REFLECTIONS OF SCIENCE STUDENTS ON THEIR EXPERIENCES OF AN ACADEMIC DEVELOPMENT PROGRAMME IN SOUTH AFRICA

M. Potgieter*
Department of Chemistry
e-mail: marietjie.potgieter@up.ac.za

A. Harding*
Department of Mathematics and Applied Mathematics
e-mail: ansie.harding@up.ac.za

Q. Kritzinger*
Department of Plant Science
e-mail: quenton.kritzinger@up.ac.za

C. Somo*
Faculty of Natural and Agricultural Sciences
e-mail: charity.somo@uga.edu

J. Engelbrecht*
Department of Science, Mathematics and Technology Education
e-mail: johann.engelbrecht@up.ac.za
*University of Pretoria, Pretoria, South Africa

UNISA | university of south africa

ABSTRACT

This article reports on students' experiences of an access programme in the Faculty of Natural and Agricultural Sciences at the University of Pretoria, South Africa, namely, the BSc four-year programme (BFYP). The programme has a preparatory 18-month phase after which students join the mainstream programme. The aim of the article is to give a voice to students who enrolled in 2008 and are either still in the system or have successfully completed the degree programme. The authors identify three performance bands, namely: good, moderate and poor performers. They focus on the students' experiences in the preparatory phase of the BFYP, reporting on their personal perceptions of the structure of the programme; on the challenges they faced; and their preparedness upon transition to the mainstream programme. The distinguishing feature of the article is that students' experiences are reported on through the lens of the different performance bands, adding shades of intensity to the different perspectives. Whilst the structure and features of the BFYP were experienced positively by most students across the performance bands, the voice of the poor performing students emerged in the study, expressing their sense of frustration; their inability to cope; and their failure to identify their challenges and to seek assistance. The need to equip underperforming students more effectively in terms of academic and life skills was the key finding of the study and should be of interest to the wider audience of educators and counsellors involved in access programmes.

Keywords: academic development, access, students' experiences

INTRODUCTION

Access programmes in science are at the order of the day at South African universities. These programmes are costly and stakeholders need to be assured of the success of the resource investment. The field of academic development (AD) has not always fared well with the result that its capacity to contribute to higher education in South Africa has not always reached its full potential (Boughey 2007).

The broad aim of this article is to make a contribution to the discourse on the effectiveness and success of access programmes in South Africa. We focus on an access programme situated within the Faculty of Natural and Agricultural Science at the University of Pretoria, South Africa. The distinguishing feature of the programme is that it extends the three-year bachelor's degree programme to four years taking students initially through a bridging period and preparing them to join the mainstream programme after 18 months. In a previous article (Engelbrecht, Harding and Potgieter 2014) we reported on the flow, retention and initial success rates of students within this programme. Here, we report qualitatively on students'

experiences with regard to the structure of the programme, the assistance offered, particular challenges faced and the transition to the mainstream programme.

BACKGROUND

The background to the access programme is described extensively in the previous article (Engelbrecht et al. 2014), but is summarised here for the benefit of the reader. In 2008, three previously presented access programmes were consolidated into a single BSc four-year programme abbreviated to BFYP (Smith 2007). Changes in government funding policy provided the impetus for this consolidation (Grayson 2010), which was further supported by research results confirming the unnecessary duplication of efforts for groups with similar needs (Potgieter, Davidowitz and Mathabatha 2008). This new programme had four streams, namely: Agriculture and Biology; Physical Science; Mathematical Science; and Veterinary Biology (which was discontinued in 2010 because of changes in the veterinary programme). The new programme was introduced with the aim of increasing the number of graduates in the science and science-based faculties and, following national policy, in particular graduates whose prior learning had been adversely affected by educational and/or social inequalities (DoE 2006).

The BFYP is formally offered in the Faculty of Natural and Agricultural Sciences and is open to students with academic potential but whose secondary education did not prepare them adequately for studies at a tertiary level. A large percentage of students admitted are from previously disadvantaged groups. Selection for the BFYP is based on students' Grade 12 results combined with the results of an admission test that 'seeks to identify students whose school results do not adequately reflect their potential to succeed with university study, given suitable mediation' (Yeld and Haeck 1997, 7).

The programme has two phases. During the first phase, which lasts 18 months (three semesters), students receive intensive academic development, psychological support and vocational guidance for further studies. They then continue their studies in the second phase where they join students in the normal three-year mainstream degree programme in their fourth semester, which would be the second semester for the mainstream students.

All courses in the programme bear credit. All students do courses in Mathematics, Physics, Chemistry and Biology in the first semester and in the second semester differentiation occurs depending on the stream in which students are enrolled. By the end of the first semester, students may request to change their registration from one stream to another and, during the second semester, they may apply for selection into other faculties.

The programme has some characteristic features. All teaching activities are done by the discipline departments rather than within the programme itself. Most of

the teaching and learning takes place in smaller groups. This allows for individual attention and gives ample opportunity for questions and discussion. In addition to small classes, students also attend lectures in large groups where the teaching style is more formal in order to prepare students for the second phase of the programme. The medium of instruction in the programme is English. However, since the majority of students enrolled for this programme are second language English speakers, the language and study skills modules included in the curriculum address a well-recognised barrier to learning that most of these students are facing (Grayson 1997). In addition, career guidance and counselling services are offered. Students' progress is assessed continuously, and throughout the year students have to meet certain levels of academic performance in order to continue in the programme.

The first two semesters of the programme are presented at the Mamelodi Campus of the university and students then transfer to the main Hatfield Campus, after successful completion of the first year. Logistically, the physical environment is well suited for the programme with many venues for the smaller sized classes. After successfully completing the first 18 months of the programme, students obtain credits equivalent to the first semester of a three-year mainstream degree.

The strategy of utilising the BFYP to increase the number of contextually disadvantaged students in science programmes is viewed as one of the university's priorities. Financial assistance ranging from full scholarships to partial bursaries is available for the first year of study (two semesters). Various bursary and funding initiatives exist to increase the number of contextually disadvantaged students in the programme.

