

A learning development module to support academically unsuccessful 1st-year medical students

C A Kridiotis, MA (Health Professions Education), BTech, BCom; S Swart, PhD (Health Professions Education), MA (Industrial Psychology)

Division of Health Sciences Education, Office of the Dean, Faculty of Health Sciences, University of the Free State, Bloemfontein, South Africa

Corresponding author: C A Kridiotis (c.kridiotis@intekom.co.za)

Background. Students who fail the first semester in an undergraduate medical programme at the University of the Free State may join a Learning Development Programme (LDP) in the second semester. A new generic skills module, Lifelong Learning Skills (LLS), was added to the curriculum in 2013.

Objective. To ascertain whether the LLS module helped to improve the generic learning skills of LDP students.

Methods. Student reflections and a self-administered questionnaire with open-ended questions were used to obtain feedback.

Results. Students believed that the LLS module enhanced their generic skills, and that it was beneficial to them. Aspects such as motivation, time management and critical thinking improved. Furthermore, they indicated that the skills mastered during the module continued to be useful in the subsequent academic year.

Conclusion. The students' reflections made a valuable contribution to understanding ways in which they can be supported. Through student insights, future presentation of the LLS module can be enhanced.

Afr J Health Professions Educ 2017;9(2):62-66. DOI:10.7196/AJHPE.2017.v9i2.694

Not all 1st-year students who enter the medical programme in the Faculty of Health Sciences at the University of the Free State (UFS) in Bloemfontein, South Africa, are successful, despite the application of strict selection and admission criteria. Selection criteria include high academic scores in school-leaving examinations and achievement according to National Benchmark Tests (NBTs). Furthermore, applicants may have held secondary school leadership roles, as well as achieving in both sport and cultural activities, for which additional admission points are allocated. Across all institutional faculties, research has shown that student success is 'a complex phenomenon with many influencing factors',^[1] which include cognitive, motivational, dispositional, sociocultural and economic variables.^[2]

While acknowledging that complex factors contribute to entry-level student unpreparedness for higher education, institutional support is considered vital for students struggling academically in their 1st year of study. International research has shown that faculties can contribute to student support by using strategies to enhance self-efficacy in students in all disciplines.^[3] In the UFS undergraduate medical programme, early monitoring of assessment results and student academic support and development are in place.^[4] The identification of effective strategies for medical student remediation has been investigated, which include providing at-risk students with an alternative learning environment, teaching to smaller groups of students and improving students' generic skills.^[5,6] Results show that mandatory remedial courses offered to small groups of medical students have proved successful.^[6,7]

In line with the international trend of providing remediation programmes,^[6,7] UFS medical students who fail one or more of their first-semester modules for the first time, are given the opportunity to join a 6-month Learning Development Programme (LDP) during the second semester. Academic success in the LDP allows students a second opportunity to re-enter the mainstream medical programme at the start of the following academic year. Theoretical underpinnings of a remediation

course include mindful design of the syllabus to include aspects of active learning and carefully selected course content, with the aim to promote student self-regulation and self-reflection.^[7] The theory behind successful remediation includes the three key steps of diagnosis, use of remedial activities, and subsequent re-testing.^[8] Additionally, according to Hommes *et al.*,^[9] collaboration between students benefits their performance and influences their learning.

Over a number of years, the focus of the LDP for UFS medical students has been on modules providing additional content knowledge, i.e. medical terminology, language skills, medical physics, basic biochemistry and physiology, and integrated anatomy and physiology. Since 2013, the LDP curriculum also includes a new generic skills module – Lifelong Learning Skills (LLS). The rationale behind this revised curriculum was that recent international research has indicated that key generic learning skills were contributing factors in the academic success of medical students.^[5,7] These generic skills include information literacy, data handling, information and computer technology, problem-solving, self-management and teamwork.^[5] Critical thinking skills are also considered to be a key generic skill, specifically for medical education.^[7]

According to Murdoch-Eaton and Whittle,^[5] the challenge for medical educators is to train healthcare professionals to recognise 'unstated assumptions, values or prejudices, to evaluate evidence, interpret data and inspect arguments using discrimination, accuracy and judgement'. The focus of the LLS module is on developing generic skills in students, and introducing them to professional conduct, ethics, and critical thinking in healthcare. Motivation, learning styles and study techniques, time management, communication skills, problem-solving and professional behaviour in the health sciences are all key learning areas in the module. International research has shown that curricula for medical education may undervalue student motivation, and ways to stimulate intrinsic motivation may improve the manner in which future medical education is planned and

delivered.^[10] When studying students' wellbeing, motivational strategies and 'approaches to learning and their perception of their learning environment', it was found that the same learning environment may not be perceived in the same way by all students.^[11] The LDP provides unsuccessful students with an alternative learning environment.

