Government Funding as Leverage for Quality Teaching and Learning

[1]S. Y. Essack, [1]T Lingah, [1]K. P. Mashige, [1]N. Mtshali, [2]I. Naidoo, [3]P. Naidoo, [1]F. Oosthuizen, [3]S. Pillay and [1]F. Suleman

[1]Faculty of Health Sciences, [2]Department of Management Information, [3]Student Counseling Centre (Westville)

University of KwaZulu-Natal, Private Bag X54001, Durban, 4000, South Africa

Abstract

The South African Higher Education Funding Framework uses funding as a lever to achieve equitable student access, quality teaching and research, and, improved student retention and success. Maximizing the institution's subsidy from the national Department of Education via teaching input and output grants necessitates innovative strategies pre- and post student admission. This paper describes a post-admission "academic development and student support (ADSS)" project in the Faculty of Health Sciences, showing how teaching interventions in the form of recurriculation to student-centered, diversity sensitive curricula in tandem with delivery using non-didactic pedagogies, and, learning interventions in the form of comprehensive and holistic student support by the implementation of a student monitoring system with referral to academic and/or student counseling and services personnel improved student retention and success, thereby translating equity of access to equity of outcome.

Introduction

The South African Higher Education Funding Framework uses funding as a lever to achieve student access, quality teaching and research, and, improved student retention and success (Department of Education, 2003). The national Minister of Education spoke to the theme of "Education changes lives, changes communities" in her 2008 budget speech, translating this as "greater access, transformation, and quality" in the context of higher education. She specifically challenged Universities to match the increased access of students from previously disadvantaged backgrounds with increased success, highlighting the target participation rate of 20% by 2015 (Pandor, 2008).

The Higher Education Funding Framework

The national budget for higher education consists of "institutional restructuring grants", "earmarked grants" and "block grants". Earmarked grants encompass the nationally administered student financial aid scheme, funding for teaching, research and community development, capital for institutional restructuring and the higher education quality assurance framework. Block grants consists of teaching input and output grants (described in detail below), research output grants determined from publications and research masters and doctoral graduates and institutional factor grants which additionally fund institutions by size and demographics where institutions enrolling large numbers of previously disadvantaged students receive augmented teaching input grants (Department of Education, 2003, Department of Education, 2004).

Teaching Input and Output Grants

Teaching input grants are based on enrolled totals of full-time equivalent (FTE) students, weighted according to Classification of Educational Subject Matter (CESM) categories in compliance with the national Department of Education (DoE)-approved enrolment plan (Department of Education, 2003) devised in a 3-step process where (1) the national DoE determines national goals and objectives related to graduate outputs, (2) institutions develop institution-specific three-year rolling plans in response to these goals and objectives and (3) the DoE and institutions jointly determine the final student enrolment plan which is subject to annual amendment on the basis of changing external circumstances or changing institutional performance (Department of Education , 2004). It is thus essential that Universities meet enrolment targets and that all students undertake the full annual course load.

Teaching output grants incentivize improvements in student success, throughput and graduation and are calculated as a ratio of the actual weighted (by CESM category) total teaching outputs produced by the institution compared with normative weighted teaching outputs expected as a result of benchmarking (Department of Education, 2003), i.e., graduation benchmarks for contact and distance students stratified by 3-year undergraduate degrees, undergraduate degrees of 4 or more years (e.g. professional degrees in Engineering, Health Sciences and Medicine), postgraduate degrees up to honours level and postgraduate degrees up to Masters level (Department of Education, 2004). It is thus essential that students graduate within the minimum time.

Shortfalls between actual and normative total outputs may be awarded to institutions in the form of the "teaching development grant" on submission of a teaching development business plan.