RESEARCH FOCUS

The general objective of the research project was to establish which factors contribute to student academic success with respect to the structure of the BFYP and the assistance offered within the programme.

The article focuses on students' experiences in the first 18 months of the BFYP as well on their experiences of the transition to the mainstream programme. The specific objectives of the article are:

- to identify the challenges students were faced with and to report on their personal perceptions of preparedness upon transition to the mainstream programme;
- to distinguish between the perceptions of good, moderate and poor performing students of their undergraduate experience.

LITERATURE REVIEW

Academic development or access programmes are well established in the higher education domain, and many universities in southern Africa have programmes to facilitate access to university education for disadvantaged and under-prepared students. Not a vast amount of literature exists that delves into students' experiences and perceptions of access programmes. From the literature studied, it was generally found that the majority of students considered access programmes to be beneficial and a positive experience (Carranza 2007; Eaton 2007; Efiritha, Nogget and Nyevero 2012; Grayson 1997; Munn 1993; Quayle and Essack 2007; Wood and Lithauer 2005). Students at a Zimbabwean university found their bridging programme to have a 'noble purpose' (Efiritha et al. 2012, 452) where two thirds of the students found that the programme equipped them well. One third of this group, however, felt that they did not benefit much from the bridging programme. Most of the students interviewed said that the programme 'gave them confidence to their studies' (Efiritha et al. 2012, 458) by helping them familiarise themselves with the systems of the university.

Similarly, Quayle and Essack (2007) reported that students at the University of KwaZulu-Natal, South Africa, were generally satisfied with the access programme for social sciences, commerce and humanities and perceived it to be 'beneficial and legitimate in preparing them for their degree studies' (Quayle and Essack 2007, 71). In a study by Munn (1993) on the Scottish Wider Access Programme (SWAP) during which current and former access students were interviewed, it was found that students felt satisfied with the access course, and that it prepared them well for higher education.

The prominent negative theme that emerges from the literature regarding students' experiences of access programmes is a feeling of discrimination and isolation (Efiritha et al. 2012; Hlalele and Alexander 2012; Lundell, Beach and Jung 2007). Students from a General College (GC) programme in the United States (US), a freshman-admitting programme for the university providing multidisciplinary courses that include skills development and student support services, raised feelings of stigmatisation and disappointment whereas others felt 'a sense of dislocation and physical marginalization' (Lundell et al. 2007, 79) as the programme was housed in a separate building on the campus. Not being part of the mainstream group was also given as reason for a sense of isolation by students in Zimbabwe (Efiritha et al. 2012), where 13 out of 15 students felt that they were discriminated against by students in the main stream. The idea of stigmatisation and inferiority was also evident in the study by Quayle and Essack (2007) due to the isolation of the access programme students from the mainstream students.

With regard to the features of access programmes, students saw the smaller class sizes as compared to larger, more lecture-based classes as a positive feature (Lundell et al. 2007; Schmitt et al. 2007). On the other hand, some students indicated that they

disliked the smaller class sizes as they felt as if they were at high school (Lundell et al. 2007); whereas in another study, a student commented that since it seemed like high school, it made her feel more at ease (Schmitt et al. 2007).

In terms of support, students from the GC were appreciative of the friendliness and personal attention given by some teachers, whereas in other cases they felt some teachers to be unapproachable (Lundell et al. 2007; Schmitt et al. 2007). Students were also positive about other support structures, including the student advisors, support programmes such as supplemental instruction (for academic support) and a Transfer and Career Centre (Lundell et al. 2007; Schmitt et al. 2007). Carini, Kuh and Klein (2006) found that the academic development of at-risk students correlated more strongly with the quality of relationships; a supportive atmosphere on campus; and interaction with faculty than that of more able students. Numerous studies, such as Kuh's (1995), have confirmed that interaction with peers and with faculty out of class contributed significantly to student learning and personal development.

There are a number of other aspects of access programmes that students have viewed as beneficial and helpful. These include tutoring (Eaton 2007; Munn 1993), continuous assessment (Munn 1993) and being equipped with academic and life skills. These skills include study strategies, time management, group work, dealing with stress, coping with the demands of university and communication (Carranza 2007; Davidowitz and Schreiber 2008; Grayson 1997).

Grayson (1997) reported on student experiences regarding the Science Foundation Programme (SFP) at the University of Natal (now known as the University of KwaZulu-Natal). The year-long pre-degree programme was designed to identify academically talented but under-prepared black students. The aim of the programme was to focus on issues such as cognitive and practical skills, effective study attitudes, peer learning, articulation and communication of understandings, coping skills and self-reliance. In the SFP, class attendance is compulsory (as a means to help students with time management) and some students did not like this approach feeling as if they being were treated as school children. However, other students felt that the strict approach helped them with self-discipline (Grayson 1997). According to Carranza (2007), students regarded class attendance as one of the most important factors for academic success.

Students indicated that the work load was high in the SFP and some students struggled to cope with long days filled with lectures and being given homework for the next day. Some students saw this in a positive light and saw this as an opportunity to improve their time management skills and learn to cope under pressure (Grayson 1997). This opinion was also echoed by a student from the GC where the programme taught students about time management (Schmitt et al. 2007).

Counselling services formed an integral component of the SFP and the service helped to address the students' psycho-social needs. The counselling component included attendance of workshops on time management, stress management, job related skills as well as about dealing with personal issues (Grayson 1997). Alumni

from the Counselling Help and Assistance Necessary for a College Education (CHANCE) program at Northern Illinois University in the US commended the counselling-based model and graduates commented that staff had 'influenced their entire lives' (Eaton 2007, 192).

Wood and Lithauer (2005) concluded that students from the Nelson Mandela Metropolitan University in Port Elizabeth, South Africa, who complete a foundation year tend to perform better in later degrees than students who are admitted directly to the mainstream programmes with similar academic profiles. They stated further that foundation experiences also had immense effects on all aspects of the students' lives, not only on their academic performance. Students felt that the programme helped them to cope with university. Although students felt that the programme did help them to prepare for the mainstream programme in terms of content, skills and subject knowledge, some students were unhappy with the lack of cognitive development and that some subjects were irrelevant for specific degrees. As part of this programme, a module on academic and life skills is offered that includes aspects on time management and communication skills. Students saw this as a valuable component of the programme (Wood and Lithauer 2005).