In a large-scale study conducted in the USA across various institutions, Booth *et al.*^[12] researched factors that students thought had supported their educational success, in an attempt to understand how institutions could deliver support to students, both inside and outside the classroom. Feedback from the study showed that students regarded 'being directed' and working towards a goal as important, and that being focused and aiming to succeed were equally important. It was also reported that if students felt that they were nurtured and valued, and that there was someone who encouraged them to succeed, it had a positive impact on their studies. When students were actively engaged, and when they participated in lectures and felt that they were connected with the institutional community, these factors contributed to student success.^[13] International results highlight that collecting data on self-regulated learning among medical students and on student participation in learning activities, may 'help medical schools to identify students who are at risk for poor performance early in their training'.^[13] Students' confidence in their individual academic-related skills plays a role in their motivation to achieve, and although student perceptions may be self-reported, there is an association between level of practice of a skill and confidence to use the skill.^[14]

The newly developed LLS module in the LDP at the Faculty of Health Sciences, UFS, is aligned with the abovementioned research findings, and aims to help students to address their goals, function in a small and nurtured environment, and overcome their academic shortcomings in positive ways. The current research sought to gauge student perceptions regarding the new LLS module.

The objectives of the study were:

- to ascertain whether there was a student perception that the introduction of the LLS module within the LDP of the Faculty of Health Sciences, UFS, helped to improve their generic learning skills
- to ascertain whether there was a student perception that the LLS module made a difference to the way they approached their studies, and whether the module could be improved in future
- to determine whether the module was perceived by students to have had an ongoing impact not only on their generic skills, but also on their attitudes, professional conduct, group skills, and overall academic success.

Methods

The study used a qualitative methodology, with some quantitative elements. Student academic statistics were used as an overview to determine the number of students who passed and failed. The qualitative methodology included student reflections on the LLS module. These reflections were documented and reviewed by the researchers over a period of two years. Ten medical students were in the LDP in 2013, and 15 in 2014.

In the second part of the research, a self-administered questionnaire with open-ended questions was used to gain information from the first group of students ($n=7$), who had successfully progressed through the LDP in 2013, re-entered the second-opportunity mainstream programme and successfully completed semesters 1 and 2 in the mainstream. Students were asked to reflect on the benefits of the LLS module in particular and the LDP in general, a year after completion of the programme, and subsequent

academic success in the mainstream programme. By analysing academic achievements and student self-reflection, triangulation was used as a validity process. The data were edited, categorised and summarised by both researchers, and thematic analysis was used to identify common themes in the responses. Ethical approval to conduct the study was obtained from the Ethics Committee of the Faculty of Health Sciences, UFS (Ecufs ref. no. 112/2014). Permission was obtained from the Dean of the Faculty of Health Sciences, Head of the School of Medicine and Vice-Rector: Teaching and Learning, UFS.

Results

During 2013, 158 1st-year students enrolled in the first semester of the medical programme at the Faculty of Health Sciences at UFS. Of these students, 144 (91.1%) passed the first semester, 12 (7.6%) failed the first semester and 2 (1.2%) voluntarily discontinued their studies. Of the 12 students who failed the first semester, 10 (6.3%) were placed in the LDP for the second semester. One of the students had already obtained a qualification before being selected for the medical programme and, according to regulations, was not allowed into the LDP. At the end of the second semester LDP, 7 of the medical students in the LDP achieved an overall average mark of 75% for all the modules in the programme and were readmitted to the first semester of the mainstream medical programme in 2014. Two students were unsuccessful in the LDP, as shown in Table 1. One student discontinued his studies.