The University of KwaZulu-Natal adopted a resource allocation model that links Faculty budgets to income from student fees and from the DoE block grants and is thus directly influenced by teaching input and output grants. Optimizing income via the block grants requires innovative strategies pre- and post student admission. Pre-admission strategies such as the recruitment of previously disadvantaged students and student selection tools predictive of student success and post-admission strategies such as curriculum and pedagogic interventions and comprehensive and holistic student support variously address equity of access and equity of outcome. This paper describes the context and rationale behind the "academic development and student support (ADSS)" project which focuses on quality teaching and learning to maximize income from the teaching input and output grants.

The Faculty of Health Sciences at the University of KwaZulu-Natal

The Faculty of Health Sciences consists six Schools made up from thirteen cognate disciplines. The professional disciplines are Audiology, Biokinetics, Dentistry, Nursing, Occupational Therapy, Optometry, Pharmacy, Physiotherapy and Speech Language Pathology. The non-professional but core disciplines of Anatomy, Medical Biochemistry, Pharmacology and Physiology make up the remainder.

The Academic Development and Student Support (ADSS) Project

Literature Review

Curriculum intervention is aimed at adapting curricula to assist in developing a student's general academic and cognitive skills, language proficiency and capacity for self-directed learning (Council for Higher Education, 2004). Curriculum intervention focuses on curriculum design, content and pedagogy that engender student engagement and subsequent retention and success. In response to the increasing diversity of students with different levels of preparedness for higher education, curriculum design has progressed from a "more time more tuition" separate or bridging model aimed at improving inadequate secondary education to a semi-integrated or foundational model which additionally provided academic development laying the necessary foundations for further study to the integrated and holistic model which integrates academic development in mainstream programmes (Crosling et al.,

2009 and Kloot et al., 2008). The ideal curriculum is student-centred and consists of authentic and contextualized content necessitating the generation and dissemination of indigenous knowledge, challenging tasks relevant to students' life experiences, adequate and appropriate orientation and induction and the integration of learning and other skills together with active and interactive learning paradigms and formative assessments for academic development (Crosling et al., 2009).

The delivery of contextualized curricula with integrated academic development requires a pedagogic shift from the traditional didactic model to interactive pedagogies based on the connectivism and constructivism learning theories, both of which create "rich environments for active learning (REALs)" (Kilfoil, 2008, 1023). Connectivism is based on the principles that learning and knowledge lie in a variety of diverse opinions, that learning is a process of connecting specialized information sources, that the capacity to know where to source knowledge is superior to knowing "what" and "how", that nurturing and sustaining connections is critical to continual learning, that the ability to connect diverse disciplinary fields, ideas and concepts is a fundamental skill, that the acquisition and/or construction of current cutting edge knowledge is the central tenet, and, that decision-making is in itself a learning process. Similarly constructivism promotes learning and investigation within authentic contexts, fosters the development of student responsibility, initiative, decision-making and intentional learning, engenders collaboration amongst students and faculty, uses dynamic, interdisciplinary, generative learning activities that facilitate critical thinking processes to assist students to develop comprehensive and complex knowledge structures, and, evaluate student progress in content and learning skills within authentic contexts using real life examples (Kilfoil, 2008).

Integral to connectivism and constructivism are collaborative learning, cooperative learning and learning communities as evident in pedagogies including but not limited to supplemental instruction (SI), structured learning assistance (SLA) and peer-led team learning (PLTL) (Arendale, 2005). SI facilitates the mastery of content in the process of developing and integrating learning and study skills in high risk courses and aims to improve student performance, retention and completion/graduation rates (Arendale, 2005)[1]. SLA assists

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[1] http://web2.umkc.edu/cad/SI/overview.html (accessed 23 September 2009).

students in developing the basis required to engage with the course content and to develop and apply the learning strategies most suited to the content, again in high risk courses[2]. PLTL is where peer-leaders guide the activities of small groups in workshop format providing an active learning experience, creating a leadership role at undergraduate level and engendering faculty development in a creative dimension of instruction[3].

