing their university courses, and that development and growth in other ways should be considered as criteria in judging successful support programmes.

American studies claiming successful support programmes are reported by Williams, 1969; Miller *et al*, 1971; Abbott, 1978; Brown and Erwin, 1978; Pedrini and Pedrini, 1978; Roueché and Snow, 1978; Hampton, 1979a; Driskell and Kelly, 1980; McDermott *et al*, 1980b; Sullivan and Wilson, 1980; Blanc *et al*, 1983; Mullin and Summers, 1983; Reed and Hudepohl, 1983; and Kulik *et al*, 1983. In South Africa varying degrees of success have been reported by Bradley, 1983; Glennie, 1982; White, 1983; Van der Watt, 1983; Cloete, 1984; Tunmer, 1985; and Sanders, 1986.

In addition to the many reports of failure in the 1960's and early 1970's several recent evaluations report that ASP makes no significant difference (Hill-Scott and Grigsby, 1979: Landward and Hepworth, 1984; Tabberer, 1984; and in South Africa, Yule and Gous, 1984). Many others reported a lack of success with conventional support programmes which led to them trying other tactics (Stenner and Mueller, 1973; Roueche, 1978; Stronck, 1978; Hechinger, 1979; Kraetsch, 1980; Sullivan and Wilson, 1980; Ornstein, 1982; White and Bigham, 1982; and in South Africa, Meyer, 1983). However, of these, several reported definite initial successes, but that

gains were short-term and not sustained (Hill-Scott and Grigsby, 1979; David and Pelavin, 1978; Mullin and Summers, 1983; and Landward and Hepworth, 1984).

Several authors agree that ASP could be successful, but only under certain conditions. Stenner and Mueller (1973) say they won't succeed unless they start early in a child's life and are long term in nature. Brown and Ervin (1978) only had success after students had spent two years in ASP. Jorgensen (1980) said that programmes would fail unless student-centred. Kraetsch (1980) claimed "band-aid" programmes would fail, and that it was essential to look at psychological factors in addition to academic deficiencies. Sullivan and Wilson (1980) had success except with their science students. White and Bigham (1982) believe that success will only be achieved by programmes which do not select students on academic criteria. Kulik et al (1983) report that ASP did not work in the community colleges in America, although it did help the students in unique ways which traditional yardsticks could not measure. In South Africa Yule and Gous (1984) found no real statistical evidence of increased retention or success, but reported that all indications were that the programmes were helping the students. Tunmer (1985) believes that ASP can only help mastery-orientated students with a holist approach to learning, and not surface-learners who show "learned helplessness".

It is likely that many researchers would agree with Bard (1975) who reported a mixture of successes and failures. While most students were coming out of remediation without the skills they were supposed to have, some individuals managed stunning achievements. However, it should also be remembered, as Landward and Hepworth (1984) point out, that some high-risk students succeed even without ASP.

A review of the factors which the research shows to contribute to successful programmes reveals several important issues.

2.3.1 COUNSELLING

Perhaps the most widely agreed upon factor in the American literature is the role of counselling. Many authors merely observe that sound academic advice and counselling are absolutely essential (Williams, 1969; Milander and Simmons, 1971; Handleman, 1979; Cooper, 1980; Roueche and Watkins, 1980; McDermott et al 1980c; Greenberg and Lieberman, 1981; White and Bigham, 1982; and Koeppel, 1984). However Hampton (1979a) provides evidence to show that the best results are achieved when coursework and tutoring are combined with counselling. He consequently advises a holistic approach to ASP, involving not only content and skills, but advice on social and personal aspects too. This is particularly important in South Africa where certain non-academic problems influence the performance of black students. In addition to lacking basic and study skills they experience difficulties with finances, accommodation and transport, and they require assistance in managing these problems.

While many of the authors advocate counselling in order to assist the high-risk students adapt to the social and academic demands at university (i.e. adaptation to environmental factors) Kraetsch (1980) believes it should be used to help the student take responsibility and control of his own life (i.e. improving personal deficiencies). Sheridan (1982) agrees that appropriate counselling is important to motivate students to increase their self-discipline and persistence.

Some authors, however, take the matter further. They imply that many students in ASP are not capable of success in the courses they have selected, no matter how much assistance they receive, and that they require counselling to help them realise this. As early as 1969 Williams advises that disadvantaged students be informed of their problems and status. He feels that unless you are realistic from the start in helping the

students recognise their deficiencies, they will resist and resent attempts made to help them, especially at a later stage. Stronck (1978) believes that educators should assume a major role in assisting students to recognise their limitations in talent and educational background. He asks how long colleges should allow a student to suffer defeat without providing counselling towards realistic goals. Reed and Hudepohl (1983) feel that counselling should also be used to develop student awareness of what is required of them - and that it is unfair to let students do courses for which they are unprepared.

While South African educators have realised that it is necessary to satisfy cognitive AND affective needs, few South African support programmes emphasise the role of counselling as a critical aspect of their curriculum. Silva (1983) is one of those who does so. And while South Africans may realise that persistence in itself is not always a desirable quality for those who are unlikely to succeed (Van As, 1983), they do not advise counselling to assist these students realise their limitations, as White and Bigham do in America (1982).

2.3.2 ASP TEACHING STAFF

A second factor that the literature reveals to be of vital importance in successful ASP programmes is the quality of the ASP staff. Roueche and Snow (1978) and Sullivan and Wilson (1980) see teachers as the key to successful ASP programmes. Cooper (1980) shows that trained ASP teachers get better results and recommends that staff be carefully selected on grounds of strong commitment, positive attitudes and appropriate experience. While they must "be the right kind of person - intelligent, accepting, firm, personally secure and psychologically stable -", they must also have the skills to help the students accomplish their goals (ibid, 36). Miller et al (1971) emphasise the importance of the staffs' attitude and approach. This is supported

by Roueche and Snow, 1978; Hampton, 1979a; Jorgensen, 1980; Greenberg and Lieberman, 1981; and Reed and Hudepohl, 1983).

The negative attitude of many ASP staff is deplored by Bard (1975) who describes the mechanistic approach of certain staff who are depressed by having to teach ASP. Masters and Masters (1982) accuse teachers of the disadvantaged of reacting to them with disgust and dismay, and plead that they must believe their students are worth the effort. They must show themselves willing to help, and not just appear interested. Research has shown the necessity for staff to become personally involved with each student early in the programme (Roueche and Snow, 1978).

Investigations into various aspects concerning successful teaching staff have found that role-modelling, whether of peers or teachers, plays an important part in the success of high-risk students (Handleman, 1979; Walton, 1979; McDermott et al, 1980c; Greenberg and Lieberman, 1981). Blustein and Burton (1979) used successful ASP students as peer tutor-counsellors. They found they made good role models. This led to increased retention as well as helping the students in other ways.

Research into helper preference has shown that disadvantaged students show a slight preference for helpers of the same sex, age and race, but a definite preference for helpers of the same social class background (Gordon and Grantham, 1979).

It is not only the ASP staff themselves who are important. McDermott et al (1980c) and Tabberer (1984) point out that the normal subject staff must be aware of the high-risk students in their class and give them a chance to practise the basic skills they have learned in ASP. South African authors in particular see the role of the "normal" lecturer as important in alleviating the problems of high-risk students (Paterson, 1980; Jackson, 1984).

While South African administrators of ASP realise the importance of the type of staff they appoint, the problem they encountered when they initiated their programmes was to find anyone with experience in what was a newly developing field. Hunter (1983) acknowledges that nearly all ASP tutors at the University of the Witwatersrand come to their posts with no experience in the problems of disadvantaged students. Selection of staff for ASP, their further training, and the enlightenment of the normal staff on ASP issues is very important (Moulder, 1983; Hunter, 1982; 1983). At the University of the Witwatersrand regular lunch-time seminars, Academic Staff Development workshops and ASP conferences have been used to assist their staff.

Stronck (1978) criticises the low priority given to teaching success in the promotion of staff, who are usually judged on the number of publications they have produced. He believes that before teachers can change their behaviour, administrators must change their priorities. Sullivan and Wilson (1980) feel that although academic qualifications are important, ASP staff should rather be appointed on grounds of their teaching success. At the first South African workshop on ASP, held in 1980, it was recommended that heavy involvement in ASP be used as a criterion for promotion. However, De Vries (1983) asks if universities in South Africa can afford to use their staff on ASP when the new subsidy formula pays for every paper published. At the University of the Witwatersrand Hunter (1983) and the Senate Sub-committee on Academic Support Programmes have recognised that the career prospects and promotion of ASP staff are a problem (White, 1983). Hunter (1983) says that "the success of any distinctive professional work requires that a substantial proportion of its workers see their task as their main long-term professional concern. Without this the work in question will come to suffer from a lack of accumulation and articulation of experience, insight and skill, a lack of leadership, and the danger of perpetual amateurism" (ibid, 7). The Senate Sub-committee on Academic Support Programmes at the university states that an important factor is that all staff involved in ASP must believe that their work is valued and will be appropriately rewarded by the university (White, 1983).

