CHAPTER 6

INTERPRETATION AND DISCUSSION

6.1. Introduction

This chapter begins with the critical analysis of the conceptual framework chosen for this study. It progresses with the provision of detailed interpretation and discussion of the research data. The interpretation and discussion of the research data also serve as an attempt to respond to the central research question of this study.

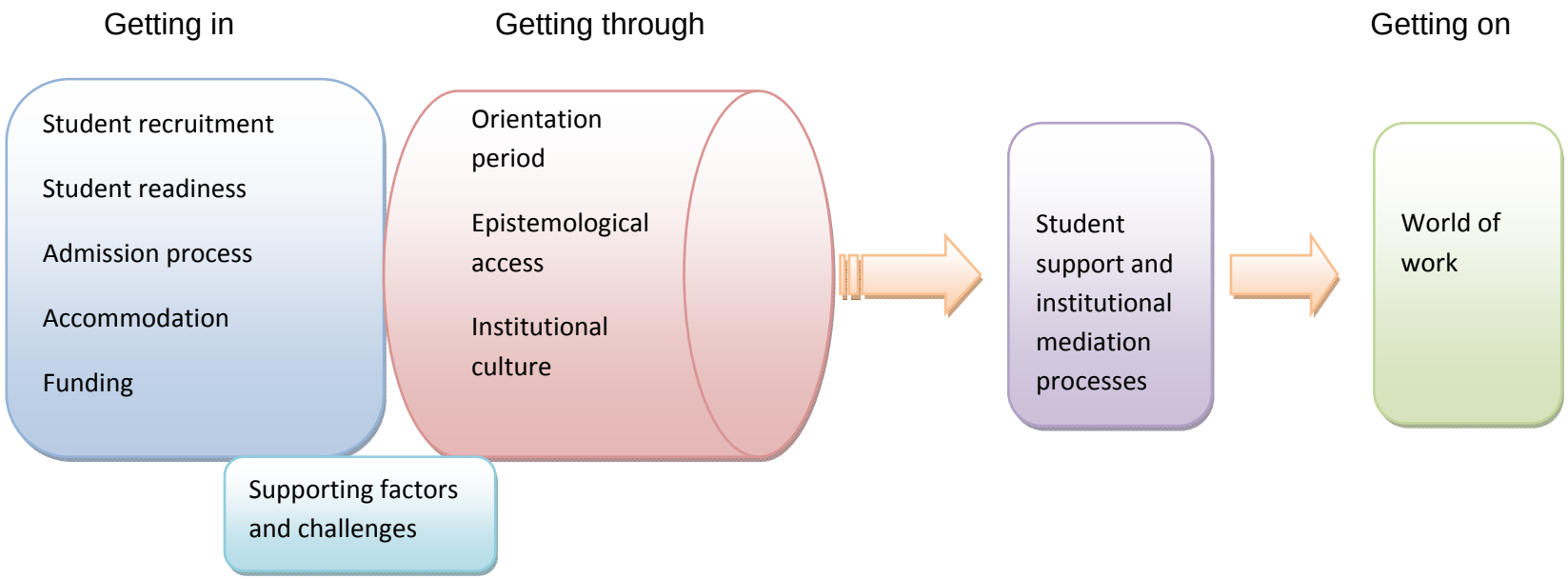
6.2. Reflection on the conceptual framework

In this study I used 'getting in' and 'getting through' as a conceptual framework (Osborne and Gallacher, 2004). The conceptual framework in this case was used mainly as an organising tool. This conceptual framework by its very nature is descriptive rather than analytical, however, by plotting the different forces along with the different categories that relates to access I was able to identify the challenges of access to Biological Sciences. Thus, even though the conceptual framework chosen was descriptive it has proven to be useful.

Figure 6.1 below delineates the process of 'getting in' and 'getting through'. The process of 'getting in' which is basically physical access, has several key factors such student recruitment, student readiness which encapsulates student preparation for higher education studies, admission process, student funding and student accommodation. 'Getting through' which includes epistemological access and cultural adjustment also highlights some critical factors such as orientation period and institutional support. Both processes in 'getting in' and 'getting through' have strong supporting factors and challenges that may enhance or impede access to Biological Sciences. However, once the institution has successfully implemented its student support or institutional mediation processes then access with success is imminent. Once access with success is attained then the students will either join the last stage which is 'getting on' that implies the successful student joins the world of work.