The Student Counseling Service (SCS) is considered an essential component of higher education institutions with its major roles delineated by the International Association of Counseling Services as (1) a holistic approach to student welfare, (2) facilitating the acquisition of learning skills and (3) personal counseling and/or psychotherapeutic services related to difficulties with integration, psycho-social problems and career counseling. Other functions include consultation with faculty, advocacy for student needs, programme development, retention activities and initiatives to enhance the campus environment by participating in a variety of University forums, providing feedback on student counseling-related needs and initiating and contributing to student policy development and review. Referral to faculty/tutors for academic aspects, other social support structures internal and external to the University and healthcare services is implicit in the SCS. The role of a counselor is thus four-fold, i.e. educational support including the psychometric assessment of potential, career planning assistance, assistance with personal and emotional difficulties and referral to allied support structures as appropriate (Morrison et al., 2006).

Peer mentoring is increasingly being integrated into the broader context of student learning and development (van Wyk and Daniels, 2004). Peer mentors facilitate the induction and retention of students and enable them to realize their potential by providing psycho-social guidance and support. They serve as positive, encouraging and affirming role models (Blunt and Connolly, 2006), demonstrating the principles of accessibility, inclusivity, recognition of diversity in its many forms, adaptability and networking (Granados and Lopez, 1999). Peer mentoring is encapsulated in SI, SLA and PLTL, which allow the creation of learner

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[2] http://www.ferris.edu/htmls/academics/sla/PI_Our_Program.htm (Accessed 23 September 2009)

[3] http://www.pltl.org/WhatIsPLTLDefinition.php

communities/groups enabling learners to share across the curriculum and shape a shared, coherent educational experience via a supportive peer group (Favish, 2005).

The literature review summarized above informed the design, implementation and monitoring of the ADSS project which has a conceptual framework of three dimensions: (1) student monitoring and support, (2) curriculum development and (3) capacity building of faculty. The student monitoring and support aspect was implemented over the period 2005-2007 during which time the Faculty progressively introduced and/or consolidated and/or integrated a number of student support mechanisms while 2008 and 2009 were spent in capacity development initiatives, interrogating the relevance and appropriateness of curricula by various stakeholders and developing modules (2008) to be delivered using pedagogies other than the didactic in 2009.

The theoretical underpinning of the research is the "theory of change" which is integral to social impact assessment and requires a comprehensive understanding of the underlying assumptions by which a desired impact is to be achieved. This change model delineates the processes of creating the change and anticipates the causal relationships between interventions and short and long term outcomes (Morrison et al., 2006).

Learning Support

The year 2005 could be considered the base-line with student support consisting of a SCS that assisted students on self-referral or referral from the discipline/School/Faculty.

The Faculty of Health Sciences subscribed to the mentorship programme and appointed academic development programme (ADP) officers in 2006. The mentorship programme assigns 10 first entry students to a senior student who, as a peer, provides relevant and contextual academic and psycho-social support, often serving as the first point of reference. Mentees described academic support as mentors providing assistance with "understanding the academic demands at University", "advice on the selection of courses", liaising with academic staff on behalf of the mentee, "coping with academic demands" and "guidance with problem solving". Personal benefits included playing the role of "big brother/sister", instilling confidence, "improving communication skills" and "providing moral support during difficult times" while social benefits included "linking with all resources on campus", an "opportunity to make friends" and "counseling on socially-related problems" (P. M. Ndaba, pers. comm.). ADP officers monitor student performance in formal assessments, identify

students performing poorly, interview students and refer them to either the academic staff or the SCS as appropriate. Additionally, ADP officers with qualifications in the discipline in which they are appointed serve as tutors covering academic content of modules on a one-to-one basis with students experiencing difficulties.

Pro-active, targeted intervention together with the consolidation and integration of support mechanisms was the hallmark of 2007 with the SCS developing a questionnaire enabling the early identification of students encountering difficulties. The questionnaires distributed via ADP officers after the first set of formal assessments for the year elicited information that could be grouped into the broad categories of "academic" and "psycho-social" indicating the need for personal or group counseling. ADP officers and peer mentors were in addition trained by the SCS and all 3 support structures coordinated and consolidated their work. Confidential record keeping was introduced and follow-up by ADP officers was made mandatory.