Carranza (2007) established that the most important factor that students described as significant to their academic success was commitment to achieve their goals. Students noted the support from the institution's developmental education programme as being a major influence on their academic success next to the importance of family to success.

From the above studies, it is clear that students perceive the value and features of access programmes in different ways. It is important that these experiences and perceptions be captured in order to assist institutions with the improvement of the processes and strategies and the quality of their access programmes.

METHODOLOGY

The current study is a descriptive study within the phenomenography research paradigm using a mixed methods approach for data collection. The primary focus of the work was on capturing and describing the different ways in which BFYP students experienced the extended programme itself as well as the transition to the mainstream programme. As such, the students' varied experiences were the unit of analysis and the first four years of undergraduate study were the phenomenon or the context of the study (Case and Light 2011). Qualitative data was captured using a questionnaire in order to elicit information that is offered spontaneously so that the most important perceptions and experiences that are recalled from memory can be documented. The data was captured after students had completed four years of study, that is, within the fifth year after they initially enrolled for the extended programme. This research design enabled us to interpret students' self-report of experiences in

terms of their subsequent performance during the full duration of their undergraduate studies. Semi-structured individual interviews were conducted with students who did not complete their undergraduate studies within the minimum time period in order to explore the hurdles for their academic progress.

Sample

A total of 102 students from the 2008 intake of students in the BFYP were still enrolled in the Faculty of Natural and Agricultural Sciences in 2012 and they were the focus of the study. Eighteen students were enrolled for honours programmes in the faculty and the remaining 84 were completing their undergraduate studies. Questionnaires were emailed to all of these students and they were contacted by phone to request their participation. A total of 40 completed questionnaires were received which represents a 39 per cent realisation rate. Participation was voluntary. The respondents were divided into the following three subgroups based on their academic status by mid-2012:

● *Good performers:* Students who had completed their first degree in minimum time (4 years) and were enrolled in an honours degree in 2012 ($n = 13$).

● *Moderate performers:* Students who needed one or two additional semesters to complete their undergraduate programme ($n = 14$).

● *Poor performers:* Students who still had numerous modules outstanding after five years. Four of these students were dismissed after four years but were readmitted the next year ($n = 13$).

Questionnaire

The research team developed a questionnaire for data collection that consisted of open-ended response items. The questions were designed to capture spontaneous responses from recollection as students reflected on either their experience in the preparatory phase of BFYP, namely, the first 18 months, or globally over the four years that they had already completed at the time of the study. The questionnaire was piloted with a student who enrolled in the BFYP the previous year to check for face validity and minor changes were made based on his recommendations. Item 1 asked students to indicate their reason for registering for the programme. Items 2–5 in the questionnaire are shown in Figure 1.

> Q2. Thinking back to your first 18 months in the four-year programme, what worked or did not work for you in:
>
> i)   The way the programme was structured?
> ii) The assistance that was offered?
>
> Q3. Thinking back over the past four years of your studies:
>
> i)   What was/were the biggest challenge(s) you faced? Give possible reasons.
> ii) How did you overcome them?
>
> Q4. After the first 18 months in the programme, when you joined the mainstream, how prepared did you feel for the transition? Explain.
> Q5. Did you apply to transfer to another faculty (e.g. Health Sciences, Engineering) during your first year? If unsuccessful, how did this affect you?

Figure 1:   Open-ended items in the questionnaire

Data capture and processing

Reponses to items 2–5 (Figure 1) were submitted to an inductive thematic analysis and the results were validated within the team of researchers. The data was analysed according to responses by the three subgroups of students and are reported as such.

Student participation in the study was requested with the stated intention of using the feedback in order to improve the programme for future students. In general, students' responses indicated that care was taken to provide well considered answers to most questions. Completed questionnaires were submitted electronically.

Interviews

Follow-up interviews were conducted with seven students from the moderate (4) and poor (3) performance bands to further explore possible reasons for them not completing their undergraduate studies within the expected time frame. The interview recordings were subsequently analysed by one of the authors.

FINDINGS

Structure and assistance offered

Students were asked to assess the first 18 months of the programme in terms of what worked and what did not work regarding the structure and assistance offered during that time.

Structure

The prominent theme that emerged from all three groups of students (good, moderate and poor performers) was a positivity regarding the design of the first 18 months of the BFYP. Comments were that 'the curriculum was very well structured and organised, and saw to it that we had all the knowledge we required for the mainstream programme' (S50, moderate performer), and that 'the theory covered was explained in detail, and I was able to understand the concepts much better' (S06, good performer).

Even amongst the poor performers appreciation was expressed such as that

> the programme allowed interactive learning and we had smaller group discussions which also helped. The modules i.e. physics, chemistry, calculus, biology, LST [the language and study skills course] helped me with the foundations to understand the concepts of the subjects much better (S42, poor performer).

Respondents from all three groups were partial to the fact that they were taught in smaller groups (50 students per group) although a single moderate performer felt that they were being picked on when in small groups. Small groups facilitated more interaction between the lecturer/tutor and the students. Tinto (2012, 5) identifies involvement and engagement as one of the four main attributes of effective classrooms: 'The more students are academically and socially engaged with academic staff, and peers, the more likely they are to succeed in the classroom'.

Furthermore, Lazear (2001) outlines a theoretical model (disruption model of educational production) where class size plays an important role in setting the classroom environment. In large classes, the students can be more disruptive, may not participate, engage or even attend, but in small classes, the students can interact more via hands-on activities and more student–faculty interaction, which leads to improved learning.

Students from all three groups (seven respondents, three good, two moderate and two poor performers) experienced the programme as highly intensive, with a full timetable making the days very long. However, one student saw this as a learning opportunity: 'Limited free time, but then again it taught me time management' (S11, good performer).