Figure 6.1

The process of ‘getting in’ and ‘getting through’



The academic puzzle that drove my research was: *What are the possibilities and limitations of widening access to under-represented groups in the Biological Sciences at the University of Pretoria?* In order to unravel and develop a deeper understanding of this puzzle, I used the University of Pretoria as a case study. To map out the investigation route, I used the processes of access, namely 'getting in' and 'getting through' (Osborne and Gallacher, 2004).

Armed to the apex with this conceptual framework, I then ardently embarked on an investigative journey. I purposefully chose to investigate the University of Pretoria's Bachelor of Science in Biological Sciences, which is located within the faculty of Natural and Agricultural Sciences.

6.3. Successes and challenges related to 'getting in'

'Getting in' is underpinned by various initiatives at the University of Pretoria, such as the in-and-outreach programmes, open days and exhibitions. These programmes forge strong relationships between feeder schools and the university. Furthermore, the university also recruits students from rural and township areas using both the client service centre (CSC) and some of the first-year lecturers in Biological Sciences. While the university has a strong recruitment drive and manages to reach rural and township areas, a high percentage of those enrolled in Biological Sciences are still white students from urban areas. Where students live and where they attend school has a great impact on their access to higher education studies. The data also underscore this point, as more that 80% of white students reside and have attended secondary schools in urban areas, whilst less than 30% of blacks come from an urban area. This emphasizes the urban-rural divide in Biological Sciences, and the under-representation of blacks from rural and township areas in this programme. It raises the question as to what extent under-represented students are able to gain access to these programmes.

While some progress is being made through the in-and-outreach programmes and recruitment, challenges still beset widening participation at the University of Pretoria. Firstly, the university faces a serious challenge with regards to students' accommodation. The residences are not sufficient to accommodate all the students

and this presents a challenge, especially for students from under-represented communities and those who come from rural areas. The situation is exacerbated by transport problems, since students who are not in residences have to find means of going home, as well as of attending classes and other extramural activities. The situation is especially dire when they have to attend late classes, since issues of security outside the university campus come into play.

Secondly, inadequate preparation of learners for university studies has the potential to hamper widening participation in Biological Sciences. The data point to a high level of under-preparedness for higher education studies which is a manifestation of the poor schooling system. Inadequate preparation for Biological Sciences is often demonstrated by students' inability to conduct practical sessions in the science laboratory. They are able to give answers to questions which relate to the practical session, but cannot conduct experiments to corroborate their responses.

The problem of student un-readiness is also fuelled by inadequate career guidance and counselling at school level. Bitzer (2010: 305) argues that the "futures of students have been long decided before the point of transition to higher education where universities have most influence." This resonates with the South African secondary schooling context, as learners need to select appropriate high school subjects upon completion of Grade 9. Some learners, particularly those from rural and township areas, are not given sufficient guidance regarding which subject mix and grades are needed to qualify them for Biological Sciences. Furthermore, these learners often fail to apply in time and instead 'walk-in' into the university and register for Biological Sciences simply because of its availability.

Nonetheless, there are students who give positive reasons for registering for Biological Sciences. Some register it because of a love of science, while others choose it because they want to bridge later to another programme such as medicine.

The third challenge relating to student readiness is that of insufficient information, either as a result of inadequate preliminary research by the students themselves or because they are given insufficient information about their career choices. The First Year Experience Survey report (2011:7) confirms the data and indicates that "30% of students are not registered for their first choice programme." This could lead to discontinuation of their studies and dropping out of the university.

