

Issues in the Learning Context of Undergraduate Physiotherapy Programme at a Premier Medical School in Zambia

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Abstract

Background: Students' perceptions of their learning environments influence their approaches to learning and the learning outcomes, and reflect a programme's effectiveness. In Africa, literature on the learning environments of medical and health sciences education is scanty, and the issues impinging on effective education are not well documented. The objective of this study was to determine learners' perceptions of the issues in the learning environment of undergraduate physiotherapy education at the University of Zambia.

Methods: Undergraduate physiotherapy students in years 2 to 5 were stratified according to level of study and randomly sampled. They were provided written information about the study, and consenting students were allowed to complete the DREEM questionnaire unassisted. Completed questionnaires were rated using a recommended guideline and their responses analysed quantitatively. Global, subscale, and item mean scores were calculated, and Cronbach's alpha was determined as a measure of data reliability and internal consistency. The study was approved by ethics committees of two universities.

Results: Ninety-three students participated in the study. The response rate was 88.4 %. All classes rated the learning environment as 'more positive than negative,' with a mean global score of 123.2/200 (61.6 %). Scores within subscales (55.7–70.4 %) were comparable across the classes. Nine items scored below 2.0/4.0 indicating dissatisfaction. These included inadequate social support, teacher authoritarianism, and factual overload. Cronbach's alpha for global scores was 0.896, and between 0.616 and 0.820 for subscale scores.

Conclusion: Though total DREEM scores showed overall positive perception of the learning environment by the students, item analysis showed students' dissatisfaction with several aspects. This analysis of undergraduate students' perceptions of the Physiotherapy learning environment provided insight into the phenomena in the programme and adds to the literature on learning environments of Physiotherapy education in Africa.

Keywords: DREEM, EDUCATIONAL ENVIRONMENT, PHYSIOTHERAPY, TEACHING AND LEARNING, UNDERGRADUATE STUDENTS

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Introduction

Analysis of the educational environments of

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health professions educational programmes has become very topical due to the massive innovations that were introduced in the past two decades, and the growing emphasis now placed on quality assurance and on students' satisfaction (1, 2). According to Lizzio and colleagues, students' perceptions

of their learning environment influence their approaches to learning and their academic achievements (3).

Educational environment consists of the contexts, cultures, ethos, and physical infrastructures within which learning occurs (4). Several regulatory bodies such as American Medical Association, the General Medical Council United Kingdom (UK), World Health Organization, and the World Federation for Medical Education now emphasize the importance of effective learning environments in education and training of healthcare professionals, considering this as an important aspect of self-review, accreditation, and quality assurance. Additionally, exploration of the phenomena characterizing the learning environments of medical and health professions educational institutions have been utilised in comparing academic achievement of students learning with different curricula models, studying at different training sites, and also for comparing the learning environments of medical schools in different countries (5).

In Africa, only few reports are available on the educational environments of medical and health sciences education, and fewer still on physiotherapy education. The physiotherapy programme of the School of Medicine, University of Zambia was the first undergraduate degree awarding programme in physiotherapy in Zambia. It is lecture-based, and follows outcomes-based five years curriculum. Whereas year 1 students study at the Great East Road Campus of the University, years 2 to 5 students attend basic and clinical education at Ridgeway Campus of the University and the associated University Teaching Hospital. Over the years, the curriculum has undergone modifications and has been subjected to several definable and indefinable constraints. This article reports on the learners' perceptions of the educational environment in the School of Medicine of the University of Zambia on the eve of the splitting of the School into four new schools—Health Sciences, Nursing Sciences, Public Health

and the new School of Medicine. It could therefore serve as baseline information for future evaluation of the performance of the programme's effectiveness under the new School of Health Sciences. More importantly, the paper adds to the slowly evolving literature on the learning environments of medical and health professions education in Africa (6, 7).