These comments echo those of SFP students (Grayson 1997) who acknowledged the demands of a full schedule, but saw it as an opportunity to improve their time management skills and to learn to cope under pressure.

Students mentioned that the slower pace of the delivery of the lectures worked well for them (two respondents, good performers) and also felt that the programme gave them the chance to adapt to university (two respondents, good performers). Furthermore, formative assessment, group activities and a fixed timetable with scheduled tutorial classes were mentioned to be of value, again by good performers.

Moderate performers did not explicitly share this opinion. On the other hand, three poor performing students commented positively on the formative assessments and the group activities. Tinto (2012) states that students are more prone to succeed in classrooms that assess their performance. This is more evident with first year students as they need to adjust to the new academic and social demands.

Logistics and other issues

Being situated on the Mamelodi campus as opposed to being on the main Hatfield campus seemed to be problematic as it made students feel isolated and not part of the larger BSc group (two students each from the good and moderate performing groups). Expressing discontent one student remarked: 'The environment in Mamelodi campus was very demoralising and a complete shock to the system' (S56, moderate performer).

However, another student contradicted this by saying that there 'was a decrease in distractions due to be isolated on the campus. It was frustrating in the beginning but allowed one to progressively get incorporated into the routine of studying' (S68, moderate performer).

The logistics involved by not being on the Hatfield campus were identified. For example, attending classes at the Mamelodi campus but writing tests at the Hatfield campus (one respondent, good performer) and the campus being too far, making transport difficult (three respondents, one good performer and two moderate performers) were reasons for concern.

Other aspects that were not working for the students during the first 18 months of the programme, indicated by especially the good performing students, were that they struggled to adapt to university life (one respondent); laboratory work was not informative (one respondent); and some classes were too big (two respondents). A number of responses from the moderate performers (four respondents) were focussed on the idea that they were forced to do modules that were of no value to them, such as doing biology while studying mathematical sciences. One respondent also commented that: 'The language courses sometimes wasted time whereas this time could have been used to study other modules' (S39A, moderate performer).

This feeling was also shared by three poor performers but only by one good performer. Good performers were clearly more appreciative of the mix of modules. Two poor performers noted that the lack of computer literacy modules in the first year was a problem.

Lecturing and assistance

Students had opposing opinions regarding the quality of the lecturing staff on the programme. One student maintained that: 'Some lecturers are not up to standard, so it felt like we got the worst lecturers not fit for main campus' (S1, good performer)

while another said: 'All the lecturers were knowledgeable in their fields and could explain the work properly' (S6, good performer).

Two poor performers commented that the lecturers were too harsh and more support could have been given in order to be prepared for main stream.

An aspect that raises concern and that was mentioned repeatedly is that of perceived spoon-feeding. Students felt that they were not only spoon fed but were treated as if they were still at high school (S40, moderate performer; S42, S46, poor performers). One respondent remarked that the academic content was too basic: 'As much as we needed the help in order to transition into mainstream I just felt that we were treated too much as children who cannot look out for themselves nor take care of their responsibilities' (S40, poor performer).

It was noticeable that none of the good performers alluded to the idea of spoon-feeding.

In terms of the support and assistance offered, seven students (three good performers, two moderate performers and two poor performers) indicated general satisfaction. Appreciation was expressed across the board for support from lecturers, tutors and scheduled tutorial sessions: 'Most lecturers were open and humble which strengthens the relationship between them and the students' (S15, good performer).

The tutor sessions were experienced positively across the groups. Eleven students (five good performers, three moderate performers and three poor performers) stated that the tutorial sessions worked well for them. One good performer said that being forced to attend tutorial sessions every week really helped them to pass the tests and exam. Ten respondents (one good performer, two moderate performers and seven poor performers) felt that the tutors were valuable and helpful.

Students from all three groups indicated an array of other aspects that worked for them in terms of the support offered. They commented favourably on the bus service to Mamelodi campus, the cafeteria on the Mamelodi campus, student counsellors and consultations with the co-ordinator of the programme, the facility to borrow textbooks, the IT centre and the availability of bursaries. At the Mamelodi campus, students have a dedicated student advisor and a clinical psychologist to support them with psycho-social matters as well as life and study skills similar to the counselling and advisory services provided in the SFP (Grayson 1997). Students indicated that the skills that they were taught, such as time management, were useful to them (one moderate performer, one poor performer). Compulsory counselling sessions were met with conflicting feelings with two poor performers commenting that it worked well whilst one good performer did not like it. When looking at what did not work in terms of support and assistance, the availability of lecturers for consultation was prominent, especially amongst the good performers. This was most probably due to the fact that most lecturers shuttled from the Hatfield campus to the Mamelodi for their classes, and were not permanently based at the Mamelodi campus. One good performer commented that she was constantly reminded that she does not deserve to

be at university due to her low marks, thus resulting in a low self-esteem. The lack of administrative and support services was noted by students (moderate and poor performers).

In conclusion, the structure and the support offered by the extended programme were experienced positively and appreciated by most students with certain problematic areas pinpointed such as the logistical issues presented by attending lectures on the Mamelodi campus and the perceived spoon-feeding. There were limited differences in the responses from the three cohorts of students.

Facing and overcoming challenges

The two most prominent themes that emerged from the responses across all groups were the challenges of adjustment to the new social environment and adjustment to the academic environment. Students mentioned the challenges of time management and of finding a balance between work and personal life, for example, 'having to cope with the amount of work and the fast pace of the learning programme' (S50, moderate performer).

Some students faced personal issues, financial challenges or a lack of computer or language skills. There were, however, distinct differences between the poor performers, on the one hand, and the moderate and good performers, on the other, in terms of their ability to clearly describe which aspects of adjustment presented the challenges that they experienced. The poor performers merely identified (as did the others) the challenge of the fast pace and large volume of work at university and nothing else. By contrast the moderate and good performers identified the new socio-cultural environment; the transition from school; the transition between the first and second year; adaptation to the university lifestyle; and adaptation to the Mamelodi campus as the challenges that they faced in terms of adaptation to the new social environment. Nine of the 13 good performers identified very specific academic challenges, such as choice of electives, the tight examination schedule or finding an appropriate study method. Seven of the 14 moderate performers clearly specified their academic challenges, such as managing timetable clashes or passing core modules that are prerequisites for subsequent courses. The poor performers, on the other hand, could not pinpoint academic challenges but seemed to be more articulate regarding personal issues and financial challenges. Four of the 13 poor performers described their financial problems in detail and three stated the challenges of facing failure, wanting to prove self-worth or lacking appropriate life skills.