Inadequate learner preparation for university study is also exacerbated by the high expectations created through grade inflation at Grade 12 level of the school system. On the basis of their inflated marks, the learners believe they are ready for higher education. According to Govender and Moodley (2012:5), “grade inflation is normally associated with falling standards, but can also be explained by any number of factors, such a change in curriculum and improvements in the manner of examining”. In the South African context, this phenomenon could be explained in terms of changes in curriculum. The shift from the old curriculum to the Outcome Based Curriculum (OBE), phased in from the lower grade in 1998, was later extended to the Further Education and Training Band of schooling, culminating in the first cohort of learners exiting Grade 12 in 2008 after twelve years of schooling and being awarded a National Senior Certificate (NSC).

A further finding, both gleaned from the literature and confirmed by the data, is that of the structural break. This is a result of the introduction of a new system which brings about a complete shift from the way things were before (Schöer et al., 2010). The shift from senior certificate and the introduction of NSC brought about the inflation of the Grade 12 marks, making these marks unreliable and leading to inefficient decision-making in student admissions (Marnewick, 2012). It is clear from the literature review that there is no correlation between first-year university performance in Information Technology (IT) and Grade 12 NSC marks in mathematics and English (Marnewick, 2012). However, there was a correlation between the National Benchmark Test’s (NBT) quantitative literacy (QL) scores and the first-year students’ performance in IT. Thus, for universities to select and place prospective students appropriately, additional information is required. This could be obtained through additional measuring tools such as the NBT, especially for the low performance scores (Nel and Kistner, 2009). To widen participation, the University of Pretoria uses ‘sociotechnic tools’ such as NBT. Marnewick (2012) argues that NBT has some advantages, despite the NBT results suggesting that students are not adequately prepared for university studies. It should be noted that the NSC as an exit school qualification was issued for the first time in 2008 and so has only been in place for three years; these challenges could therefore be referred to as teething problems. Furthermore, while there is high dropout rate in the first year of study, this could be attributed not only to the challenges inherent in the transition between

secondary school and higher education but also to the inadequate preparation for higher education (Marnewick, 2012; Schöer et al., 2010; Letseka and Maile, 2008).

The data suggest that NBT is viewed differently by students from poor backgrounds, as they have to pay to write the test and travel to the venues where the test is taken. This could have a negative impact on widening participation, because these learners may not have funds either to pay for the test or to travel to the venue, and thus may end up not taking the test. In this sense, the NBT could be viewed as an exclusionary tool, perpetuating access to Biological Sciences primarily for people of high socioeconomic status.

Fourthly, the policy-makers pointed out that access policy (which is also interpreted as admission process by policy-makers) at UP is designed to achieve diversity. This is done by maintaining a 40% split between blacks and whites. This split in percentages indicates the tacit procedure of allocating places according to race. This is deleterious, as it disregards the demographic of the country and further implies that enrolment places are reserved for people of certain races, despite them being in a minority. Thus, in a way, this practice perpetuates the notion of access as inherited merit (Goastellec, 2010).

The literature review in this study revealed that the notion of access as inherited merit was prevalent during the nascent stages of higher education in UK and US, and seems to have persisted in certain countries, including in South Africa even after democracy. The dawn of democracy in South Africa opened the way for social justice, equity and the redress of the inequalities of the past (DoE, 1997, 2001a). This placed access firmly in the social justice realm, with a need to craft policies that addressed this national imperative. Policy should appeal to the moral accountability and transparency of democratic practices, including in education and in pursuit of social goals and ideals. Equality of rights is crucial to the development and implementation of any policy.

The vision of the University of Pretoria states that: “The University of Pretoria strives to be a university with an inclusive and enabling, value-driven organizational culture that provides an intellectual home for the rich diversity of South African academic talent,” and its mission points out that: “... the University of Pretoria wants to be locally relevant through its promotion of equity, access, equal opportunities, redress,

transformation and diversity."[55] While these statements articulate the intention of the university regarding equity; redress and transformation, they are not clearly reflected at operational level.

The data confirmed this assertion, as the study found that the access policy at University of Pretoria is implemented using a bottom-up approach. That is to say, it is developed and implemented at faculty level, approved at senate level, and ratified at council level. The data further show that UP does not have an access policy in the form of a strategic high-level document, but instead has a strong set of practices and procedures, refined over the years, which are implemented at faculty level. This practice exposes University of Pretoria to different interpretations of access policy at different levels within the university. For instance, middle-level managers interpret it as admission regulations and procedures to implement the criteria agreed upon, while those at top management level have a different view and perceive it in terms of admission criteria. This practice can run counter to the positive intentions of access, namely addressing the demand for higher education and wider participation, especially in science and technology.