Figures 1 – 4 are a typical example of results obtained from the questionnaire survey conducted by the SCS. Figures 1 – 3 stratify results per year of study while Figure 4 shows the learning-related interventions (excluding personal counseling). Student development and academic counseling account for more than 50% of learning-related needs at all levels while learning-related interventions such as time management, study skills and examination preparation account for 67% of the total interventions implemented.
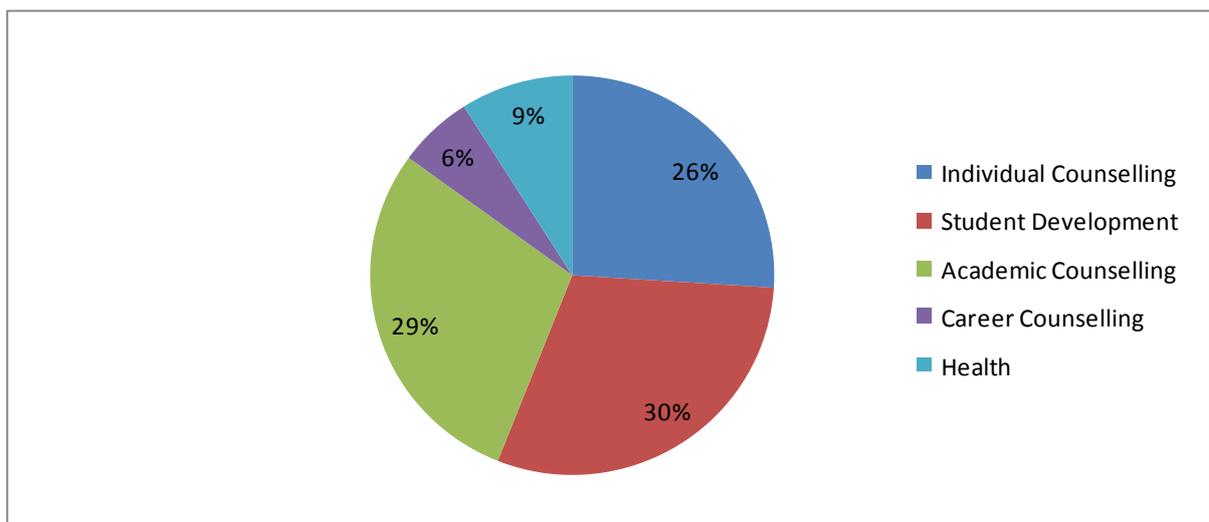

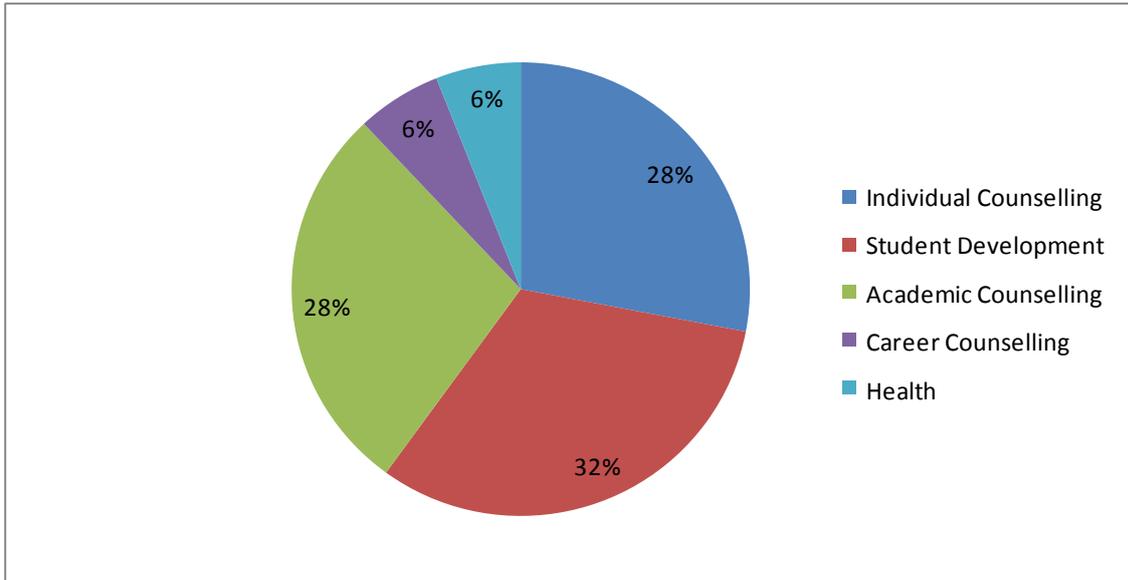Figure 1: First Year Students Development Needs Assessment