> Finding the study method that worked for me. In the four-year programme they taught us to use flow diagrams, but this did not work for me at all. Study methods used at school level does not work at university at all ... other methods of studying needed to be used that would suit me best (S06, good performer).

Choosing electives. I did not know why we had to take them and so I just took the stuff that fitted my timetable and had the most credits (S10, moderate performer).

Initially I was not aware of the manner in [which] the financial assistance operated so I was constantly frightened by the penalties that may have to be imposed if I was not able to settle my fees. I was in constant unrest because of that ... (S95, poor performer).

Facing failure for a test I prepared hard for. I think it was caused by me thinking that I understand yet I was clueless of what was expected of me (S76, poor performer).

Students from all groups expressed coping strategies that revealed the development of their academic competence and the application of appropriate life skills. Responses revealed strategic thinking about time management; a commitment to work hard and apply extra effort; making wise choices of courses and activities; and keeping up with the work by studying regularly, for example: 'I tried to come to school early in the morning and make sure that I do all my work before going home' (S44, moderate performer), and 'I worked hard, dropped all the chemistry modules and took GGYs (geography modules)' (S13, good performer).

One or two students from each group mentioned determination and perseverance as a way to overcome academic challenges. Some students from the moderate and good performers believed that a positive attitude, a focus on the task and achieving balance assisted them.

Apart from these general trends in responses across all groups, there was also a distinct difference between the poor and moderate/good performers in terms of their tendency to actively seek academic assistance from knowledgeable others. Moderate and good performers consulted widely with tutors, lecturers, senior students, peers or students who performed well (five or six from each group). One or two students from each group mentioned forming study groups for collaborative learning. However, with one exception, none of the poor performers mentioned using or seeking such academic support to overcome the challenges that they faced. Instead, one poor performer mentioned the positive contribution of career counselling and advice on academic choices and three mentioned the positive contribution of support by family or parents.

In my first semester I never had strong relationships with lecturers. To overcome my challenge I had to be much closer to the lecturer. Being much closer helped me not to be shy and ask questions or consult lecturers. Through asking, studying and consulting my performance improved exponentially ... (S15, good performer).

Genetic(s) I actually had a study group that helped me to understand the various ways to apply theory that we learnt in class (S55, moderate performer).

> I spoke to my parents about the pressure, and realised that I just needed to relax and choose activities and duties wisely (S64, poor performer).

> I went to see a counsellor at the student affairs building. I was advised to re-evaluate my choice of course and why [I] chose it. I also did some aptitude tests that boosted my confidence in accomplishing what I desired (S76, poor performer).

To summarise, what distinguished the moderate and good performers from the poor performers was their ability to clearly identify specific academic challenges and their tendency to seek academic support from knowledgeable others. By comparison poor performers were more articulate about financial or psychological challenges and seemed to rely more heavily on family or non-academic support.

Preparedness for joining the mainstream programme

In total, 26 out of the 40 (65%) students felt well-prepared for the mainstream programme; while 12 (30%) felt under-prepared; and two (5%) were undecided. In terms of performance bands, 11 of the 13 good performers, and 10 of the 14 moderate performers felt well-prepared compared to only five of the 13 poor performers. One good performing student described the transition as 'a piece of cake' (S15).

Good performing students who felt well-prepared expressed their appreciation for the four-year programme and felt, in some instances, that they were better prepared than the mainstream students. They felt that work that had already been covered in the preceding programme gave them an advantage when covered later and that they had acquired valuable study techniques in the first 18 months such as using mind maps. Individual students referred to a chemistry module CMY 127, a seemingly difficult module, saying they were happy that they were able to cope with the module.

Some moderate performing students who felt well-prepared claimed that their confidence was boosted by improved marks compared to Grade 12 and that there was no problem with time management, workload and pace. They felt that the programme gave them the foundation needed for the rest of their studies and the confidence to master the workload. Class mates seem to play an important role when transitioning to the mainstream programme, with familiar faces providing comfort and security, mentioned more than once. The transition was made easier, 'as I still saw people from first year in my classes' (S109).

The programme was successful in preparing them for the transition from school to university, as explained by a student: 'I learned a lot of things which I didn't get from high school' (S44).

The five poor performing students who felt well-prepared stated that they had acquired a good foundation. This does not mean that they were prepared, in fact, their performance indicates that they were not well prepared. Yet there was a strong

sense of having survived the first 18 months and feeling confident, thinking they were ready.

Of the good performing students, three did not feel well-prepared. One student who felt under-prepared blamed it on being ill-informed regarding choices on electives. Another student felt under confident upon entering the mainstream due to the increased volume of work and regretted not making use of the services offered by the student support centre. A third student did not feel prepared at first upon entering the mainstream but soon realised that the programme had indeed provided him with the required skills and he then gained confidence.

Of the moderate performing students, three students found the transition to the mainstream programme difficult with one student feeling undecided. Students who felt under-prepared found that leaving the environment that they had become familiar with over 18 months proved to be hard. The approach to studying followed in high school and in the first 18 months of the four-year programme now had to be adjusted. According to one student, 'it felt like I was starting from scratch' (S46a), and according to another, 'I felt overwhelmed by the amount of work covered and the time allocated' (S114). The large number of students in a class in comparison with the Mamelodi dispensation where 'we were separated into small groups which made facilitation of classes easier and the lecturers could easily address us' (S55) was a challenge.