Further, the study highlights that the University of Pretoria vacillates between its commitment to widening participation and providing support to students, whether academic, financial or psychosocial, and its role as a top academic research institution.

Funding comes in the fifth place. It plays a critical role in access to higher education in general and to widening participation in particular. Each application of a potential student needs to be accompanied by a certain amount of money, called an application fee. This can be a factor in participation in Biological Sciences because without it the application may be delayed, leading to all sorts of complications, including the student not gaining access to his or her first-choice programme.

The study revealed that student funding poses a serious threat to students from under-represented groups, particularly in BS. Both the literature and the data indicate that, while University of Pretoria's top management is satisfied with the NSFAS funding model, student funding is inadequate to cater for needy students,

[55] http://web.up.ac.za

that is to say, it covers only a certain portion, such as tuition fees, but not residence fees (DHET, 2010; Wangenge-Ouma, 2010).

6.4. Successes and challenges related to 'getting through'

Once students have finally gained admittance to the Biological Sciences, they then need to 'get through' their university studies. To mediate the chasm between school and university studies, as well as to widen participation, UP supports its students academically and financially, as well as in other ways. Student support is essential because, as Marnewick (2012) points out, the universities cannot rely on school results only, but also need to investigate the socioeconomic backgrounds of their students in order to determine the kind of support that is required.

Thus 'getting through' includes the support that the university offers students so that they can succeed in their studies.

The first key step in the support that the university offers its students is a two-week orientation period. This is used for different purposes by the university, such as administration and competency testing, as well as introductory lessons. The students, however, seem to use the orientation period to achieve different things and more personal goals, such as networking. So while this session did not enjoy a lot of popularity among the students, they used it to create the new networks that are so crucial for survival in university studies. It seems that students who were in residences were able to benefit more from the two weeks, as compared to those who had to commute between the university and their homes and thus could not attend some of the activities.

The second critical support that the university offers its students is academic support, anchored in strong mentoring and tutoring programmes. These play a critical role in widening participation in Biological Sciences, as they assist students to 'achieve with success' in their studies. The mentorship and tutoring programmes also narrow the chasm between school and first-year university experience. Despite some negative comments about the poor facilitation skills of some of the tutors, the students were mostly satisfied with this service. However, this did not prevent many of them from failing their first semester exams.

Poor academic performance is fuelled by the overwhelming workload that the students in Biological Sciences have to deal with. It can also be attributed to the epistemological access, that is, in terms of how curriculum is mediated in the Biological Sciences lecture rooms. This suggests that, in order for the university to achieve widening participation and help students to succeed in their studies, which in turn would increase throughput rates, the students in Biological Sciences need to manage their time more efficiently. Further, the university need to deal with the question of how curriculum is mediated.

The third support mechanism offered by the university is the communication tool called 'click–up'. This aims at ease of communication between lecturers and students. However, its good intentions may be limited in the case of students from rural and township areas who do not stay in campus residences, do not have access to computers or the internet at home, and can only access these while at university.

In the fourth place, the university offers foundation programmes as a way of widening participation, since these programmes allow students to choose the slow progress route, completing a three-year programme in four years. This is achieved by spreading the study courses over a longer period, thus reducing the work load and pressure on the student and increasing his or her chance of completing degree studies, albeit over a prolonged period. The data showed that the majority of students in the Biological Sciences are whites from urban areas. Black students from townships or rural areas are likely to be admitted through alternative admission routes using admission tests, and are placed in foundation courses because their school marks may not be good enough to allow them to be admitted directly into degree studies. DoE (2008:64) cautions that despite the good intentions of the foundation courses they are perceived as 'dumping ground' since they cater mainly for black students. The foundation year seems to fail in shaking off its founding philosophy which links it with the apartheid education. Foundation year was proposed in late the 1930s by Malherbe's (1977) and his proposal then was that foundation year is necessary for black students in order to supplement the poor education they received. This still holds true almost two decades after democracy as majority of blacks are located in rural areas and are from low socioeconomic status thus receive poor schooling.