Methods

To realise the aim of the study stated above, the Dundee Ready Educational Environment Measurement (DREEM) questionnaire (8) was used to gather information on the students' perception of their learning environment. A quantitative descriptive design was used, and full time undergraduate students of the Bachelor of Science in Physiotherapy in year 2 to year 5 who were studying at the Ridgeway Campus participated. The study was approved by the Ethics Committees of the Department of Health Studies of the University of South Africa (certificate number REC-012714-039) and the University of Zambia (reference number IRB-00001131 of IORG-0000774). Total enrolment in the programme at the time of study was 105, giving a sample size of 83, calculated based on a margin of error of 5 %, confidence level of 95 %, total enrolment, and a response distribution of 50 %. An online sample size calculator was used. The sampling was randomly stratified according to level of study, and randomisation was accomplished with the aid of an online randomizer. Information sheet detailing the purposes of the study and the involvement of participants was handed to those selected. Each consenting student voluntarily completed a questionnaire, comprising a demographic section and 50 DREEM items. For confidentiality, no names or registration numbers were collected. The investigators were aware of the effects of power differentials on data quality. Therefore, none of the investigators were directly involved in data collection. Only one of the authors (HS) was involved in teaching the students at the

time of the study.

The DREEM is a 50 items instrument designed and validated for quantitative assessment of educational environments in medical schools (8). Participants responded to the DREEM items based on 5 point Likert scale from “strongly agree” to “strongly disagree.” The returned completed questionnaires were sorted and rated using a recommended guide (9). According to the guide, each item had a maximum score of 4 and a minimum of 0, giving a maximum total score of 200. Scores of 0 to 50 were interpreted as ‘very poor,’ 51-100 as ‘Plenty of Problems,’ 101-150 ‘More Positive than Negative,’ and 151-200 as ‘Excellent.’

The factor structure of the DREEM as defined by the inventors included 5 subscales as follows:

1. Students’ perception of learning (SPL) - consisting of 12 items with a maximum score of 48 marks; the items were 1, 7, 13, 16, 20, 21, 24, 25, 38, 44, 47, and 48. Scores of 0-12 in this subscale was interpreted as ‘Very Poor,’ 13–24 as ‘Teaching is viewed negatively,’ 25–36 as ‘A more positive perception,’ and 37–48 as ‘Teaching highly thought of.’

2. Students’ perception of Teachers (SPT) - consisting of 11 items, and having a maximum score of 44 marks; the items were 2, 6, 8, 9, 18, 29, 32, 37, 39, 40, and 49. Scores between 0 and 11 were interpreted as ‘Abysmal,’ 12–22 as ‘In need of some retraining,’ 23–33 as ‘Moving in the right direction,’ and 34–44 as ‘Model Teachers/programme organisers.’

3. Students’ academic self-perception (ASP) - consisting of 8 items and had a maximum of 32 marks; the items were 5, 10, 22, 26, 27, 31, 41, and 45. Scores here were interpreted as 0 - 8 ‘Feelings of total failure,’ 9–16 as ‘Many negative aspects,’ 17–24 as ‘Feeling more on the positive side,’ and 25–32 as ‘Confident.’

4. Students’ perception of the educational atmosphere (SPA) - consisting of 12 items and a maximum score 48 marks. The subscale included items 11, 12, 17, 23, 30, 33, 34, 35, 36, 42, 43, and 50. The scores within this subscale were interpreted as follows: 0–12 ‘A terrible

environment,’ 13–24 ‘There are many issues which need changing,’ 25–36 ‘A more positive attitude,’ and 37–48 ‘A good feeling overall.’

5. Finally, students’ social self-perception (SSP) - consisting of 7 items with a maximum score of 28 marks and included items 3, 4, 14, 15, 19, 28, and 46. Scores here interpreted as 0–7 ‘Miserable,’ 8-14 ‘Not a nice place,’ 15–21 ‘Not too bad,’ and 22 -28 ‘Very good socially.’

The scores from the returned questionnaires were first entered into Excel worksheet and then exported and analysed with SPSS software version 22. The mean global scores for each class and for the entire programme were determined as well as mean scores for each of the 5 subscales described above. Results for the 4 classes were compared by one way analysis of variance. Mean scores on individual DREEM items were also analysed to determine specific areas of the learning environment that students were not happy with. Validity of the dataset was verified by correlation of mean scores on individual items between the classes. Reliability of the dataset was also assessed by calculating Cronbach’s alpha.

Results

The sample size was calculated to be 83. However 100 questionnaires were distributed to consenting students. Of these, 93 questionnaires were returned, giving a response rate of 93 %. Fourteen of these were from year 2, 25 from year 3, 26 from year 4, and 28 from year 5. Fifty participants were females and 43 were males. The mean age of the participants was 25.7 (SD=5.50) with a range of 21 to 49; 76 were single, 16 were married and 1 was widowed. Participants living on-campus in University hostels were 43, off-campus residents in rented accommodations were 29, and 21 participants were residing at home with relatives.