Roueche and Snow (1978, 69) conclude that "the individual teacher is the key to the design and implementation of an effective programme for high-risk students".

2.3.3. STUDENT SELECTION

Perhaps one of the most important unsolved dilemmas concerning ASP is the selection of the programme participants. White and Bigham (1982) report a direct relationship between the selectivity of an institution and retention. The problem is actually twofold; firstly how to identify those students who are high-risk, and secondly how to select from this group those who have the potential to succeed, so they can be given the necessary assistance to allow them to achieve success.

It has been recognised that there are those among the high-risk students who are unlikely to succeed no matter how much help they are given, either because they lack the ability or they lack the motivation to work (McDermott et al 1980c; Van As, 1983). The "open doors" policy in the USA has definitely led to problems with high-risk students. Bard (1975) believes that automatic admission undercuts the students' motivation to work. Furthermore, he reports that students who don't cope become very bitter. Many authors agree with Roueche (1978) that colleges should do everything possible to prevent students enrolling in programmes and courses where they have no chance of success - or that at least they have a moral obligation to inform them that they are unlikely to succeed (Stronck, 1976; Paterson, 1980; O'Halloran and Russell, 1980). Apart from this obligation to inform the students, Van As (1983) believes that students should be excluded if they don't succeed after being given a first chance, for reasons of university subsidy, lecturer job satisfaction, improving the quality of work of the rest of the class, and because of restricted facilities.

The first of the two issues, identifying those at risk, is perhaps more easily solved. It is important to realise, however, that methods of selecting students for ASP, in

addition to being VALID and RELIABLE must also be LEGITIMATE in the eyes of the students. Students reject selection criteria which they perceive to lack legitimacy, no matter how valid or reliable they are perceived to be by the administrators (File, 1983). Stronck (1978), for example, reports that their placement tests were rejected as elitist, and that they were forced to abandon their use.

Selection criteria may be grouped into two broad categories, academic and non-academic.

ACADEMIC CRITERIA: These may involve school results, standardized test scores or special entry tests, and most of the studies in the literature involve the identification of high-risk students before they actually start their course-work.

SCHOOL MARKS: The use of school marks for selection is very common, in spite of reservations about their validity and reliability, especially in South Africa where the large number of different examining boards make comparability of matric marks suspect (Penny, 1980). However, the advantage of using school results is that they "possess a crude practicability in spite of their questionable predictive validity" (Penny, 1980, 84). Furthermore File (1983) claims that they have a certain legitimacy in the eyes of the students, although certain researchers, both in the USA and in SA have shown that low ability students often feel that these marks do not reflect their true ability (Glennie, 1981b). Selection at South African universities is usually based on matric marks, either in certain subjects or on an aggregate rating system. The method of calculating the Matric Rating for the selection of Science students at the University of the Witwatersrand is given in document S80/900A, University of the Witwatersrand, 1980. Several problems exist with this system. In addition to the doubtful validity of comparing marks from different examining boards, these ratings cannot be calculated for mature or foreign students. Furthermore, with the obvious discrepencies in the education of the various race groups, academic achievement is a very unfair selection system (Gering and

Zietsman, 1983). A further problem with using these marks is that while statistics based on school achievement may be useful for identifying those at risk, they are not much good for distinguishing those who are likely to succeed from those who won't.

STANDARDISED TEST SCORES: Although these are widely used as selection criteria in America, there is much dissatisfaction with their use. They are not used in South Africa.

SPECIAL ENTRY TESTS: These are fairly common in America (e.g. Souchek, 1979) and are being more widely used in South Africa. They are used to test a variety of factors such as existing knowledge, reading skills, comprehension, and conceptual or perceptual abilities. However, in South Africa much research needs to be done before we have evidence about their reliability and validity (File, 1983). Constant revision and modification of the tests has made this a difficult task. A further problem is that they do not have satisfactory predictive validity.

FALTER-FIRST METHODS: Because of the failure of the pre-selection mechanisms to predict persistence a fourth "academic" criterion method was tried in several institutions (File, 1983; Hunter, 1983; White, 1983; Yule and Gous, 1984). In this method students are not selected until they have achieved poorly at university. Often the results of the first class test are used to do the selection. Many students will seek assistance at this stage, while others have to be identified and counselled into support programmes. This method has the advantage of legitimacy in the students' view. Furthermore they are often motivated by fright and tend to work harder. However, this method is reported to be time-consuming and difficult to operate (File, 1983; White, 1983) and it does not allow for attitudinal and motivational changes which may occur later in the year (O'Hallorhan and Russel, 1980). There are two further drawbacks which are not mentioned in the literature. Firstly many students, especially those who are high-risk, suffer a major psychological setback if they fail in their first academic test. Secondly late identification of these students means much time is wasted when vital basic skills, such as obtaining and processing information, and good

learning and study habits, should already have been taught. Moreover, this selection method cannot distinguish between the lazy and the underprepared student (File, 1983).

NON-ACADEMIC CRITERIA have also been used for selection. Many of these rely on subjective evaluations such as information from high-school personnel, and student interviews or questionnaires (Miller et al 1971; White and Bigham, 1982). They may evaluate vocational preference (Nisbet et al 1982), attitudes (Penny, 1980; Van Der Watt, 1983; and Williams, 1969) or study habits (Pratt and Gentemann, 1984). Student characteristics such as education, language, and home or school background vary too widely to be used as selection criteria and lack legitimacy in the students' opinion (File, 1983). Hunter (1983) advocates the use of interviews for black South African students who do not meet the normal entry criteria. He believes that although blacks may find interviews daunting, they can be advised on interview procedures and be interviewed by blacks. This would be one way of finding information which the dean could use in exercising his discretion to admit such students. Nisbet et al (1982) worked out characteristics of pupils likely to succeed. He concluded that despite only moderate correlation, their predictive value was useful. Personal contact was rated as the best selection method by Hampton (1979a), while a more recent report by Pratt and Gentemann (1984) urges that non-cognitive factors be used for selection.

Unfortunately selection criteria are never really good predictors of success, but this is especially so among the weaker students (Howard et al, 1984; Sheridan, 1982), or the black students in South Africa (Hunter, 1983). A further problem is that while there is a statistical correlation between matric results and academic performance, prediction in the individual case is uncertain. Van Wyk and Crawford (1984) point out that such analyses can only give probable results as long as human factors play a role, and that individual students may perform very differently from any prediction. As a result researchers can only come up with cautiously worded predictions such as "there is a 68% chance that a student with a certain matric rating will end

up with a mark within ± 12.2% of the mark calculated from 1" (Here 1 refers to their formula using Matric Rating to predict success with their first-year physics students at the University of the Witwatersrand) (Van Wyk and Crawford, 1984, 9). They add that "the probability of a student passing is 50% if he or she has a rating close to 46. The probability, however, varies very rapidly in this range, and drops to 30% for a rating of 40" (ibid, 9). Howard et al (1984, 21) can only conclude that "a good allround pupil makes a satisfactory student, a mediocre pupil may make a satisfactory student, and a weak pupil is in general a poor student. Yet there are weak pupils who become satisfactory students".

Several reports on prediction studies have found the selection mechanisms they used were NOT good predictors of success. O'Halloran and Russell (1980) conclude that using school results for selection cannot be justified. They found that while poor maths was a good predictor of failure, good maths was not a predictor of success. In South Africa Van As (1983) reports the HSRC warning of low correlation between success and the matric marks, and their unfairness in selection. At an ASP meeting on assessment and procedures for selection at the University of the Witwatersrand (June, 1983) it was reported that biographical data gave a low correlation with first year results. Penny (1980) found the aptitude test he used was good at identifying students at risk, but was not a good predictive device.

However, some prediction studies using conventional selection methods have reported a degree of success (Stronck, 1978; Abrahams and Jernigin, 1984). The latter found, however, that the only good predictor of success was the number of hours spent in ASP, and this is not known at the time of selection. Their survey showed American researchers did not concur on the best predictors of success. In South Africa varying degrees of predictive success have been reported, few of which are particularly satisfactory for ASP selection (Engelbrecht, 1983; Van Wyk and Crawford, 1984; Zietsman and Gering 1985; Shochet, 1985; and Sanders, 1986).