Seven of the 13 students from the poor performing group felt under-prepared with one undecided. These seven students experienced it as a new challenge when they joined the mainstream, being under a lot of pressure. Spoon-feeding was again mentioned as a problematic issue. One student said bluntly: 'I found the first eighteen months quite useless as everything was spoon fed and in mainstream I struggled to keep up' (S40).

This respondent felt 'as though I was in high school, even worse perhaps, and cannot do anything for myself'. Two students expressed over confidence as a problem for the transition. They had been doing relatively well in their studies up to that point, never failing anything and not writing any supplementary exams and falsely thinking they were ready. They approached mainstream in the same way they had approached high school and the first 18 months and found that this approach was insufficient for mainstream success.

In conclusion, most students felt that in the preceding programme they acquired study skills and learnt how to work hard, with their successes giving them confidence. The overlap of work between the initial phase and the mainstream is considered beneficial. It is quite common to feel initial insecurity upon joining the mainstream before settling in and drawing the benefits of the preparation that the first 18 months offer.

However, and understandably so, the poor performing students experienced the transition to the mainstream less favourable than the good and moderate performing

students. Students who felt under-prepared suffered due to the increased workload and pace as well as the increased group sizes. They felt overwhelmed as new challenges emerged. These students blamed the programme of the first 18 months for their ill-preparation, feeling that the programme was too similar to the high school approach and caused them to be over confident upon entering the mainstream.

Response to failed attempt to transfer to other faculties

All the students in the study sample were enrolled in the Faculty of Natural and Agricultural Sciences from 2008 to 2012. However, these students had several opportunities to apply for admission to either health sciences or engineering if they wished to transfer earlier in the undergraduate careers. The prospects of selection are better for good performing students than for the other subgroups and it is no surprise that five of the 13 good performers applied for selection. Three moderate performers and four poor performers also applied unsuccessfully to be admitted to these faculties. The experience of rejection had different effects on the students. The good performers became motivated by the experience: 'It motivated me to try again' (S01), and 'So this made me aware that I really needed to work even harder' (S14). The moderate performing students optimised the directing power of the experience: 'It affected me in a positive way because it made me to realise that medicine was not for me' (S44) and 'I went and study something related to mining engineering which is geology' (S75). Poor performing students interpreted rejection as a message of personal failure and inadequacy: 'It affected my ability to concentrate on what I was studying, thinking I'm under qualified' (S76) and '... a strong sense of failure and rejection. Of course not everyone responds the same. For me it was terrible, I became somewhat self-destructive' (S23).

SUMMARY OF QUESTIONNAIRE RESPONSES

The most prevalent themes that emerged from the data regarding students' responses to their experiences are presented in Table 1. While the project was primarily a descriptive study that sought to report on the variety of student experiences rather than relative prevalence, there is value in providing a semi-quantitative account for the following reasons: It makes explicit the commonality of some experiences across all performance groups, especially in terms of the characteristics of the programme, but it also differentiates between the different performance groups in a way that can inform future support and intervention strategies. In Table 1 the prevalence of specific statements are presented with a dark circle for similar responses from six or more respondents per subgroup, a thick lined circle for four or five respondents expressing similar views and a thin lined circle for two or three similar responses. For the last question the symbols represent a proportion rather than exact numbers

as for the others because of the smaller size of the cohort for whom the question was relevant.

Table 1: Prevalence of responses per sample subgroup

Response to experience	GP[a]	MP[a]	PP[a]
1. Structure of programme and assistance offered (the first 18 months)			
a. General approval of programme structure (e.g. slower pace, smaller groups, group activities)	●*	●	●
b. Logistics were problematic (isolation on Mamelodi campus, transport issues, lack of support services)	◐	◐	○
c. Satisfied with support from staff, tutors and student advisors	●	○	●
d. Found tutorial sessions to be beneficial	◐	○	○
e. Object to some compulsory courses (e.g. language courses, doing Biology if studying Mathematical Sciences)		◐	○
f. Found the programme as very intensive with long days and very full timetables	○	○	○
2. Facing and overcoming challenges (overview over 4 years)			
a. Challenged by the large volume of work and fast pace	○	◐	○
b. Develop productive coping strategies	●	●	●
c. Clearly identify academic challenges	●	●	
d. Seek academic assistance from knowledgeable others	◐	◐	
e. Struggle with financial issues			◐
3. Transition to the mainstream			
a. Felt prepared for transition to mainstream	●	●	◐
4. Failure to be selected (relevant to 30% of sample)			
a. Transform negative result into new vision/motivation	●	●	
b. Interpret outcome as personal failure, demotivated		◐	●
GP[a] = good performers; MP[a] = moderate performers; PP[a] = poor performers ●* = 10 respondents with similar responses; ● = 6 to 9 respondents; ◐ = 4 or 5 respondents; ○ = 2 or 3 respondents			

It is evident from the overview of student responses reported in Table 1 that students from all performance groups strongly approved of the structure of the programme. They acknowledged the value of small group tutorial sessions, group work, and the support provided by both academic and support staff members. The tutorial sessions

were found to be beneficial by a weaker voice across the performance bands. Respondents from all three groups expressed their sense of preparedness for the transition to mainstream which further testifies to the success of the programme. The logistical challenges associated with the satellite campus and the packed timetable were also mentioned by all groups as possible complaints, but this voice was significantly weaker than that of approval (compare 1b and 1f with 1a and 1c in Table 1). Similarly, all subgroups mentioned that it was a challenge to adapt to the larger volumes of work and the fast pace at university, but strong evidence for productive coping strategies were found in the responses of the whole sample.

Apart from these general trends across all performance bands there were also distinct differences which should be noted. While none of the good performers objected to compulsory courses in the first year, this complaint was voiced by moderate and poor performers (Table 1, 1e). Financial challenges were also only mentioned by poor performers. The top and moderate performing students were able to identify exactly what their academic challenges were during their undergraduate years and they stated repeatedly that they consulted regularly with knowledgeable others, namely lecturers, tutors, senior students and peers (2c and 2d). Poor performers did not mention any specific academic challenges and did not report seeking assistance from others, which could indicate that they did not pursue those opportunities for learning that they needed most (Kuh 1995). This apparent lack of effective monitoring and management of learning is indicative of weak metacognitive skills, which is known to be associated with poor performance (Everson and Tobias 1998). The poor performers were also the most vulnerable to rejection (Table 1, 4b), whereas good and most moderate performers managed to transform rejection into positive energy and motivation.