In the fifth place is parental support, which is critical in education in general and in widening participation in particular. Those parents who take a keen interest in their children's education will not only provide a conducive milieu but will also endeavour to give them the necessary material support, such as computers and the internet, therefore, providing cultural capital to these students. The educational level of these parents can enhance this support, as those who have some form of higher education can be used as a reference point by their children. This is especially important for first-generation university entrants. The lack of such support can reduce the students' chances of success. Thus the data show that parents have a valuable role to play in the studies of their children. One of the policy- makers pointed out that "any kind of support that parents offer to their children is reflected in their performance at university, therefore parental support is very critical." One of the first-year students echoed this, saying that "my parents are doing so much to help me settle in the university, they check from time to time as to how I am doing and this kind of support is important, especially when things are tough."

The university offers another important kind of support to students, one which encapsulates the psychological and social services. These services play a vital role in students' success, despite not being part of the academic structure. Psychosocial support is especially critical, as the students cannot focus on their studies if they have personal issues which bother them. However, as one of the policy- makers pointed out, the "university is not a welfare society; therefore the university cannot afford to address the social ills of the society." The psychosocial services offered by the university, though not popular among the students, nevertheless have the potential to assist them in handling personal issues, thus freeing them to focus better on their studies.

The literature review and data point out that institutional culture plays a significant role in students' negotiation of access with success. This phenomenon has been experienced before as a survey conducted in 1936 - 1938 in whites only and male dominated universities in South Africa also pointed out the dissatisfaction about institutional culture and the negative impact it has on the academic performance of the first year students of that period (Malherbe, 1977). The data indicate that there are still pertinent issues relating to institutional culture that need to be adequately addressed in order to widen participation of students from under-represented groups

in Biological Sciences. The cultural shock experienced by students, particularly in residences, may have a negative impact on widening participation. Nonetheless, the data indicate that, in order to succeed with their studies, the students need to 'fit-in' or adapt to the harsh institutional culture, i.e. students require cultural adjustments. One way to become part of this culture is to participate in extramural and cultural activities. However, many students do not participate in these activities mainly owing to lack of time and work overload.

This poses a serious challenge to those students who do not take part in these activities because in order for a university to develop critical thinkers and lifelong learners, it is imperative to develop and facilitate effective learning experiences outside the normal lecture room. These extracurricular activities help in enhancing the transmission of subliminal messages about institutional culture (Mandew, 2003).

Language is one of the key tenets of culture. The language issue compounds the often daunting challenges which underpin access and widening participation in Biological Sciences. The majority of black South Africans take English as a second or third language. However, Afrikaans and English are the languages of learning and teaching at the University of Pretoria. The mastery of either Afrikaans or English by students is therefore imperative for success in higher education studies at this university. The lack of command of these languages is a barrier to access with success (Bradbury and Miller, 2011; CHE, 2010; Cross and Carpentier, 2009; DoE, 2008b). The language issue at University of Pretoria is further compounded by the lecturers who not only code switch between English and Afrikaans during their lectures but also teach in either Afrikaans and give examples in English or vice versa (Jansen et al., 2010).

The challenge regarding the medium of instruction is not new at the University of Pretoria. Malherbe (1977) and Mandew (2003) pointed this issue out when it was discovered in the late 1930s. However, during those years the Afrikaans speaking students who attended universities using English as medium of communication and instruction were not pleased with that medium of instruction. Malherbe (1977) also pointed out the inconsistency of the usage of the dual-medium of instruction. To this end, the same challenges are faced by blacks at the University of Pretoria and this demonstrates the slow transformation process within the university. Furthermore, the

work of Malherbe (1977) has led to policy intervention by the apartheid government that advocated for exclusiveness in terms of language. This kind of solution is not appropriate as it is against the democratic principles which advocates for inclusiveness. Therefore, policy interventions by policy-makers at university and elsewhere should be based on the democratic principles of inclusiveness.