Howard et al (1984) found that the South African examination board whose results gave the best prediction of passing was the DIA followed by the JMB. Those giving the best prediction of success rates (gaining at least the minimum number of credits) were Natal, JMB, and DIA. Penny (1980) reports that the contradictory results in SA studies on prediction of success could well be due to the different examining boards. A further factor influencing the results could be the fact that symbols are used rather than actual marks, which results in the grouping of students whose marks may differ by as much as nine per cent.

A promising study for the selection of science students in South Africa is reported by Penny (1980). Although he rejects using the Matric Rating for selection of most students he does advocate its use for science students, as he found significant associations do exist. He found the English symbol gave the greatest predictive validity and advises that in the Science Faculty symbols are useful discriminators and justify current selection procedures in the sciences.

The Senate Sub-committee on Academic Support Programmes at the University of the Witwatersrand concludes the "search for a simple, reliable, and valid test of need for ASP is unlikely to be successful", but recommends that the search for such diagnostic tests continues (White, 1983).

Several other methods of selection have been suggested. In the USA Koeppel (1984) describes a voluntary, take-home, self-scoring and evaluating diagnostic test in basic skills. This tells the candidate if he has the basic skills he will require, and what remediation he will need to take. Landward and Hepworth (1984) suggest the successful completion of a specified minimal course of study as a condition for college entry. This would seem to preclude disadvantaged students. However, Cloete and Schochet (1985) have discussed the idea of a short pre-university course which provides intensive mediated learning experiences in the South African situation. Those students who show improvement probably have the potential to succeed with the help of academic support, while those who do not show improvement should not be admitted to

university. A further South African study by Gering and Zietsman (1983) provides a statistically based argument to support their view that any student in the top four out of a class of one hundred in a school has done very well and should be admitted to university even if he does not meet the normal entry criteria. They support their view with empirical evidence in a later paper (Zietsman and Gering, 1985). This would be one way of allowing students whose quality of schooling has been blamed for their poor achievement to get a chance of attending university.

2.3.4 VOLUNTARY OR MANDATORY PARTICIPATION IN ASP

A further issue being debated is whether or not ASP attendance should be mandatory for certain students. While some workers believe ASP should be voluntary (Bradley, 1983), one of the well documented characteristics of high-risk students is that many are unwilling to seek help, and that they are less likely than traditional students to make use of support services available to them (Bryson *et al*, 1978; Friedlander, 1980). For this reason some researchers believe that ASP should be mandatory for certain high-risk students (Hampton, 1979b; McDermott *et al*, 1980c; Paterson, 1980; and Reed and Hudepohl, 1983).

However, while they believe that some students need to be made to join these programmes, researchers are aware of several difficulties involved in making attendance mandatory. Support programmes with a "conditional" clause can develop a stigma (Friedlander, 1980: Gering and Zietsman, 1983). Furthermore, an unmotivated and disinterested student cannot be forced to achieve merely by making him attend a support programme. An uncommitted student can be a problem, and at the University of the Witwatersrand the Senate Subcommitte on Academic Support Programmes points out that admission to study-skills courses is a privilege for the disadvantaged, and although voluntary, failure to attend should lead to the withdrawal of that privilege (White, 1983). This is especially necessary where facilities are limited and there is a

waiting list for the programme.

Many high-risk students, however, lack the self-discipline to work independently, and need to be virtually forced to attend (Allen, 1984). Thus while many researchers are reluctant to make support mandatory, they do advocate "active recruitment" (Hampton, 1979a; Sheridan, 1982; Allen, 1984). The students are well informed about their chances of success, told exactly what help is available to them, and are firmly advised and guided into ASP. However, Richardson (1983) warns that "hard-sell recruitment programmes mislead applicants by interfering with a realistic approach to the issue of open access".

2.3.5 SUBJECT-BASED OR GENERAL SKILLS COURSES

A further issue of concern debated in the literature is whether support programmes should be general skills courses or should be subject-based. While general skills courses were common in the early support programmes, and still occur at many places, evidence exists that ASP is more effective if the skills are developed in a subject-based context (Hill-Scott and Grigsby, 1979; McDermott et al, 1980a; Hunter, 1982; Oosthuizen, 1983; and Tabberer, 1984). Cloete and Shochet go so far as to state that "the development of students as learners is inextricably bound to their development as subject-specialists" (Cloete and Shochet, 1985, 14). Some arguments given to support the subject-based courses include:-

1. Students do not see the relevance of subject-free courses. They tend to resent them as extra workloads, so that motivation becomes a problem.
2. The transfer of skills from one context to another tends to be limited.
3. It is easy to monitor whether your students are applying the skills they have been taught in the support programme if the programme is linked to your subject.

(McDermott et al 1980c; Schochet, 1983; Moulder, 1983).

However Shochet (1983) states that rote-learning habits can

often only be broken using subject-free exercises, and this may be the case with many bad habits. Subject-free materials also allow tasks to be done using isolated skills without the students having to contend with content matter as well. Shochet concludes "under ideal conditions subject-based intervention programmes have clear and obvious advantages but this is not universally the case. With low functioning students there are a number of advantages that accrue from subject-free intervention programmes" (Shochet, 1983, 8).

2.3.6 RACIAL AND ETHNIC ISSUES

A well controlled study conducted by Lesser in 1964 showed that ethnicity had an effect on achievement (Ornstein, 1982). After the Jensen furore these results were supressed on the grounds of racialism. While one is reluctant to stir up what is a very touchy issue it is important to report findings related to racial issues, especially in South Africa, where the radical differences in political, socio-economic, cultural and educational backgrounds of the various racial groups could have a profound effect on their achievement at university.

Although Marshall and Birenbaum (1980) found that race had no effect on persistence, other authors have reported achievement differences between ASP students of different races. Pratt and Gentemann (1984) report differing retention rates, but claim this is not dependent on race alone, but on institutions. In South Africa Bradley (1983) reported that Black chemistry ASP students showed better achievement and retention than the other non-white students, who in turn did better than the white students. In an American study Brown and Ervin (1978) found that their black students did not do as well as the whites in ASP.

Some of the important issues relating to race or ethnicity include:-

1. Ethnic minorities have difficulty adapting to a system whose role-expectations in socio-cultural issues are unfamiliar to them. Those who differ from the majority

groups' norms in student behaviour and standards are considered different, difficult or even defiant, and ethnic minorities don't fit these norms very easily (Maynard, 1980). In South Africa black societies emphasise academic skills, so blacks tend to see practical experience and skills as unimportant and irrelevant (Adler, 1983).

2. In South Africa blacks have a further problem in that they are politically and educationally disadvantaged.
3. Blacks do not understand the "hidden curriculum" and this puts them at a tremendous disadvantage.
4. Different attitudes are prevalent among the different racial groups. An interesting study conducted at the University of the Witwatersrand by Potter et al (1984) investigated why black students, although they seem to be hard workers, still fail. They postulated that there would be language difficulties, basic skill deficiencies, and that the students would not make use of peer group support. They found the black students tended to be uncommunicative and unresponsive and that they failed to take advantage of the support available to them in the system. Some alarming trends were found in the black residences, where students would not accept anyone being too serious about work as this identified them as "with" the system. They showed a social cohesion and priorities which acted against their own academic interests. Finally, while many of the black students did work hard, they were doing the wrong kind of work.

Although it was racial issues that led to the initiation of many academic support programmes, both in America and South Africa, support programmes in both countries were initially populated mainly by white students. However, with time more blacks entered ASP. By 1985 eighty per cent of the Zoology ASP students were black.

2.3.7 STUDENT PERCEPTIONS AND ATTITUDES

Perhaps one of the least emphasised but most important issues in ASP is that of student perceptions and attitudes. White and Bigham (1982, 19) state that "the significant factor in

building a strong retention programme among college students is the area of motivation and attitude formation". While Williams' claim that "many students would have to change their perceptions of themselves and others before academic progress could be expected" seems harsh (Williams, 1969), the findings of many researchers since then have re-emphasised the importance of this viewpoint.