In 2014, 149 1st-year medical students were enrolled for the first semester of the medical programme. Of the total group, 131 (87.9%) passed the first semester, 17 (11.4%) failed the first semester and 1 student (0.7%) voluntarily discontinued his/her studies. Fifteen students (10.1%) were admitted to the LDP for the second semester, of whom 12 obtained the required minimum of 75% average for all modules and were readmitted to the first semester of the mainstream medical programme for 2015. Three students were unsuccessful in the LDP (Table 1).

Key reflections of the 2013 LDP students included that many expressed the feeling that they had lost a degree of self-confidence after failing the first semester. Most students viewed their experience of the LLS module as very beneficial, and the small size of the group promoted mutual support among the group members. During the LLS module they were given the opportunity to express their opinions and interact with each other. The facilitators of the LLS module positively reinforced the students, further ensuring that they felt connected and nurtured. The facilitators also ascertained that the students were made aware that, with the right

Table 1. Statistics of 1st-year medical students at the end of the first semester of 2013 and 2014

Outcome	2013, n (%) (N=158)	2014, n (%) (N=149)
Successful (passed first or second examination opportunity)	144 (91.1)	131 (87.9)
Unsuccessful (no admission to write examination, or failed examination)	12 (7.6)	17 (11.4)
Dropped out of the medical programme	2 (1.3)	1 (0.7)
Admitted to LDP	10 (6.3)	15 (10.1)
Successful in LDP	7 (4.4)	12 (8.1)
Unsuccessful in LDP	2 (1.3)	3 (2.0)

Table 2. Most beneficial aspects of the key generic skills taught in the LLS module, 2013

Learning unit	Students' reflection on beneficial aspects
Motivation and self-management	<p>'Helped build up confidence after failing first semester.'</p> <p>'Helped build a constructive, positive attitude.'</p> <p>'Discovered other students faced the same challenges as I did.'</p>
Learning styles and study techniques	<p>'Discovered how best to study using my personal learning style.'</p> <p>'Helped me study large amounts of work.'</p> <p>'Assisted with becoming more effective while studying.'</p>
Time management	<p>'Helped to discover how to make an effective study timetable.'</p> <p>'Helped to avoid procrastination by using a study timetable.'</p> <p>'Managing study time by writing it down in the form of a schedule made a huge difference.'</p>
Communication skills and critical thinking skills	<p>'The oral presentation was a very good exercise.'</p> <p>'I was apprehensive about giving the oral presentation, but felt confident afterwards.'</p> <p>'Built confidence and helped the group to bond.'</p>
Group work, problem-solving and conflict management	<p>'Helped me realise I must take the view-points of others into consideration.'</p> <p>'Made it easier to function in a group.'</p> <p>'Helpful – being more considerate and mindful of the opinions of others.'</p>
Stress management	<p>'Helped me identify my stressors and helped me cope better with stress.'</p> <p>'Discovered techniques to help me deal with stress.'</p> <p>'Helped, I had been very stressed out when I failed.'</p> <p>'Realised I could ask for help.'</p>
Test and examination management	<p>'Was useful to discover techniques to approach tests and examinations.'</p> <p>'Learning key action words to identify what examiner is asking for was useful.'</p> <p>'Helpful, we could have spent even more time on this.'</p>

approach to their studies, academic success was within their reach. Essential reflections of students regarding the most beneficial aspects of the generic skills learned in the LLS module during 2013 are shown in Table 2.

Some students indicated that they would like more information on applying new learning styles, and also that more help was needed in applying study techniques, and test and examination management. These shortcomings, having been identified, were addressed in subsequent facilitation of the LLS module.

The comments of the 15 medical students in the LDP during the second semester of 2014 included reflections, e.g. that they found the module

insightful and beneficial, as they reassessed the way in which they learnt and applied knowledge. The LLS module encouraged the students and made them approach the future positively, despite the fact that they had failed. They reported having acquired skills in writing scientific reports, presenting and critical reflection, which they did not have before. The module also brought about an improvement in attitudes and perspectives, preparing students to become academically and socially better prepared for the challenges of medical education.