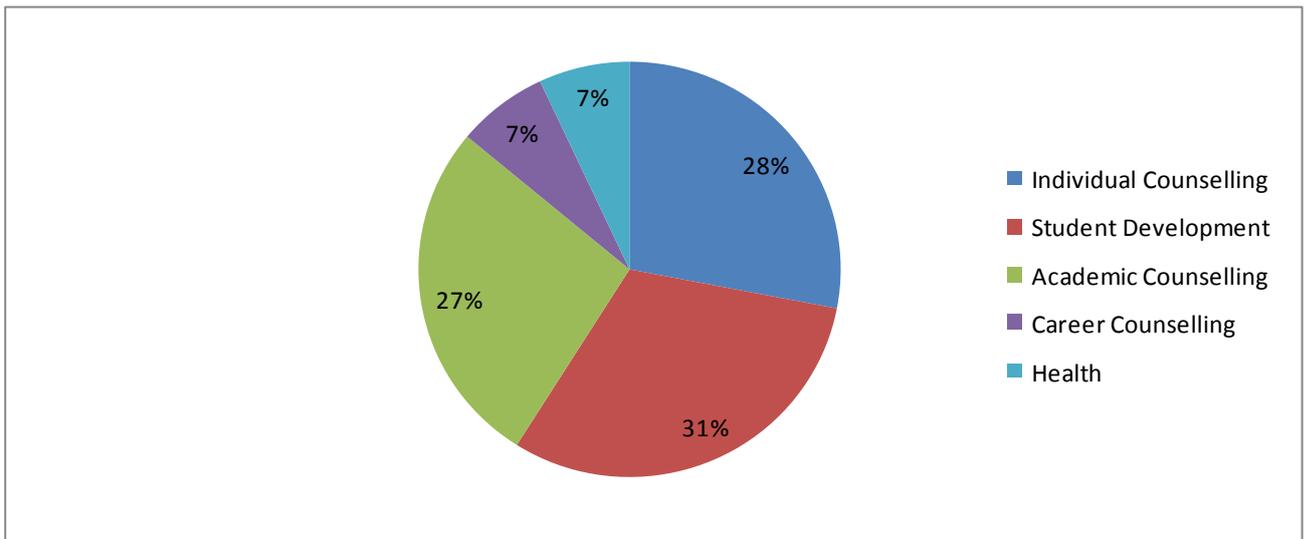Figure 2: Second Year Students Development Needs Assessment