Some of the findings of research into students perceptions and their attitudes to their work are:-

1. High-risk students have a low self-concept and self-expectancy (Hampton, 1979b; Cooper, 1980; Friedlander, 1980; Haynes and Johnson, 1983).
2. Contrary to popular belief, these students are poorly motivated (Bryson et al, 1978; Hampton, 1979b; Bradford, 1983). Bradford (1983) recommends that the whole question of motivation be looked at in South Africa.
3. While it is realised that the concept of "reality" is debatable, it is reported that high-risk students do not face reality, not only in terms of their own abilities, but in what is required of them to remedy their deficiencies, and the work required of a student to succeed at university (Roueche and Snow, 1978, Hampton, 1979a). Hechinger (1979) points out that education is not a delivery system, and that learning must be done by the learner. Handelman (1979) agrees that students must see that learning is a two-way street and that they have to make an effort.
4. Students see their needs to be content-centred rather than in terms of thinking and learning skills (Blanc et al, 1983).
5. Students do not perceive a difference between knowing and understanding. Students who rote-learn may obtain good marks but they often do not understand the work and are therefore unable to analyse, apply or synthesise from the information they have learned (Blanc et al, 1983; McDermott et al, 1980a).
6. High-risk students often have an inaccurate perception of their own skills and abilities (Koeppel, 1984). At the University of the Witwatersrand forty-three per cent of the ASP chemistry students in 1981 felt that their

matric marks were not a true reflection of their abilities and that they should be given a chance to show this (Glennie, 1981b).

7. High-risk students are reluctant to accept advice and help (Bryson et al, 1978; Tabberer, 1984). At the University of the Witwatersrand an attitudinal survey among ASP students in 1981 showed that sixty-one per cent of the students did not want to participate in ASP for various reasons (Glennie, 1981b). The Senate Subcommittee on Academic Support Programmes at the University of the Witwatersrand points out that a central issue in ASP appears to be that the student must perceive that he needs what ASP has to offer, and see that ASP meets his needs (White, 1983).
8. Grouping of remedial students leads to improved achievement and attitude towards their subject matter (Newfield and McElyea, 1983).

2.4 CHARACTERISTICS OF SUCCESSFUL SUPPORT PROGRAMMES

Several authors have attempted to ascertain what characteristics are shown by academic support programmes which are successful (Bednar and Weinberg, 1970; Stenner and Mueller, 1973; Jorgensen, 1980; Marshall and Birenbaum, 1980; McDermott et al, 1980c; Sullivan and Wilson, 1980; Landward and Hepworth, 1984). Excellent overviews of large numbers of support programmes are given by Roueche and Snow, 1978; Kulik et al, 1983; Mullin and Summers, 1983; and Reed and Hudspohl, 1983.

A disturbing finding of Mullin and Summers (1983) is that no approach or programme characteristic is consistently effective. In fact their most consistent finding was that parental involvement was essential, and this places effectiveness outside the school system. This finding is supported by Ornstein (1982) who reports that the Coleman study shows the effects of home environment to far outweigh the effects of any school programme on achievement. This

has alarming implications for tertiary level support programmes.

A recent finding which could have important implications is that NEW programmes were far more effective than established ones (Kulik et al, 1983). They propose that novelty, rather than experience, is the key factor in programme success. They suggest that energy, enthusiasm and funding may decrease as the programme is institutionalised, thus adversely affecting programme results.

It would be impossible to list all the characteristics given in the literature, but some which are given consistently as features of successful ASP include the importance of:-

1. developmental rather than just remedial support;
2. the attitudes, abilities and type of staff used;
3. the full backing of the institution and administrators;
4. an articulated ASP policy and continuing reliable allocation of funds;
5. year-long programmes rather than shorter ones.

It is felt that a review of the literature such as this one provides valuable pointers not only for researchers and evaluators, but for administrators and teaching staff involved in support programmes.

CHAPTER 3: THE EVALUATION OF ACADEMIC SUPPORT PROGRAMMES

In discussing various reservations concerning the acceptability of evaluations, McLaughlin et al (1977, 1) point out that the audience of evaluation reports "must be sufficiently aware of the issues in evaluation to judge for themselves that the evaluations are performed acceptably". As controversy exists about many issues concerning the evaluation of academic support programmes and their findings, it is felt that this matter is of sufficient importance to merit a separate chapter on evaluation issues in this report.

3.1 WHAT "EVALUATION" EMBRACES

While the term "evaluation" implies an assessment of worth, many evaluators exclude the process of making this judgement from the task of the evaluator (McLaughlin et al, 1977). The Phi Delta National Study Committee on Evaluation defines evaluation as "the process of delineating, obtaining and providing useful information for judging decision alternatives" (Stufflebeam et al, 1971). They exclude the judgement itself from the evaluation.

3.2 LACK OF CONCENSUS ON THE RESULTS OF ASP EVALUATIONS

Perhaps one of the most pessimistic aspects of ASP is that in spite of the widespread research into and evaluation of support programmes, there appears to be little agreement about their worth. Evaluative research in education appears to be faced by several constraints which may contribute to this lack of concensus about the results of support programmes.

1. THE DESIGN OF THE PROGRAMMES: As early as 1969 it was pointed out that "most programs are not experimentally designed to permit empirical assessment of the effects of specific independent variables" (Williams, 1969, 287). Hill-Scott and Grigsby (1979, 444) agree that the "overarching problem is that compensatory education programs are services first and a national experiment second". In most academic support programmes there is no valid control group, and to withold ASP from some students to create such a group would not be ethical. Thus not only are support programmes not structured to facilitate empirical research, but it is difficult to satisfy the demands of a good experimental design even if one wants to.

2. CRITERIA FOR SUCCESS: This problem was highlighted by Mullin and Summers (1983) who concluded, after a survey of forty-seven compensatory education programmes, that researchers are unable to agree on criteria for success of such services. The many complex interacting factors which affect the success of the programmes are difficult to identify, let alone isolate and measure. However, there are many who would agree with Hill-Scott and Grigsby (1979, 444) that we should "stop depending on test scores as sole indicators of program effectiveness". "Too often the evaluation of effectiveness... has been based on the sole criterion of how many students entering the program eventually graduate, and ignore what they teach about teaching students how to discover what they want in life, and how to achieve these goals" (Miller et al, 1971, 538). It is possible that programmes which do not show statistically significant quantitative gains will be judged a failure by some, while others might consider them to be successful if they help their students in other (less quantifiable) ways.

3. DETECTABILITY OF CHANGE ATTRIBUTABLE TO ASP: Brophy (1979) discusses the problem of many educational studies which show no significant difference between two groups which are compared to examine the effect of experimental

treatment. One reason for this could be that the independent variable involved (in this case ASP treatment) does not have sufficient effect ON ITS OWN to cause enough difference in the dependent variable (the achievement of the ASP students) to have a significant effect on the results. Furthermore, too many extraneous variables (such as student motivation and attitude, and even inherent ability) influence the results. Thus students may be benefitting from ASP in ways which cannot be measured. Furthermore, other variables may be affecting students in such a way as to negate the positive effects of support programmes in which success is measured in terms of academic achievement. This is especially true if measurements depend on studies of groups rather than the measurement of individual's achievements. The results of a few individuals who are not achieving well (for whatever reason) can significantly reduce the mean score of small groups. Stufflebeam et al (1971) point out that care should be taken in deciding whether the programme does not produce significant improvements or whether the evaluation methods are unable to detect these.

4. CONTEXT SPECIFICITY: One of the major problems in educational research is the lack of generalizable results, because of the context-specific nature of any educational situation in reality. Jorgensen (1980) feels that the range of results concerning the worth of ASP occurs because of the different types of programmes and the different philosophies on which they are based. Thus generalizations such as "ASP works" or "ASP does not work" cannot be given with certainty as many individual programmes will not conform with the statement. Hechinger (1979) reports that successful academic support programmes cannot readily be replicated in different settings and that they are at best broad guides about ideas and strategies that might be helpful.

5. LINGERING IMPRESSIONS: The initial reputation of a programme tends to persist, even if subsequent research contradicts earlier findings. Stickney and Marcus (1985) claim that the promising results of the 1970's and 1980's,

which provide evidence that compensatory programmes do have an effect, are masked by the dissatisfaction prevailing after disappointing research results from the 1960's.

6. EVALUATION METHODS: Several authors express reservations about the effect of evaluation methods used on the outcome of the evaluations. Hill-Scott and Grigsby (1979) feel that the overall impression that compensatory education is a failure is due to incomplete research. Fullan (1983) blames poor experimental sampling, design and instruments for results showing no significant differences between students attending support programmes and those who do not. Mullin and Summers (1983) feel that incomplete evaluations may, on the other hand, be responsible for some reported ASP gains which do not, in fact, exist. Forbes (1985) discusses the problem of misrepresenting data. He gives an example of a statistic of thirteen per cent being rounded off to fifteen, and then twenty per cent as the report was passed on to various higher authorities.

7. EVALUATIVE STRATEGIES: Researchers disagree about the methods which should be used in educational evaluation. For many years the controversy centred on two major paradigms, the psycho-statistical and the ethnographic (social-anthropological). Attempts to mix methods associated with each of them were resisted by proponents of each of the paradigms. The paradigms used in the evaluation of support programmes constitute an important factor influencing the results of such studies, and should be looked at more carefully.