Further reflections of the 2014 LDP students included comments that although some of the module content was similar to what they were taught in semester 1 in the mainstream, the attention to foundational knowledge in this module made the understanding and retention of the study material more manageable. The underlying support provided to the students in the LDP course enabled them to grasp concepts they had previously found challenging. The module was considered by one student 'to have made a huge impact on my studies and the way I look at university life.' One effective and beneficial skill acquired by students was improved time management. Their reflections regarding the generic skills learned in the LLS module are shown in Table 3.

Quantitative data were used to track the academic progress of the students in the year following the LDP, to ascertain whether students maintained their level of academic success. The students who had passed the LDP in 2013 and re-entered the mainstream medical programme ($n=7$) had all been academically successful. These students indicated that they had learnt better time management during their LLS module, which was very beneficial. The students also indicated that the LDP in general had motivated them to study consistently and consequently and to prepare ahead of their classes in the mainstream programme. Students were asked a year after completing the LDP which module(s) they considered to have been the most beneficial during the programme. Student perceptions on the efficacy of the LDP in general, as well as the contributing factors to their initial academic failure and subsequent academic success, were documented by the researchers. The students cited the modules of integrated anatomy and physiology, medical terminology, and basic biochemistry and physiology as being the most helpful. The consolidation of core knowledge during 'the slower pace' of the LDP modules was cited as very beneficial to the students after they had re-entered and were successful in the mainstream programme.

When asked to comment on factors that contributed to their subsequent success in the mainstream programme, students indicated that during the second opportunity, they were more aware of the way in which they would be assessed. By being familiar with the assessment methods, they could adjust their learning. In the mainstream, integrated assessment methods are used, which require deep learning and challenge students to apply critical thinking. The LLS module had informed students of assessment principles and key action words, as well as giving them the opportunity to practise the use of study techniques, learning skills such as effective summarising and ways to maximise retention of study material. The students also indicated that timeous feedback on the results of assessment helped them to plan for the next test. When students were part of the LDP, their progress was carefully monitored and they became familiar with the support services at the Division of Health Sciences Education, which also played a role, as the students were comfortable with asking for assistance when they needed it. Additionally, the second-opportunity students indicated that the student mentors who had been appointed during 2014 to guide mainstream students also played an important supportive role, and that this contributed to their academic success.

Table 3. Beneficial aspects of the key generic skills taught in the LLS module, 2014

Learning unit	Students' reflection on beneficial aspects
Motivation and self-management	'Learned about goal setting, to keep being motivated.' 'Helped benchmark my needs, identified lack of resources.' 'Made me realise what went wrong last semester.'
Learning styles and study techniques	'Practical application methods of learning strategies extremely valuable.' 'I realised I have below average self-acceptance, and am critical of others – things I have to work on.' 'I learned to improve, implement deep learning, being more effective while studying.' 'I learned to summarise, formulate questions while learning.' 'Helped me understand the preparation-teaching-learning-assessment and reflection cycle.' 'I am more accommodative of people than I was previously.'
Time management	'I organised my study space, used tips to study more effectively.' 'I realised how much I procrastinate and how to avoid this.' 'Managing my study time by planning a schedule.' 'I learnt that working continuously is better than cramming.' 'Making a weekly, daily and semester planner helped me to record and plan for tests and assignments, very helpful.'
Communication skills and critical thinking skills	'I learned about written academic submissions, which was worthwhile.' 'The chance to give an oral presentation in front of a smaller audience was beneficial, and will prepare me for giving a presentation in front of a larger audience.' 'I benefited from having to write a scientific essay and reference it correctly.' 'I benefited by having some classes with other allied health professionals, such as nurses. This gave me understanding and insight.'
Group work, problem-solving and conflict management	'This module's focus was on the social aspects of ethical dilemmas.' 'The focus on group work is something I appreciated, I saw how my behaviour affects the other members of the group.' 'I do not enjoy group work, but because of this learning unit, I now know how to take part in group work and discussions in a responsible and accountable manner.' 'Helped me to think outside the box.' 'I realised that in the medical profession we will be faced with dilemmas, which will need critical thinking.' 'I found it hard to critically reflect on an article, which worries me. I need to improve this skill.'
Stress management	'Stress is a constant and chronic problem throughout the medical field and I believe this unit approached it in the right way.' 'I was able to identify how my stress is manifested.' 'Although this learning unit did help me identify stressors and the symptoms of stress, I still do not know how to manage my stress.'
Test and examination management	'I found that reflecting on a test helped me to prepare for the next test.' 'It was useful to learn about different kinds of questions and how to approach them.' 'Good techniques during the test, such as reading the question analytically and identifying the action words, is useful.'