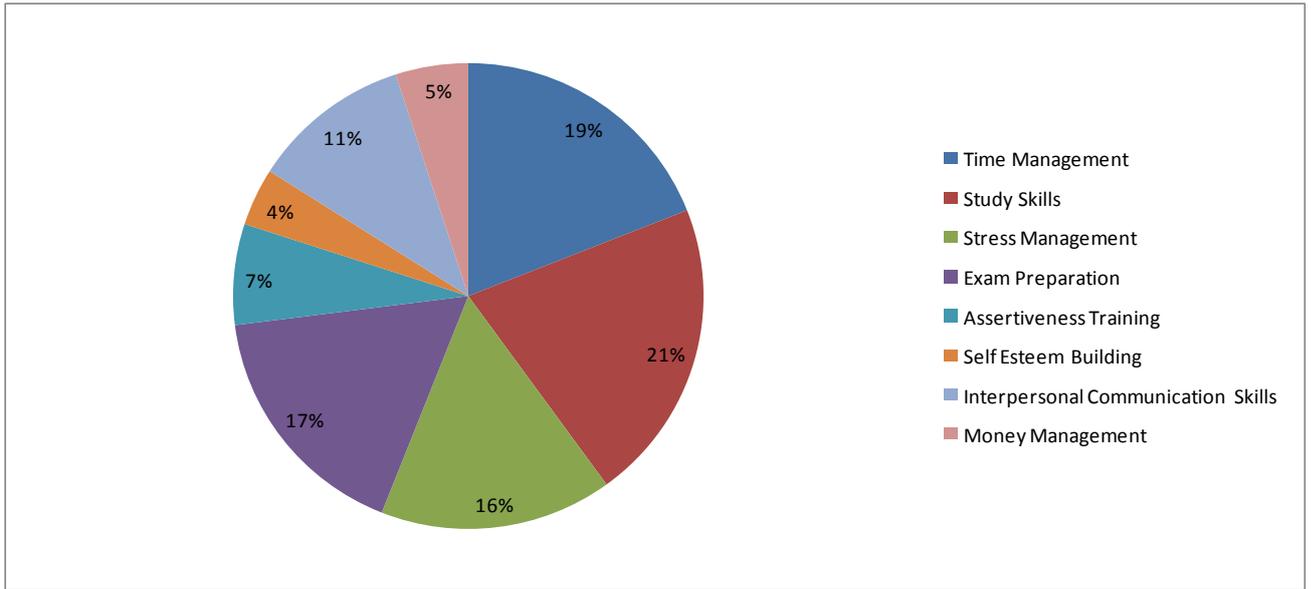Figure 3: Third Year Students Development Needs Assessment

Figure 4: Learning-Related Interventions

Student performance was used as an indicator, where we determined the mean percent mark obtained by all students registered in the Faculty of Health Sciences in all examinations (June & November) written in the years 2005, 2006 and 2007, stratified by first (L1)/second language (L2) English speakers as well mainstream (M) and alternative access (AA) students, i.e. students with matriculation points equal to or above the minimum matriculation points for admission into the programme were considered mainstream while those with matriculation points below the minimum matriculation points for admission were considered to have been admitted into the Faculty via alternative access routes. Language was considered a proxy for students from previously-disadvantaged backgrounds and matriculation points a proxy for alternative access. Different permutations of language and matriculation points were also analyzed. Data was analyzed using SPSS 15.0 for Windows. Anova (analysis of variance) tests were used to compare the final marks between the years 2005, 2006 and 2007.

Figure 5 shows statistically significant ($p<0.05$) improvements in performance between 2005 and 2007 in all cohorts save the L1 ($p =0.18$) and marginally significant improvement in the L1+ AA group ($p = 0.056$). While the graphical representation may show nominal year-on-year differences, statistically significant differences are observed because of the large sample size, i.e. approximately 1600 students write an average of 12 examinations per year. Our analyses and discussion must take cognizance of the fact that prevailing selection criteria enables the Faculty of Health Sciences to recruit academically excellent students. The vast