INTERVIEW DATA

Seven interviews were conducted, four with moderate and three with poor performing students. Students were asked: 'When and where exactly did you start encountering academic problems?' and 'Why did that happen?'. Four students identified the year during which they made the transition to the mainstream to have been the most challenging (2009), while the others struggled more in later years when they were trying to complete their degrees. Four students, two from each category, identified a specific module (third year mathematical statistics or third year physics) or a specific discipline (such as geology or genetics) to be the source of academic problems. This is not surprising seeing that mainstream students also find that these modules or disciplines to be especially challenging. Poor time management proved to be a problem for two students, one of whom stated:

> I took up too much HK [house committee] work to do, as we were the start-up HKs [house committee members] for House Tuks Naledi [the BFYP residence] and we were trying to

market the res [residence]. I then fell behind on my work and found it difficult to bounce back'(S64, poor performer).

The other said that he was also challenged by the lack of personalised support from the lecturers in the mainstream programme.

During the interviews, one poor performer and one moderate performer admitted to have applied unsuccessfully for selection to either health sciences or veterinary sciences, information which was not volunteered in response to question 5 on the questionnaire. After rejection from their first choice faculty they felt trapped in the wrong career path and became demotivated in their studies. One of these students reported that above the discontentment in his career choice he also found the core modules in that programme difficult: 'Geology is hard, I am still struggling with it even now. I am not a geology person, you see, I am a health sciences person' (S49, poor performer).

The other student reported that when she gave up trying to qualify for selection for veterinary sciences she became despondent and started having a non-caring attitude towards her studies, until she sought help from family members who then encouraged her to persist in her current programme (S50, moderate performer). These admissions should be taken note of especially when read in conjunction with responses to question 5 on the questionnaire. The negative impact of failure to pass courses or failure to be selected can become crippling if students have not mastered appropriate coping skills to process the disappointment. Under-performing students are more likely to experience repeated failure and student counsellors in the BFYP should make every effort to empower them to deal with that.

DISCUSSION AND CONCLUSIONS

The article has focused on students' experiences in the first 18 months of the BFYP, reporting on their personal perceptions of the structure of the programme, on the challenges they faced and on their preparedness upon transition to the mainstream programme. The feature that distinguishes the current article from previous literature is that experiences are reported on through the lens of good, moderate and poor performers. The voices of students in the different performance bands add shades of intensity to the perspectives and experiences.

The findings support the general view expressed by students in similar programmes, that the BFYP is beneficial and offers a positive experience (Carranza 2007; Eaton 2007; Efiritha et al. 2012; Grayson 1997; Munn 1993; Quayle and Essack 2007; Wood and Lithauer 2005). Students mostly saw the smaller class sizes in the programme as a positive feature compared to larger, more lecture-based classes in the mainstream, thus supporting the findings of Lundell et al. (2007) and Schmitt et al. (2007). It is pleasing to note that although the perception of intensive, long days and the challenge of large volumes of work across the performance bands

is a common thread it is not a strong one. Yet cognisance should be taken of the voices, especially of poor performers, that equate small classes to still being in high school and that express dislike of the perceived 'spoon-feeding' teaching approach. Students want to be treated like the adults they are and are sensitive to this aspect as also witnessed by Grayson (1997).

The general problem of isolation experienced elsewhere (Efiritha et al. 2012; Hlalele and Alexander 2012; Lundell et al. 2007) also reflected strongly in this programme, mostly because of being on a satellite campus. Yet no mention was made of discrimination or stigmatisation as was typically experienced elsewhere (Efiritha et al. 2012; Lundell et al. 2007; Quayle and Essack 2007). This finding should be seen in a positive light and could point to a change in perception regarding access programmes at this university in particular. The conclusion then is that access programmes have become more of an accepted practice locally and it could be worthwhile investigating whether this is a general trend in South Africa.

With respect to the transition to the mainstream, there was fair consent of preparedness across the performance bands, supporting the findings of Wood and Lithauer (2005). However, although the majority of good and moderate performers felt prepared for the transition to the mainstream, just over a third of the respondents (37%) did not feel prepared or were undecided. The feeling of under-preparedness was most prevalent amongst poor performing students. The respondents in the study were all still active within the system and the study does not account for students who opted out along the way. The portion of the initial intake of students who were not adequately prepared by the BFYP considerably exceeds a third of the initial intake. The question needs to be raised as to whether there is reason for concern because the tail of disgruntled and seemingly under-prepared students is perhaps too long. On the other hand, there is solace in the fact that the finding corresponds to the Zimbabwean context (Efiritha et al. 2012) where a third of the students also felt that they did not benefit much from the bridging programme.

Both academic and other counselling services are important aspects of any access programme as evidenced by Lundell et al. (2007), Schmitt et al. (2007), Grayson (1997) and Eaton (2007). We add support to this claim as students in the BFYP, across the performance bands, expressed appreciation for the personal support and attention they received from staff members and student advisors. The study also presents evidence that poor performers are more in need of counselling as they cannot clearly identify academic challenges; they do not openly seek academic assistance; and they interpret problems such as not being selected for another degree programme as a personal failure. According to Munn (1993), the problems experienced by access students could be grouped into three main types, namely, academic, personal and financial. The study supports this premise but it should be noted that financial problems were only mentioned by a few of the poor performing students and did not emerge as a strong voice, somewhat surprisingly given the personal circumstances of many of these students.

The gains experienced by students in the BFYP were more than merely of an academic nature. Gains in life skills, such as time management and perseverance, as well as gains in confidence were mentioned by respondents across the performance bands. Such gains are at the heart of access programmes and the current findings correlate with the studies by Grayson (1997), Wood and Lithauer (2005), Carranza (2007), Munn (1993), and Davidowitz and Schreiber (2008). In terms of these gains the BFYP succeeded, more so for the two upper performance bands than the lower band.