The other factor that could be attributed to the slow transformation of the institution is the fact that out of six policy-makers interviewed the stark reality was that majority (5) were white and only one black albeit that gender in this case was biased towards females. This is not startling as Nkomo (2012:34) points out that "although increasing equity for students is evident, the demographic picture of full-time instruction and research is the opposite of student enrolment; ... The total black representation stood at 39% in 2007, as opposed to 59% for whites. At this level, the growth rate of black staff is insubstantial..." This explains the fewer numbers of blacks in the middle management level at University of Pretoria. This situation is also aptly delineated by Jansen (2009:2) "... as one of the only a handful of senior black administrators at what was then South Africa's largest residential university".

Jansen et al. (2010:110) note "the persistent negative expectations of the students' chances of success on the part of university lecturers" as one of the key factors that may lead to students being unsuccessful in their studies. The data show that the first-year lecturers in Biological Sciences expect their students not to succeed in some parts of the curriculum, such as being unable to conduct science experiments during practical sessions.

6.5. Conclusion

In conclusion, this study confirms some of the findings of the research conducted by Jansen et al. (2010) for the Council on Higher Education (CHE) report. In the first place, there is the challenge regarding the primacy of the language of learning and teaching at higher education institution level. The complexity of the dual medium of instruction and its impact on how students negotiate access with success is highlighted. What is reflected in the language policy and what is practiced in the lecture rooms are poles apart. This is more apparent for students from under-

represented groups, including those from township or rural areas. In this sense, language as a medium of instruction has a profound impact on widening participation.

In the second place, there is the influence of residence culture and its impact on students' social integration and on their success or failure in their studies. The cultural shock experienced by black students in residences demonstrates the influence of culture. In order to succeed, they have to adapt to this unfamiliar culture.

In the third place is the chasm between school and university. The huge challenges in the secondary school system exacerbate this problem. The inadequate preparation of students for university studies is highlighted.

In this study, I argue that the main challenge to widening participation in Biological Sciences is to secure a pool of secondary school learners from under-represented groups, including those from townships and rural areas, who are adequately prepared for the rigours of higher education studies. To this end, it is imperative that higher education institutions put in place additional measures to select and place such students appropriately, since the current school system produces learners who are under-prepared for higher education (Boughey, 2010). It should be noted that the question of under-prepared first year students is not a new phenomenon to South African higher education as it has been indicated elsewhere in this study. The work of Malherbe (1977) also points to similar deficiencies albeit that the context, period, gender and race of the first year students studied are different.

I therefore conclude that the school system supplies insufficient numbers of students from under-represented groups and township and rural areas who have the potential to pursue Biological Sciences, since those from the pool of available students are not exposed to high-level cognitive activities which could better prepare them for higher education. The study revealed the entrenched social inequalities that are exemplified by the urban-rural divide.

I further argue that, while significant strides have been made regarding physical and epistemological access in this university, there is still a low participation rate for black students especially from township and rural areas. Thus physical access is still difficult to attain, as demonstrated in the findings on 'getting in'. Furthermore, lack of

accommodation in residences not only impedes access to Biological Sciences but also denies students access to important facilities, such as computers and internet, through which they could use important communication tools such as ‘click–up’. Participation in extramural and extracurricular activities such as tutoring is also curtailed, especially if these take place in the evening, or if there are evening lectures which need to be attended. If students have to commute between university and their homes after attending evening lectures, issues of security also become a serious concern. Physical access and epistemological access are therefore in themselves not enough to widen participation. It is necessary to ensure that basic needs, such as a place to sleep, are met, combined with a subsistence allowance. The National Student Financial Aid Scheme (NSFAS) funding is not sufficient to cover all the costs incurred at the university, since it covers mainly tuition fees, with only limited cover for residences and transportation.

CHAPTER 7

CONCLUSION AND RECOMMENDATIONS

7.1. Introduction

This chapter gives the conclusion and recommendations that emerged from this study.