Table 1 presents the description of the DREEM scores. The mean total (global) DREEM score for this study was 123.2/200 (61.6 %, table 1). This interprets as “more positive than

Table 1. DREEM scores from the 93 physiotherapy participants at the School of Medicine

	Mean (%)	SD	Rating category (based on McAleer and Roff ⁹¹)	Cronbach's alpha
Global Score (max 200)	123.2 (61.6)	22.2	More positive than negative	0.852
Students' perception of learning (SPL) (max 48)	30.7 (64.0)	5.7	A more positive perception	0.735
Students' perception of teachers (SPT) (max 44)	26.73 (60.8)	5.4	Moving in the right direction	0.768
Academic self-perception (ASP) (max 32)	22.54 (70.4)	5.3	Feeling more on the positive side	0.719
Students' perception of atmosphere (SPA) (max 48)	27.64 (57.6)	7.4	A more positive attitude	0.820
Social self-perception (SSP) (max 28)	15.6 (55.7)	3.5	Not too bad	0.616

negative” educational environment based on the rating guide.

The total and subscale scores for participants from the four classes were not significantly different, with the following total scores for year 2, 128.7 (64.4%), year 3, 119.0 (59.5%), year 4, 124.5 (62.3%), year 5, 123.0 (61.5%), $P>0.05$. The mean score for all participants for the subscale of perception of learning was 30.7/48 (64.0%). Based on the guideline for rating, this interprets as ‘a more positive perception.’ Under the subscale of perception of teachers, the average score for all participants was 26.73/44 (60.8 %), interpreted as ‘moving in the right direction.’ Details of other subscale scores are presented in table 1. In figures 1 to

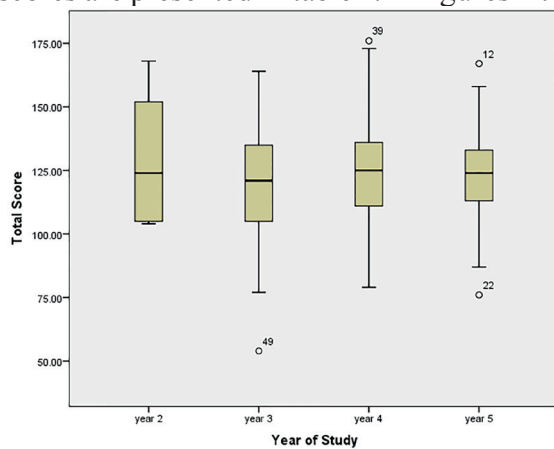


Figure 1. Global DREEM scores for the 4 Physiotherapy classes.

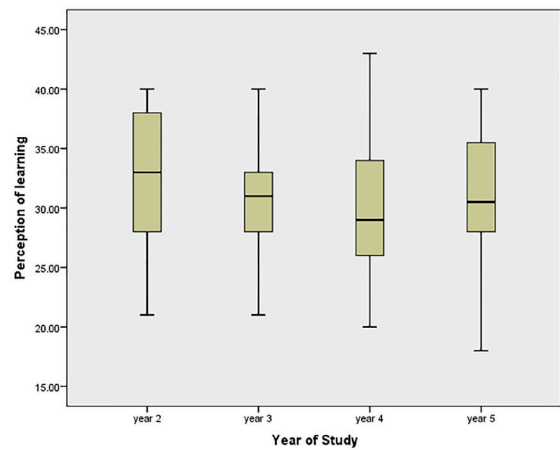


Figure 2. DREEM scores for the 4 classes in the subscale of Perception of learning.

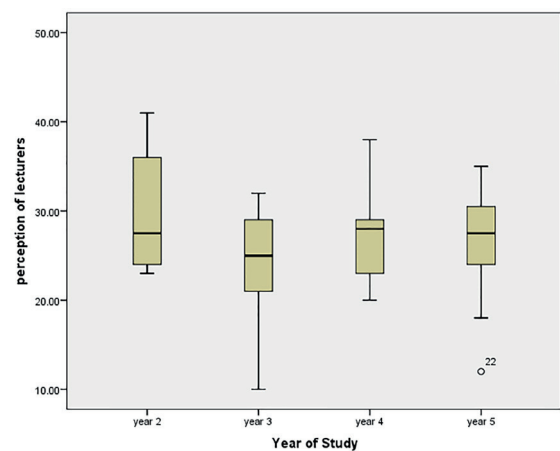


Figure 3. DREEM scores for the 4 physiotherapy classes in the subscale of Perception of teachers (lecturers).