3.3 THE EVALUATIVE STRATEGY ISSUE

3.3.1 The psycho-statistical paradigm.

The psycho-statistical paradigm, used for many years by the "traditional" evaluators, attempts to identify the objectives of a programme, to isolate process variables,

and to refine measuring instruments in order to assess product outcomes in terms of behavioural changes. This paradigm has become an increasingly unsatisfactory one in the field of education, because it emphasises quantitative measurement, experimental design, and statistical analysis which are often inappropriate when dealing with human beings, whose behaviour tends to be difficult to predict and often does not conform to rules and generalizations.

Some of the objections to this approach include:-

1. The oversimplification of a complex reality: Stake (1967) rejects this method because it promotes the "great simplifiers" of statistical analysis, theory-building and concensus seeking, in order to reduce complex educational phenomena to something we can comprehend.
2. Incomplete evaluations: McLaughlin et al (1977) point out that a large part of the true nature of evaluation will be missed if it is assumed that evaluations will conform to some simple model. The tendency to evaluate only preplanned outcomes means that important aspects are ignored as they are "unintended" outcomes.
3. The evaluation of groups rather than individuals: Stenhouse (1980) maintains that while this paradigm sometimes gives good results, it has its limitations. The fate of individuals tends to be of no concern. If "treatment" is shown to be significantly better, it is given to the group although it may be inappropriate or even wrong for some individuals.
4. Technical reports whose findings are not used to improve programmes: Reports tend to be couched in terminology which is not easily understood by those outside the field of educational evaluation, and they are therefore not understood by audiences for whom they are intended. Furthermore, although these evaluations emphasise validity, reliability, measurability and generalizability, Patton (1982, 16) points out that "evaluators found that methodological rigor did not guarantee that findings would be used". The utilization of evaluations became a major concern.

Parlett, (1974, 14) puts the case succinctly. "So many

random, unpredicted, and human factors intervene that neat experimental designs cannot contain them all. For this reason, results from such studies rarely carry conviction: they present an emaciated and artificial picture of real-world educational life".

3.3.2 The social-anthropological paradigm.

In 1972 a group of non-traditional evaluators who were dissatisfied with the psycho-statistical paradigm which dominated the field of evaluation at the time, met to discuss the issue. This meeting resulted in an alternative social-anthropological strategy which would be based on the real situation of the curriculum in action. Whereas the traditional evaluators had only considered intended outcomes, had only examined products, and would only reveal concensus, the "new wave" evaluators wanted to illuminate the reality of unintended outcomes, to look at process as well as product, and to reveal the diversity of opinions which existed. Their evaluations would be holistic (responding to a wide range of questions and not only those intended by the programme's designers) and illuminative (seeking to open the system to critical appraisal). The holistic-inductive approach they use is aimed at UNDERSTANDING social phenomena.

A further effort was made to develop the standards of evaluation in 1981 by the Joint Committee on Standards for Educational Evaluation, after five years of input from hundreds of practising evaluation professionals. Stufflebeam summarised their work by stating that "the standards... essentially call for evaluations that have four features. These are utility, feasibility, propriety and accuracy" (Patton, 1982, 16).

The main objection to this style of evaluation is that the methods of obtaining data are subjective and value-laden. This leads to criticisms such as that of Kulik et al (1983) that "some evaluations are subjective and anecdotal and thus of little scientific value", although Stenhouse (1980) makes the point that descriptive studies need not confine themselves to words and should include quantitative

aspects. However, proponents of this paradigm claim that measurement is never objective and value-free, and that we should face this limitation rather than pretend that scientific approaches eliminate it.

Bryson et al (1978) claim that descriptive studies on support programmes raise more questions than they give answers. While this was meant as a criticism, it may not be a bad thing if it results in more questions and probing and hence further understanding of the issues underlying ASP.

3.3.3 The paradigm of choices

Several authors attempt to use methods which were taken from both the major paradigms. McLaughlin et al (1977, 9) point out that "certain types of information call for similar evaluation paradigms, some for different paradigms". Glennie (1981a) states that many interacting factors contribute to the success of ASP in South Africa, and that it might be necessary to use a multi-faceted approach rather. "We are convinced that the programme can only be adequately judged on a wide range of complex criteria: subjective as well as objective" (ibid, 7). In 1980 Stenhouse made an attempt to mix the two paradigms, which he sees as complementary approaches to education research. He comments that "it is high time superficial and stylistic differences between their proponents were recognised as impediments to good sense in the research community" (Stenhouse, 1980, 4).

Many evaluators reject such attempts on the grounds that two different philosophies form the basis of the two paradigms, and the methods specifically linked to each, which make them mutually exclusive (Patton, 1982). Patton challenges this, and the assumption that "qualitative and quantitative paradigms are assumed to be rigid and fixed" and that the choice between them is "the only choice available" (ibid, 193). He believes that "the flexible, responsive evaluator can make mind shifts back and forth between paradigms within a single evaluation setting. In

doing so the evaluator can view the same data from the perspective of each paradigm, and can help adherents of either paradigm interpret the data in more than one way" (ibid, 190). In addition he believes that methodologies are not irrevocably linked to one paradigm, and consequently proposes a new paradigm, the paradigm of choices, which recognises that different methods are appropriate for different situations.

3.4 THE PURPOSE OF THE EVALUATION

McLaughlin et al (1977, 1) state that "whether based on quantitative data or on anecdotes, ...it seems prudent to provide as much valid, objective, representative information as possible to our policy decision makers". However, it should be remembered that evaluation should not be an imposition from without (by funders and administrators) but should contribute intrinsically to the development and functioning of the programme (Glennie, 1983). Scriven coined the terms SUMMATIVE and FORMATIVE to describe evaluations with these two purposes. Funders and decision-makers tend to want summative evaluations, which are conducted with the purpose of judging the worth of a programme as a whole. Programme participants, on the other hand, are usually more concerned with formative evaluations, as these allow for the identification of areas of the programme which require revision, and which can therefore be used to improve the course offered.

As the development of ASP is still in its infancy in South Africa it is imperative that we use evaluations which are not only summative in their nature, but those whose primary purpose is formative. Thus while it is important to look at the academic achievement of the ASP students, it is vital that we understand why some of them succeed while others fail, as it is only through such an understanding that attempts can be made to improve the situation. It is felt that this can be best achieved by an evaluation set within the framework of Patton's paradigm of choices.

CHAPTER 4: RESEARCH DESIGN

The Zoology 1 ASP has run for five complete years, 1981 to 1985. The systematic collection of data for this study was conducted using the 1984 ASP group and a "comparison" group. However, it is felt that to restrict this evaluation to the 1984 group merely because the data for the other groups are incomplete, is to limit the holistic picture one hopes to achieve in an evaluative study such as this. Certain data are available for earlier groups, and it is hoped that by examining these some trends and changes might be detected. Thus data from 1981-1983 have been included where they might contribute to the detection of trends or to a greater understanding of the ASP situation. Much of the quantitative data used to compare the 1984 groups is also available for the 1983 groups, and a quantitative comparison of the 1983 groups has, therefore, also been included.

4.1 METHOD OF SELECTION OF THE "EXPERIMENTAL" AND "CONTROL" GROUPS

Most evaluation studies require some sort of comparison to be conducted before a judgement can be made. Stake (1967) identifies two types of standards for comparison, namely relative and absolute comparisons.

Absolute comparisons usually involve a comparison of the goal outcome with what was expected to occur, and judge whether the needs were met. The design problem in such research is often the complexity of goal setting, and the fact that the people involved in many programmes are unsure of exactly what their goals are. Furthermore, as goals vary for almost every support programme, methods using absolute comparisons are not as well developed as those for relative comparisons (McLaughlin et al, 1977).

Relative comparisons involve a comparison of what would have occurred without "treatment" and what actually happened with "treatment". They tend to answer the question "did the programme have an effect?". Such comparisons involve a design problem of deciding what would have occurred without treatment. The only known method to estimate how the group would have achieved without treatment is to compare it with a "control" group which does not receive the treatment. If the true experimental method is being used it is important to select the experimental and control groups randomly in order to increase the internal validity of the study. McLaughlin et al (1977, 20) state that because this is "based on assumptions likely to hold true in the laboratory, but violated in the conduct of uncontrolled studies in ongoing programs in the field", the validity of comparing experiment and control groups in compensatory education has become a recurring issue.