The study highlighted the challenges for students of 'getting in' to Biological Sciences and the challenges experienced by the institution, which could also be viewed as barriers to widening participation. One of these challenges is how policy is understood, interpreted and implemented. In the first place, Badat (2008) points out that most public higher education institutions in South Africa do not have an access policy. However, such institutions do have processes and procedures which they have refined over the years. In this sense, policy is understood to form an integral part of practice. The policy-makers interpret access policy as constituting their daily practice with regard to admission and placement of students in the various programmes. However, the absence of access policy leads to various interpretations of the access process which may in turn lead to inconsistency in the application of such processes. Rizvi and Lingard (2010:6) argue that "sometimes non-decision making is an expression of policy as are the actual decisions made. Significant manifestations of policy and power are often evident when things stay the same or when issues are not discussed or are deliberately suppressed. In this way, policy can be expressed in silences, either deliberate or unplanned."

The second challenge highlighted by this study is that of insufficient residences. The shortage of residences poses a serious threat to access and denies many students the opportunity to participate in various activities, including both extramural and extracurricular activities. This phenomenon is also pointed out by DHET (2011) that there are simply too many students who require housing than universities are able to accommodate. Thus demand for student housing surpass the supply.

Thirdly, the university struggles to maintain its priority as a research institution and to balance this with the huge responsibility or support that it carries towards widening participation. This vacillation between the two imperatives shifts the focus of the university.

Fourthly, the challenges related to 'getting in' Biological Sciences from the students' perspective were also highlighted. The inadequate preparation by the school system of students for university studies is manifested in the form of incorrect subject mix poor performance in the practical sessions, and general poor academic performance. Lack of funding contributes to late submission of applications, as well as to students 'walking-in' to self-apply when the academic year is about to start.

The findings on 'getting through' highlight the positive contributions, which act as enablers towards widening participation. The university offers various support programmes, such as academic support, anchored in strong tutoring and mentorship programmes. In addition, it provides financial assistance in the form of bursaries. This assistance is essential, since the National Student Financial Aid Scheme (NSFAS) does not offer enough funding to cover both tuition and residence fees. Psychosocial support, although unpopular, plays a critical role, as it addresses the personal problems of students, freeing them to focus on their studies. However, 'getting through' benefit mostly those students in residences since they have better opportunities to be supported through academic and psychosocial services offered by the university.

7.2. Recommendations

The aim of this study was to identify the perceived constraints of widening participation in Biological Sciences as well as to highlight the barriers that bedevil widening participation.

Here are a few issues for consideration:

i) It is vital to facilitate career guidance and counselling at school level, particularly at disadvantaged schools.

ii) The first-year students need to be accommodated in residences, as this will help them adjust to university life and its demands. It will also combat the challenges of residing out of campus, including problems of transport.

iii) It is vital to bridge the chasm that seems to exist between secondary schooling and first-year university studies. The data suggest that widening

participation could be achieved through better cooperation between schools and the university.

iv) Discretionary quotas, expressed in the form of 40% black and white students, may undermine transformation and the university's quest to achieve a diverse student population. Thus for example the number of white female students in the Biological Sciences remains high, despite whites being in a minority when the country's demographics are taken into account.

v) Financial assistance is the key for most black students to accessing university studies, particularly the Biological Sciences. The available funding should therefore be promoted, particularly the financial assistance which is made available so that application fees can be waived.

vi) The vision and mission of the university demonstrate its commitment to widening participation; however, access policy needs to be put in place and to be understood and implemented consistently with this vision throughout the university.

7.3. Concluding comment

This study has contributed to increasing the corpus of knowledge on widening participation in the Biological Sciences. It has illuminated the challenges which have arisen from the secondary school system and which have a negative impact on widening participation, with special reference to Biological Sciences. It demonstrates that, despite the efforts to widen participation, more still needs to be done to reach out to students from under-represented groups. This could play a significant role in the quest to increase the number of students who obtain science and technology degrees, such as a BSc in Biological Sciences. The study has further pointed out that more attention to basics needs such residences and funding need to be ramped up in order to assist deserving but needy students from under-represented groups who wish to pursue careers in the Biological Sciences.