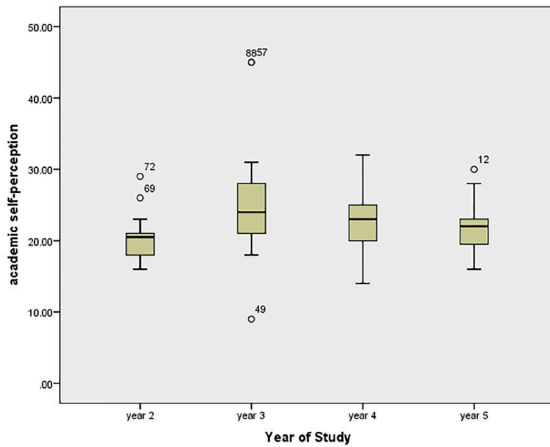


Figure 4. DREEM scores for the 4 physiotherapy classes in the subscale of academic self-perception.

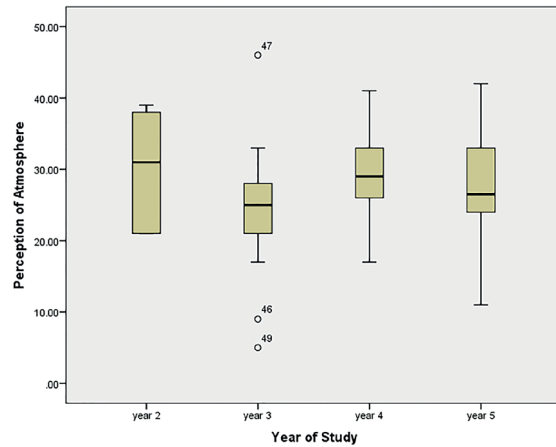


Figure 5. DREEM scores for the 4 physiotherapy classes in the subscale of perception of atmosphere.

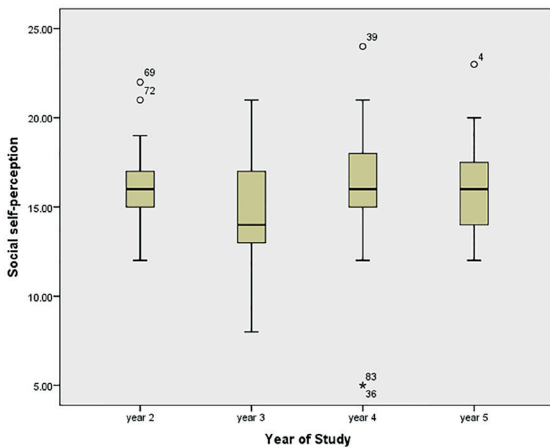


Figure 6. DREEM scores for the 4 physiotherapy classes in the subscale of social self-perception.

6, the total and subscale scores for the four classes are presented as box plots.

In table 2, the mean scores on each of the 50 items are presented, arranged according to their subscales. Nine items with scores less than 2.0/4.0 represent problem areas and are highlighted in bold. These issues include inadequate social support system for stressed students (item 3) a boring learning context (item 14), authoritarian posture of the lecturers (item 9), factual overload (item 25), and unpleasant accommodation. The subscales of perception of atmosphere and social self-perception had the most issues.

Table 2. Mean scores on individual DREEM items with 9 items scoring below 2.0 highlighted in bold

Item#	Statement	Mean score	SD
SUBSCALE 1. STUDENTS' PERCEPTION OF LEARNING (SPL)			
1	I am encouraged to participate in teaching sessions	3.2473	.71712
7	The teaching is often stimulating	2.2903	.98445
13	The teaching is learner centred	2.5376	.82829
16	The teaching helps to develop my competence	2.9247	.89972
20	The teaching is well focused	2.5699	.79943
22	The teaching helps to develop my confidence	2.9570	.75056
24	The teaching time is put to good use	2.4194	1.09666
25	The teaching over emphasizes factual learning	1.6022	1.00152
38	I am clear about the learning objectives of the programme	2.6129	1.06355
44	The teaching encourages me to be an active learner	2.5699	1.12673
47	Long term learning is emphasized over short term learning	2.5376	1.15682
48	The teaching is too teacher centred	2.4301	.90166
SUBSCALE 2. STUDENTS' PERCEPTION OF TEACHERS (SPT)			
2	The teachers are knowledgeable	3.0860	.68613
6	The teachers espouse a patient centred approach to consulting	2.4409	.80030
8	The teachers ridicule the learners	2.0645	.91849