An effort has been made to identify the goals of this programme, so that an absolute comparison could be conducted. The views of the ASP co-ordinator, the Head of the Zoology Department, the three tutors who have presented the Zoology Academic Support Programme, and the 1984 ASP students, have been solicited. However, this type of evaluation is not sufficient to convince a "science" department of the programme's worth. Nor is it as convincing to programme funders as is a relative comparison. Therefore a relative comparison has also been conducted.

In this study neither the ASP ("experimental") group nor the "control" group was chosen randomly. In fact the latter should rather be termed a "comparison" group as there is no guarantee that the two groups were equivalent prior to treatment. The two groups were matched according to Matric Ratings as this was the criterion used to identify those students considered to be at risk. Those students who then joined ASP became the "experimental" group, and those who did not became the "comparison" (control) group. The latter group will henceforth be referred to as the non-ASP or NASP group. Small numbers made it impossible to try and match

students according to race, sex, home language, the matric exam written, or any other factors which might well have had an effect on the results, and it is realised that this could affect the validity of the results. Furthermore, it is possible that those students volunteering to attend ASP were more motivated to succeed than were those identified to be at risk, but who declined to attend ASP.

The basis for selection of ASP students since the inception of the Zoology 1 ASP programme has been to identify students considered to be at risk because of their low Matric Ratings, their disadvantaged educational backgrounds, or because their home language is not English. These students have then been advised to attend ASP. At no stage was attendance made compulsory. Slight variations in selection methods occurred in some years, as a method was sought which was more valid in its selection of ASP students, and which was quicker to implement.

In 1981 eleven of the twenty-seven ASP students passed the April test and were advised that they no longer required academic support, while several students who had failed this test then joined ASP. In 1982 School of Biology diagnostic tests were administered to try and diagnose students deficient in some of the skills thought to be essential for success. When the results eventually became available, all black students with low scores were invited to attend ASP, no matter what their Matric Rating was. In 1983 a short departmental diagnostic test was used to identify some skills and abilities of the students. Those who had a low Matric Rating but a high diagnostic test score were told that they need not attend ASP as they were thought to have the skills necessary for success. Their low Matric marks were possibly caused by factors other than lack of learning skills. In 1984 a modified version of the School of Biology diagnostic test was used, but as the results took eight weeks to process, they could not be used for ASP selection. However, the tests were repeated in October and can thus be used as a pre- and post-test measure of certain skills.

4.2 DESCRIPTION OF THE 1983 AND 1984 ASP AND COMPARABLE NASP GROUPS

Students of both groups were extremely heterogeneous in terms of their backgrounds. Some were registered for a three-year curriculum and others for the four-year curriculum. Some were registered at the university for the first time, while others had already spent a year there. Some students spoke English as their home language, others not. Table 1 describes the 1983 and 1984 ASP and NASP groups according to race, sex, whether they are first year registrations, and whether they are three- or four-year curriculum students. Raw data have been converted to percentages where possible, for ease of comparison.

TABLE 1: Description of 1983 and 1984 ASP and NASP groups

GROUP	RACE					SEX		FIRST REGISTR	CURRICULUM	
	W	I	C	B	A	M	F		3-Y	4-Y
1983 ASP	18	3	-	5	1	10	17	20	7	20
(N=27)	67%	33%				37%	63%	74%	26%	74%
1983 NASP	15	1	1	1	-	13	5	14	7	11
(N=18)	83%	17%				72%	28%	78%	39%	61%
1984 ASP	11	1	1	13	-	10	16	26	2	24
(N=26)	42%	58%				38%	62%	100%	8%	92%
1984 NASP	17	3	1	2	-	19	4	20	5	18
(N=23)	78%	26%				83%	17%	87%	22%	78%

4.3 ANALYSIS OF THE DATA

The statistical analyses were done on the IBM 3830 (Mainframe) at the University of the Witwatersrand, using the Statistical Analysis System (SAS) 82.5. It should be noted that Hogrebe and Dwinell (1984) recommend the use of SAS for more than just statistical analyses. They found it to be an "exceptionally good counseling tool" for students in developmental programmes (ibid, 413).

In deciding what statistical tests should be used, it is important to consider the claim of McLaughlin et al (1977) that methodological sophistication in recent research has resulted in long accepted methods now being questioned where they apply to the evaluation of compensatory education. They point out that "the basic design problem, which has long been noted by philosophers of science, is that all scientific observation and interpretation is performed in the context of a theoretical framework"...and that "acceptance of the information thus gathered often depends on the acceptance of the framework" (ibid, 19).

The use of statistical methods such as estimating the effects on a population by looking at the effects on a sample, is based on a set of assumptions rarely tested in evaluation studies. Furthermore, statisticians have shown that many of the common statistical methods are quite "robust" with respect to some of their assumptions, and that they produce results which are valid even if the assumptions are not quite true. For example the common t-test assumes the normal distribution of random errors, but the test holds true even for significant departures from normality (McLaughlin et al, 1977).

In parametric studies results can be generalised to a population only if the sample is randomly selected. However, using non-parametric tests, although less demanding, may result in the loss of much valuable information. Kerlinger (1973) recommends that parametric statistical tests be used in educational research but that they be interpreted with caution. He claims that "in most

cases in education and psychology, it is probably safer - and usually more effective - to use parametric tests rather than non-parametric" (ibid, 288). Furthermore a preliminary examination of the results of this evaluation indicated that the distribution of the class results is a normal distribution, and that of the ASP and NASP groups approximates a normal distribution, so that the use of parametric statistics is acceptable.

A two-tailed t-test was used to determine the statistical significance of the differences between group means. In selecting the levels of significance to be used for the t-tests, the risk of Type I errors has to be balanced against the risk of Type II errors. The significance level of a test measures the risk of Type I error (rejecting the null hypothesis when it is in fact true). One hopes to minimise this in an effort to persuade sceptical scientists that one does have an effect of note. However, the risk of Type I error is inversely related to the risk of Type II error (failing to reject a false null hypothesis). This is of equal concern to the evaluator and the policy maker who may need to recommend and take action on relevant differences that may well obtain, even though customary significance levels have not been achieved (Glennie, 1983). In the evaluations conducted at the University of the Witwatersrand by Glennie (1981 - 1984), levels of $p<0,05$ are considered to be significant, and even levels of $p<0,1$ are thought to be possibly significant and therefore worth scrutiny. In this evaluation, however, the two more commonly used levels of $p<0,05$ and $p<0,01$ are given, and it is left to the reader to decide which level (s)he considers to be acceptable.

In addition to the presentation and statistical analysis of quantitative data, some qualitative data have been included in this evaluation in order to illuminate more fully the nature of the programme being evaluated. This information was obtained from the students by means of questionnaires and discussion, and from several staff members by interview. Interviews were conducted with the Co-ordinator of ASP, the Head of the Zoology Department, and two of the ASP

tutors. The views of the third tutor have also been included. However, it should be pointed out that the third tutor (appointed for the 1983/1984 period) is also the evaluator of this programme. It is hoped that the risk of biased opinions has been minimised by including opinions of the 1981/1982 and the 1985 tutors. Where the views of all three tutors coincide, it can be claimed with greater confidence that the perceptions are more likely to be valid. This is one of the forms of triangulation used to try and increase the validity and reliability of the data in this study. Several methods have been used to obtain information from various sources. These include the use of interviews, questionnaires, and surveys of various records. Opinions of staff, administrators and programme participants have been solicited on various matters. Furthermore, at least six criteria have been investigated to assist the reader to judge the worth of the programme.

4.4 CRITERIA USED FOR JUDGING THE SUCCESS OF THE ZOOLOGY I ACADEMIC SUPPORT PROGRAMME

Six criteria have been examined in an attempt to judge the success of this programme. In most cases comparisons have been made between the ASP and NASP groups. Comparisons have also been made between these high-risk groups and the rest of the class where it is felt that such comparisons of achievement are informative. The criteria used are:-

1. A comparison of group means for various tests.
2. A comparison of percentage pass rates.
3. A comparison of individual's achievements.
4. A comparison of pre- and post-diagnostic test scores.
5. The fates of students in the ASP and NASP groups.
6. The views of ASP participants.

It can be seen that several different methods of data collection have been used, following Patton's paradigm of choices. It is felt that this is the only way in which a holistic and illuminative evaluation can be achieved.

CHAPTER 5: RESULTS

This chapter is devoted to trying to answer the question "To what extent does the Zoology 1 Academic Support Programme work"?

5.1 A COMPARISON OF GROUP MEANS FOR ACADEMIC TEST SCORES

One criterion which is simple to compute, and which is commonly used in cases such as this, is a comparison of group means. These are presented for the whole class, the ASP group and the comparable NASP group. The means for each of the tests written during the year, the year marks, the practical and theory exams, and the final marks are presented for each of these groups in Tables 2 (1983 results) and 3 (1984 results). The results of a two-tailed t-test to determine the significance of the difference between the means of the class and the ASP group, as well as the ASP and NASP groups, are included in the tables.