majority of students and specifically those that meet minimum admissions criteria and are not from previously disadvantaged backgrounds seldom, if at all, access the various student support structures. SCS and ADP Officer records show that the majority, if not the total number of students accessing or being referred to these support structures were from the previously disadvantaged (L2) and alternative access student cohorts.
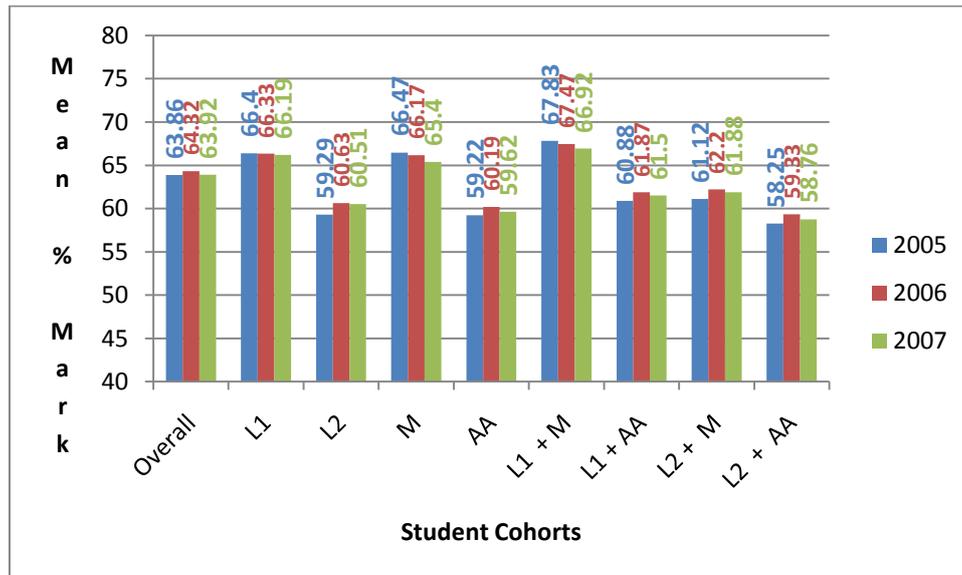

Figure 5: Mean Percent Mark Obtained in Summative Examinations

We delved deeper into the Pharmacy cohort in 2007, comparing results pre- and post ADP and SCS intervention. The intervention, undertaken in the second semester allowed us to compare differences in the June and November examination results of students who had accessed the ADP programme, using a paired t-test. Figure 6 shows that the number of modules passed per student increased statistically significantly from 83% during the June 2007 examination, to 91% during the November 2007 examination (p=0.016). The mean mark increased from 55% in June to 57% in November (p=0.049), further attesting to the success of the learner support interventions programme.
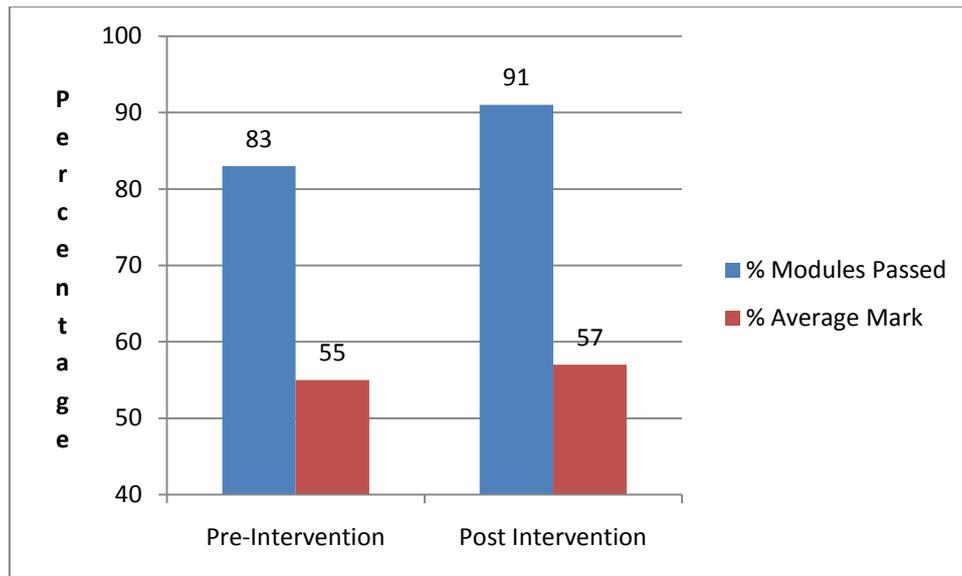
Figure 6: Pharmacy Students Performance Pre- and Post Interventions

Teaching

Schools were encouraged to adopt alternative teaching strategies to the didactic approach. As such the disciplines of Optometry and Occupational Therapy piloted one module each in a non-didactic pedagogy in 2008-9.