Discussion

In the first part of the survey, students indicated that the skills they had learnt during the LLS module helped them regain their confidence after a demoralising failure in semester 1. Students learnt to plan and apply time management and effective study techniques. They concluded that the following factors played a role in increased levels of confidence: (i) the small-group approach with supportive facilitators; (ii) interaction with peers; (iii) class discussions; and (iv) oral presentations within the small-group setting of the LLS module. Stegers-Jager *et al.*^[15] reported that participation by students in scheduled learning activities was strongly related to academic performance in the first year. A similar trend was found in the LLS module. Students who were more conscientious regarding attendance outperformed those with poor session attendance. This trend was in line with a recent study among medical students in China, which showed that student engagement in lectures and recognition that effort needed to be put into studies, directly contributed to achievement.^[16]

In the second part of the survey, students indicated the generic skills development continued to be useful in the academic year that followed,

as they studied timeously and more effectively. The slower pace at which the academic modules within the LDP were presented, was perceived as beneficial to students, and they felt their core knowledge in modules such as anatomy and physiology had been consolidated during the LDP. Former LDP students reported that, once they were back in the mainstream programme, their core knowledge of anatomy and physiology compared favourably with the levels of knowledge demonstrated by their peers. This insight is a topic to be considered in further research, and would justify research into the short-, medium- and long-term effects of a short, integrated programme on study skills and learning development of 1st-year medical students.

The LDP students of 2013, who were the first group to take the LLS module, were positive about its benefits, and indicated that the skills they had learnt during the module had continued to be useful in the subsequent academic year. The group of students were aware of the academic challenges they had to face in their continued studies, but were more equipped on a personal level to deal with the challenges, as they had acquired techniques to deal with the academic workload and the accompanying stress. Using the

goal-orientation theory to design an intervention to reinforce mastering goals as a successful outcome, 'may enhance the effectiveness of medical student training'^[17] As indicated earlier by Hommes *et al.*,^[9] collaboration between students benefits their performance and influences learning, which was also found in the current research, as frequent collaboration between the same group of students in the LLS module strengthened the bond between them, and had a positive influence on their confidence and performance. After an unsuccessful first semester, students may also have had a better understanding of how to avoid pitfalls during assessment at university, which may also have played a role in their subsequent academic success.

Conclusion

The students noted the benefits of the remedial LDP, with support from facilitators and interaction with their peers within the small group. They considered that the slower pace at which the academic modules within the LDP were presented had helped them to consolidate core knowledge, which became apparent once they were back in the mainstream medical programme. The rationale behind the development and introduction of the new LLS module was that recent research, both nationally and internationally, indicated that key generic learning skills were contributing factors in the academic success of health sciences students. The LLS module was found to have addressed the need for enhanced key generic skills among 1st-year medical students who had initially been unsuccessful, in line with findings by Burch *et al.*,^[6] who stress that 'the importance of generic skills in underpinning effective learning is increasingly appreciated'.^[6] The reflections of students made a valuable contribution to understanding how the key generic skills can be useful to medical students. The generic skills taught were found to supplement the core knowledge component of the LDP and promote lifelong learning skills in medical students in their subsequent years of study.

Acknowledgements. Dr Daleen Struwig, Faculty of Health Sciences, UFS, for technical and editorial preparation of the manuscript.