An examination of the 1983 results in table 3 shows that the class mean, although higher than the ASP mean in the June test, test 2, the year mark, the practical exam, the theory exam, and the final mark, is not significantly so. And the ASP average, although better than the class average in test 1, the practical test, and test 3, is not significantly higher.

The ASP means are higher than the NASP means in every case. The difference is statistically significant at $p<0,05$ for the practical test and for the final result.

TABLE 2: Group means for the academic scores of class, ASP and NASP groups, for 1983, and the statistical significance of the difference between the means.

	GROUP MEANS (%)			SIGNIFICANCE OF THE DIFFERENCE BETWEEN THE MEANS	
	CLASS N=144	ASP N=27	NASP N=18	CLASS/ASP	ASP/NASP
TEST 1	62.1	64,6	54,2	NS	NS
JUNE TEST	59,7	57,7	53,0	NS	NS
TEST 2	59,6	55,9	55,7	NS	NS
PRAC TEST	48,6	49,4	40,4	NS	p<0,05
TEST 3	45,9	47,1	40,0	NS	NS
YEAR MARK	55,9	55,5	49,3	NS	NS
PRAC EXAM	45,2	44,9	39,1	NS	NS
THEORY EXAM	48,4	47,6	41,5	NS	NS
FINAL MARK	50,2	49,8	43,4	NS	p<0,05

TABLE 3: Group means for the academic scores of the class, ASP and NASP groups, for 1984, and the statistical significance of the difference between the means.

	GROUP MEANS (%)			SIGNIFICANCE OF THE DIFFERENCE BETWEEN THE MEANS	
	CLASS N=171	ASP N=26	NASP N=23	CLASS/ASP	ASP/NASP
TEST 1	52,7	50,0	45,8	NS	NS
JUNE TEST	55,5	53,2	51,3	NS	NS
PRAC TEST	47,3	41,0	39,0	p<0,05	NS
TEST 2	50,7	50,5	44,4	NS	NS
YEAR MARK	53,6	52,0	48,3	NS	NS
PRAC EXAM	51,7	50,1	47,8	NS	p<0,05
THEORY EXAM	48,7	40,2	42,7	p<0,01	NS
FINAL MARK	51,3	46,7	46,4	p<0,05	NS

NS = not statistically significant

In 1984 a different picture emerges, with the class means always higher than the ASP means. These differences were not statistically significant for test 1, the June test, test 2, the year mark, or the practical exam. They were significantly different at $p<0,05$ in the practical test and the final mark, and at $p<0,01$ in the theory exam.

If the ASP means are compared with those of the NASP group they are higher in every case except the theory exam. However, these differences are not statistically significant, except for the practical exam ($p<0,05$). On the only occasion when the NASP mean was higher than the ASP mean (for the theory exam) the difference was not statistically significant.

5.2 A COMPARISON OF THE PERCENTAGE PASS RATES OF THE GROUPS

A further criterion which is easy to compute and commonly used to compare groups, is the percentage pass. The percentage pass rates for the whole class and the ASP and NASP groups are given in Tables 4 (1983 results) and 5 (1984 results) for each of the academic variables considered in Tables 2 and 3.

TABLE 4: A comparison of the percentage passes in 1983

	PERCENTAGE PASS		
	CLASS N=144	ASP N=27	NASP N=18
TEST 1	68,8	77,8	66,7
JUNE TEST	75,0	77,8	55,6
TEST 2	66,0	66,7	66,7
PRAC TEST	47,9	44,4	27,8
TEST 3	39,1	46,2	18,8
YEAR MARK	69,4	77,8	55,6
PRAC EXAM	31,5	34,6	16,7
THEORY EXAM	44,4	44,4	16,7
FINAL MARK	49,7	59,3	27,8

It can be seen that during 1983 the percentage pass of the ASP group exceeded that of the whole class in test 1, the June test, test 3, the year mark, the practical exam and the final mark. The ASP group had the same percentage pass as the class in the theory exam, and virtually the same pass rate for test 2. The percentage pass of the class exceeded that of the ASP group only in the practical test.

If the percentage pass of ASP and NASP groups is compared, that of the ASP group far exceeds that of the NASP group except for test 2 where they are the same. For both the practical exam and the final mark the ASP pass rate is twice as high as that of the NASP group, and for the theory exam it is almost three times as high.

However, in 1984 the results do not present quite as convincing a picture.

TABLE 5: A comparison of the percentage passes in 1984

	PERCENTAGE PASS		
	CLASS N=171	ASP N=26	NASP N=23
TEST 1	59,1	42,3	34,8
JUNE TEST	70,8	69,2	60,9
PRAC TEST	42,7	24,0	28,6
TEST 2	45,8	41,7	34,8
YEAR MARK	61,4	61,5	43,5
PRAC EXAM	53,2	61,5	34,8
THEORY EXAM	42,7	7,7	26,0
FINAL MARK	45,6	34,6	47,8

During 1984 the percentage pass of the class exceeded that of the ASP group in all cases except the year mark, where they were virtually the same, and the practical exam, where the ASP group had a substantially higher pass rate.

The ASP percentage pass exceeded that of the comparable NASP group in test 1, the June test, test 2, the year mark and the practical exam. However, the NASP group had a better pass rate for the practical test and almost four times the success rate in the theory exam. As a result of their achievement in the theory exam, their percentage pass for the final mark was substantially better than that of the ASP group.

Thus it can be seen that while the ASP group achieved far better results than the comparable NASP group and even than the class as a whole in 1983, their success was not as convincing in 1984, although they still achieved better pass rates than the NASP group in most of the tests.

In 1984 fifty-eight per cent of the ASP group were black, while only twenty-six per cent of the NASP group were black. Did the fact that so many more of the ASP students came from a background considered to be disadvantaged affect the pass rate of the two groups? The percentage pass rates of the white and black students in the ASP and NASP groups for 1983 and 1984 have been computed in order to try and ascertain if this is the case. They are given in table 6.

TABLE 6: Percentage pass rates of white and black ASP and NASP students in 1983 and 1984.

1983		1984	
GROUP	PERCENTAGE PASS	GROUP	PERCENTAGE PASS
ASP whites (N=18)	61%	ASP whites (N=11)	45%
ASP blacks (N=9)	67%	ASP blacks (N=15)	27%
NASP whites (N=15)	33%	NASP whites (N=17)	41%
NASP blacks (N=3)	0%	NASP blacks (N=6)	67%

While six of the black ASP students (sixty-seven per cent of them) passed in 1983, none of the black NASP students passed that year. In 1984 only four black ASP students (twenty-seven per cent of them) passed, while four of the black NASP students (sixty-seven per cent of them) passed. The 1984 ASP blacks seemed to be faring poorly if compared with the blacks who did not attend ASP in 1984. However, it should be noted that of the four black NASP students who passed in 1984 one was repeating the course, and one had been accepted into the faculty on the grounds of mature age (these students usually work well). The higher pass rate of the 1984 NASP group as a whole does not seem to be attributable to the higher percentage of white (advantaged) students in this group. Both white and black ASP students showed a lower percentage pass in 1984 than in 1983, while both white and black NASP students showed a higher percentage pass in 1984 than in 1983.

5.3 COMPARISONS OF THE ACHIEVEMENT OF INDIVIDUALS IN THE ASP AND NASP GROUPS RELATIVE TO THE RESULTS OF THE CLASS AS A WHOLE

One of the problems with analysing group results in a situation like this is that poor achievement by individuals may lower the group means and percentage passes, so that the achievement of the GROUP may be detrimentally affected. It is advisable, therefore, to consider the results of individual students whenever possible. Figures 1 and 2 provide histograms to show the spread of the marks of the class as a whole, the ASP and the NASP groups, so that some idea can be gained of how individuals within each group have achieved.