The discipline of Optometry piloted a case-based teaching strategy with its third year cohort which required an integration of the knowledge learned from different aspects of the programme and which included substantial critical analysis and problem solving. Occupational Therapy used a range of student-driven methods such as case studies, seminars and small group discussions with its second year students which required students to participate in collaborative learning and take responsibility for their own learning. These alternative methods allowed students to debate issues and critically evaluate current trends.

Only qualitative results from a staff and student perspective are reported with quantitative data in terms of student performance pending examinations where assessments are better aligned to pedagogy. Feedback from academic staff indicated that the facilitation of the process was challenging with "buy-in" from students and difficulty in implementation in larger classes cited as the main challenges. Students were initially negative and unresponsive to the new teaching and learning approach necessitating strong facilitation skills. A frequently reported concern in the initial stages was the lack of confidence amongst students

to express their views. The approach however engendered a collegial learning environment and gradually inculcated interaction and learning from both the students and facilitators. Despite initial reluctance to engage with the alternative teaching method, the overall student feedback was positive. Students reported a better understanding of content covered in this way, enjoyed the participative nature and acknowledged the problem-solving and critical thinking skills gained. The alternate pedagogy was preferred despite substantial time required for preparation and self-directed learning.

Discussion and Conclusion

The Faculty of Health Sciences adapted the recommendations of Laden (2004) where we:

- Orientated and inducted students to facilitate the transition from secondary school and enable successful navigation of and integration into the higher education system using mechanisms such as peer mentors.
- Implemented a monitoring and early alert system that identifies students encountering academic and other difficulties and allows prompt intervention.
- Provided appropriate student welfare services by formalized collaboration between the Faculty and the SCS to facilitate student retention and success.
- Are in the process of providing appropriate programmes, curriculum and pedagogy to facilitate and enhance students' abilities to achieve academic and career aspirations.

Study skills and academic support may be provided as separate, semi-integrated or integrated curriculum models (Crosling et al., 2009). Separate models provide academic support aiming to improve an inadequate secondary education, semi-integrated models additionally provided academic development laying the necessary foundations for further study by developing cognitive, communication and study skills, while the integrated and holistic model integrates academic development in mainstream programmes instilling cognitive, practical, reasoning and thinking, and conceptual, critical thinking, language, communication, life and study skills through subject content (Kloot et al., 2008). Horizontal and vertical integration are essential components of curriculum design with the former encompassing the contextualization of academic and life skills within a disciplinary field and relating cognate disciplines as opposed to teaching in silos while the latter involving the convergence of academic development with mainstream curricula (Jones et al., 2008). Research on widening

participation recommends integrated models of academic support enhanced by one-on-one support and recourse to additional support as required (Crosling et al., 2009).

While holistic integrated model is obviously best practice, precluding stigmatization we commenced with the semi-integrated model addressing learning in the first instance while we piloted the teaching intervention of recurriculation as a natural progression to the holistic, integrated model.

Although the teaching-related interventions are in their infancy, qualitative results show the beginnings of a culture of independent/self-directed learning auguring well for life-long learning. The learning-related interventions encompass the proactive determination of learning-related development needs, monitoring of student performance in formative, continuous and summative assessments and comprehensive and holistic student support by consolidated, integrated and coherent collaboration of Faculty-based academic staff and ADP officers in tandem with the University-wide SCS and mentorship programme. Qualitative and quantitative responses attest to the success of these learning-related interventions.

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