1. Wilson-Strydom M. A framework for facilitating the transition from school to university in South Africa: A capabilities approach. PhD thesis. Bloemfontein, University of the Free State, 2012. <http://scholar.ufs.ac.za:8080/xmlui/handle/11660/1935> (accessed 21 April 2017).
2. Cliff A, Ramaboa K, Pearce C. The assessment of entry-level students' academic literacy: Does it matter? *Ensovoort* 2007;11(2):33-48. http://www.academia.edu/7958363/The_assessment_of_entry-level_students_academic_literacy_does_it_matter (accessed 11 April 2017).
3. Krumrei-Mancuso EJ, Newton FB, Kim E, Wilcox D. Psychosocial factors predicting first-year college student success. *J Coll Stud Dev* 2013;54(3):247-266. <http://dx.doi.org/10.1353/csd.2013.0034>
4. University of the Free State. Student Academic Support and Development. Bloemfontein: UFS, 2014.
5. Murdoch-Eaton D, Whittle S. Generic skills in medical education: Developing the tools for successful lifelong learning. *Med Educ* 2012;46(1):120-128. <http://dx.doi.org/10.1111/j.1365-2923.2011.04065.x>
6. Burch V, Sikakana CNT, Gunston GD, Shamley DR, Murdoch-Eaton D. Generic learning skills in academically-at-risk medical students: A development programme bridges the gap. *Med Teach* 2013;35(8):671-677. <http://dx.doi.org/10.3109/0142159X.2013.801551>
7. Winston KA, van der Vleuten CPM, Scherpbier AJ. The role of the teacher in remediating at-risk medical students. *Med Teach* 2012;34(11):e732-e742. <http://dx.doi.org/10.3109/0142159X.2012.689447>
8. Cleland J, Mackenzie RK, Ross S, Sinclair HK, Lee AJ. A remedial intervention linked to a formative assessment is effective in terms of improving student performance in subsequent degree examinations. *Med Teach* 2010;32(4):e185-e190. <http://dx.doi.org/10.3109/01421591003657485>
9. Hommes J, Rienties B, de Grave W, Bos G, Schuwirth L, Scherpbier A. Visualising the invisible: A network approach to reveal the informal side of student learning. *Adv Health Sci Educ Theory Pract* 2012;17(5):743-757. <http://dx.doi.org/10.1007/s10459-012-9349-0>
10. Kusrkar RA, Croiset G, Mann KV, Custers E, ten Cate O. Have motivation theories guided the development and reform of medical education curricula? A review of the literature. *Acad Med* 2012;87(6):735-742. <http://dx.doi.org/10.1097/ACM.0b013e318253cc0e>
11. Lonka K, Sharafi P, Karlgren K, et al. MED NORD – a tool for measuring medical students' well-being and study orientations. *Med Teach* 2008;30(1):72-79. <http://dx.doi.org/10.1080/01421590701769555>
12. Booth K, Cooper D, Karandjeff K, Purnell R, Schiorring E, Willett T. Student support (re)defined: What students say they need to succeed. Key themes from a study of student support. <http://archive.rpgroup.org/sites/default/files/StudentPerspectivesResearchBriefJan2013.pdf> (accessed 21 April, 2017).
13. Stegers-Jager KM, Cohen-Schotanus J, Themmen AP. Motivation, learning strategies, participation and medical school performance. *Med Educ* 2012;46(7):678-688. <http://dx.doi.org/10.1111/j.1365-2923.2012.04284.x>
14. Murdoch-Eaton D, Manning D, Kwizera E, Burch V, Pell G, Whittle S. Profiling undergraduates' generic learning skills on entry to medical school; an international study. *Med Teach* 2012;34(12):1033-1046. <http://dx.doi.org/10.3109/1042159X.2012.706338>
15. Stegers-Jager KM, Cohen-Schotanus J, Themmen AP. The effect of a short integrated study skills programme for first-year medical students at risk of failure: A randomised control trial. *Med Teach* 2013;35(2):120-126. <http://dx.doi.org/10.3109/0142159X.2012.733836>
16. Zhou YX, Ou CQ, Zhao ZT, et al. The impact of self-concept and college involvement on the first-year success of medical students in China. *Adv Health Sci Educ Theory Pract* 2015;20(1):163-179. <http://dx.doi.org/10.1007/s10459-014-9515-7>
17. Madjar N, Bachner YG, Kushni T. Can achievement goal theory provide a useful motivational perspective for explaining psychosocial attributes of medical students? *BMC Med Educ* 2012;12(1):4. <http://dx.doi.org/10.1186/1472-6920-12-4>