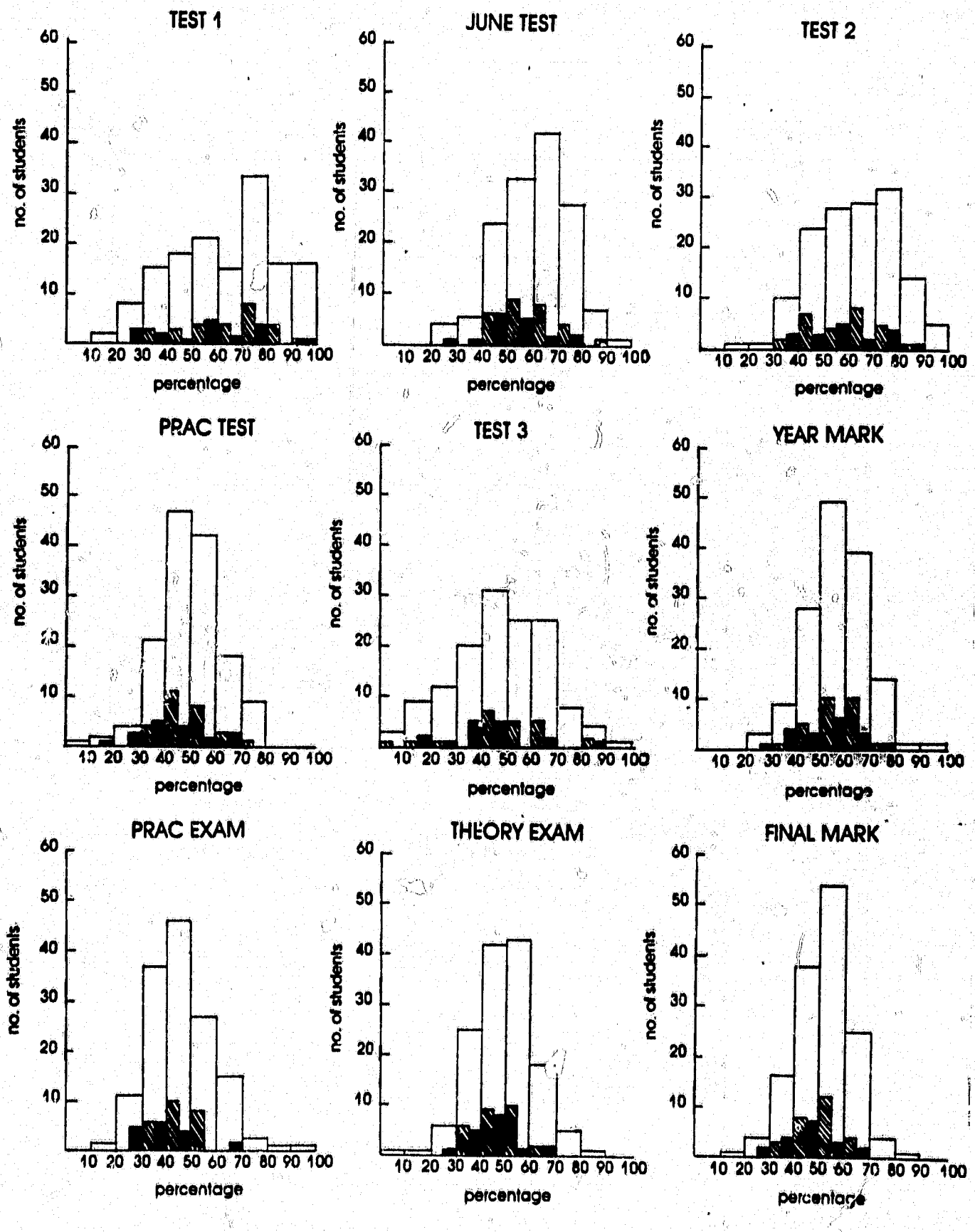


Figure 1: Histograms of the 1983 academic results.

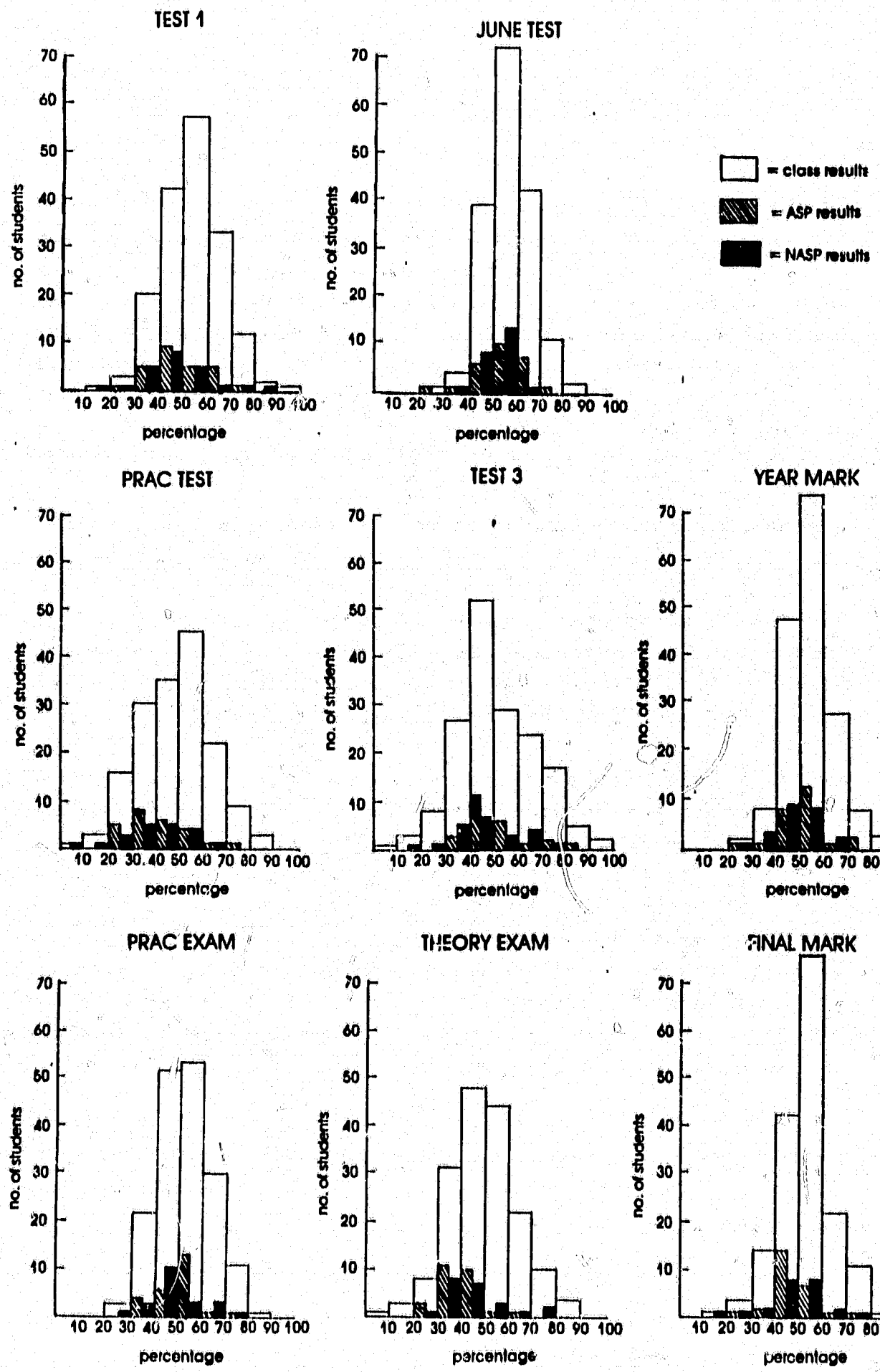


Figure 2: Histograms of 1984 academic results.

If the spread of the ASP and NASP students is compared with that of the class, it can be seen that the lowest marks are not necessarily those of students in these two groups, and that many of these students achieve marks at the top end of the scale. The 1983 results show that in eight of the nine cases it is not ASP students achieving the lowest scores. With the 1984 group this is true in six of the eight cases. The histograms also show that individual ASP students achieved higher marks than the comparable group in only one of the nine cases in 1983, but in four of the eight cases in 1984. It should be noted that in spite of their low Matric Ratings several students from both groups achieved marks of above sixty percent.

The mode of the ASP group is higher than that of the NASP group in eight of the nine cases, and equal in one in 1983, while in 1984 the mode is higher for the ASP group in only two of the cases, and equal in four of the cases.

Another way of looking at the results of individual students while comparing their results to those of the class as a whole, is the use of standardized scores, which show the score of the student in relation to the mean of the class, and indicates where it lies in terms of standard deviations away from the mean. A further advantage of standard scores is that they allow the comparison of the students' scores in successive tests (in spite of differences such as the section of work covered, the lecturer concerned, the type of test written etc.) so that a student's progress can be checked.

Figure 3 shows the spread of the standard scores for the ASP and NASP groups for their Matric Ratings, their year mark, their theory and practical exams, and their final marks (for the 1983 and 1984 groups) and the diagnostic pre-test scores for the 1984 groups. This method of presentation has been selected because of the ease with which the displacement of the scores (above or below the class mean) can be visualized.

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