In conclusion, whilst the structure and features of the BFYP were experienced positively by most students across the performance bands, the voice of the poor performing students emerged in the study, expressing their sense of frustration; their inability to cope; and their failure to identify their challenges and to seek assistance. They are also ill-equipped to deal appropriately with repeated failure. It is likely that these poor performing students do not speak for themselves only, but also for many of the students who dropped out of the BFYP along the way, for whom the programme did not work as intended. Should they not have been admitted? Is there a better way of addressing their needs? These are questions that need to be answered in order to assist with the continuous improvement of the BFYP at the University of Pretoria. Tertiary institutions in South Africa are faced with the challenge to increase access to science and engineering and to support students to reach the desired outcomes of these programmes within a reasonable time period. The need to equip under-performing students more effectively in terms of academic and life skills has emerged as the key finding of this work which warrants the best efforts of all educators and counsellors associated with access programmes in South Africa.

REFERENCES

Boughey, C. 2007. Marrying equity and efficiency: The need for third generation academic development. *Perspectives in Education* 25(3): 1–11.

Carini, R. M., G. D. Kuh and S. P. Klein. 2006. Student engagement and student learning: Testing the linkages. *Research in Higher Education* 47(1): 1–32.

Carranza, C. 2007. Student perceptions of the factors that influence academic success. In *Student standpoints about access programs in higher education*, ed. D. B. Lundell, J. L. Higbee, I. M. Duranczyk and E. Goff. Minneapolis, MN: Center for Research on Developmental Education and Urban Literacy (CRDEUL), University of Minnesota, General College.

Case, J. and G. Light. 2011. Emerging methodologies in engineering education research. *Journal of Engineering Education* 100(1): 186–210.

Davidowitz, B. and B. Schreiber. 2008. Facilitating adjustment to higher education: Towards enhancing academic functioning in an academic development programme. *South African Journal of Higher Education* 22(1): 191–206.

Department of Education. 2006. *Funding for foundational provision in formally approved programmes: 2007/08 to 2009/10*. Pretoria: DoE.

DoE *see* Department of Education.

Eaton, S. B. 2007. Their own voices: Alumni perspectives on the special admissions experience. In *Student standpoints about access programs in higher education*, ed. D. B. Lundell, J. L. Higbee, I. M. Duranczyk and E. Goff. Minneapolis, MN: Center for Research on Developmental Education and Urban Literacy (CRDEUL), University of Minnesota, General College.

Efiritha, C., M. Nogget and M. Nyevero. 2012. Voices of conflict: Students' and lecturers' perceptions of the utility of the bridging program at university. *US-China Education* A(4): 452–461.

Engelbrecht J., A. Harding and M. Potgieter. 2014. Evaluating the success of a science academic development programme at a research-intensive university *African Journal of Research in Mathematics, Science and Technology Education* 18(3): 287–298.

Everson, H. T. and S. Tobias. 1998. The ability to estimate knowledge and performance in college: A metacognitive analysis. *Instructional Science* 26(1–2): 65–79.

Grayson, D. 1997. A holistic approach to preparing disadvantaged students to succeed in tertiary science studies. Part I. Design of the Science Foundation Programme (SFP). *International Journal of Science Education* 18(8): 993–1013.

Grayson, D. 2010. Design of the engineering augmented degree programme at the University of Pretoria. http://www.assaf.org.za/wp-content/uploads/2010/10/Grayson-Engineering-Augmented-Degree.pdf (accessed 21 May 2013).

Hlalele, D. and G. Alexander. 2012. University access, inclusion and social justice. *South African Journal of Higher Education* 26(3): 487–502.

Kuh, G. 1995. The other curriculum: Out-of-class experiences associated with student learning and personal development. *Journal of Higher Education* 66(2): 123–155.

Lazear, E. P. 2001. Educational production. *Quarterly Journal of Economics* 116(3): 777–803.

Lundell, D. B., R. Beach and H-J. Jung. 2007. Facets of access: Students' impressions and experiences in the General College. In *Student standpoints about access programs in higher education*, ed. D. B. Lundell, J. L. Higbee, I. M. Duranczyk and E. Goff. Minneapolis, MN: Center for Research on Developmental Education and Urban Literacy (CRDEUL), University of Minnesota, General College.

Munn, P. 1993. Students' views on SWAP (the Scottish Wider Access Programme). *Interchange* No. 17. Edinburgh: Scottish Council for Research in Education.

Potgieter, M., B. Davidowitz and S. Mathabatha. 2008. Preparedness for tertiary chemistry: Issues of placement and performance of academic development programmes. *South African Journal of Higher Education* 22(4): 861–876.

Quayle, M. and Z. Essack. 2007. Students' perceptions of a university access (bridging) programme for social science, commerce and humanities: Research article. *Perspectives in Education* 25(1): 71–84.

Schmitt, J. G., M. A. Bellcourt, K. M. Xiong, A. M. Wigfield, I. L. B. Peterson, S. D. Halbert, L. A. Woodstrom, E. M. T. Vang and J. L. Higbee. 2007. Sharing our experiences: General college students give voice to their perceptions of General College. In *Student standpoints about access programs in higher education*, ed. D. B. Lundell, J. L. Higbee, I. M. Duranczyk and E. Goff. Minneapolis, MN: Center for Research on Developmental Education and Urban Literacy (CRDEUL), University of Minnesota, General College.

Smith, U. 2007. *Business plan for the BSc: Four-year programme to be introduced by the Faculty of Natural and Agricultural Science*. Pretoria: University of Pretoria.

Tinto, V. 2012. Enhancing student success: Taking the classroom success seriously. *International Journal of the First Year in Higher Education* 3(1): 1–8.

Wood, L. A. and P. Lithauer. 2005. The 'added value' of a foundation programme. *South African Journal of Higher Education* 19(5): 1002–1019.

Yeld, N. and W. Haeck. 1997. Educational histories and academic potential: Can tests deliver? *Assessment and Evaluation in Higher Education* 22: 5–16.