9	The teachers are authoritarian	1.6022	1.06465
18	The teachers have effective communication skills	2.8280	.82914
29	The teachers are good at providing feedback to students	2.2258	1.05428
32	The teachers provide constructive criticism here	2.5054	.90438
37	The teachers give clear examples	2.6022	.87402
39	The teachers get angry in teaching sessions	2.3441	1.25538
40	The teachers are well prepared for their teaching sessions	2.4839	1.00664
50	The students irritate the teachers	2.5484	1.04794
SUBSCALE 3. STUDENTS' ACADEMIC SELF-PERCEPTION (ASP)			
5	Learning strategies which worked for me before continue to work for me now	2.0860	.97419
10	I am confident about passing this year	3.3011	1.02983
21	I feel I am being well prepared for my profession	3.0108	.68357
26	Last year's work has been a good preparation for this year's work	3.3118	4.69500
27	I am able to memorize all I need	1.9785	1.11295
31	I have learned a lot about empathy in my profession	3.0968	.76705
41	My problem solving skills are being well developed here	2.7204	.91325
45	Much of what I have to learn seems relevant to a career in healthcare	3.0323	.94927
SUBSCALE 4. STUDENTS' PERCEPTION OF ATMOSPHERE (SPA)			
11	The atmosphere is relaxed during teaching	2.1613	1.20948
12	The course is well timetabled	1.8065	1.11568
17	Cheating is a problem in this course	2.2688	1.27807
23	The atmosphere is relaxed during lectures	2.2151	1.04100
30	There are opportunities for me to develop interpersonal skills	3.0108	.84048
33	I feel comfortable in teaching sessions socially	2.7419	.84575
34	The atmosphere is relaxed during seminars/tutorials	2.1720	.91632
35	I find the experience disappointing	2.6129	1.11348
36	I am able to concentrate well	2.2473	1.10980
42	The enjoyment outweighs the stress of studying physiotherapy	1.7957	1.22970
43	The atmosphere motivates me as a learner	1.9570	1.26761
49	I feel able to ask the questions I want	2.6559	.98350
SUBSCALE 5. STUDENTS' SOCIAL SELF-PERCEPTION (SSP)			
3	There is a good support system for students who get stressed	1.4194	.91274
4	I am too tired to enjoy this course	2.3763	1.12205
14	I am rarely bored on this programme	1.8817	1.09196
15	I have good friends in this course	3.1290	.78333
19	My social life is good	2.9677	1.02630
28	I seldom feel lonely	2.0538	1.51346
46	My accommodation is pleasant	1.7742	1.39976

Discussion

The results from this study show that the students rated the learning environment of the physiotherapy programme of the School of Medicine, University of Zambia, as 'more positive than negative.' The mean global DREEM score of 123.2/200 (61.6 %) compares favourably with other DREEM studies in undergraduate physiotherapy programmes in Africa. For example, Odole et al (10) reported a global DREEM score of 132 from

studies at the University of Ibadan, Nigeria. Outside Africa, Veasuvalingan and Arzuman (11) reported a global score of 132.84 from Malaysian physiotherapy students. The scores were also comparable to values reported by similar studies in other health professions educational programmes (12, 13). However, Olawale (7) reported a more impressive score of 158.69 when the DREEM was used to assess the educational environment of physiotherapy students of the University of Lagos, Nigeria. The scores within the subscales were also

comparable to results from the few studies carried out in Africa and India (14, 15).

In general, the global and subscale scores suggest that the students were satisfied with the learning environment of the programme. However, more critical analysis suggests that these students study under stressful conditions and a number of issues needed to be addressed to improve the learning environment. These issues include lack of social support for stressed students, authoritarian nature of the lecturers, overemphasis on factual learning, the quality of the students' living conditions, and the structure of the programme. Three of these issues, lack of support for stressed students, overemphasis on factual learning, and authoritarian attitude of lecturers, appear to be common problems in health professions education in developing countries (16, 17). The issues need deeper exploration in order to understand the underlying factors and to provide enduring solutions. Health professions education is associated with much stress, and stress could produce positive or negative effects on learners depending on the effectiveness of its management (18). Therefore, education of the learners on stress coping strategies and provision of other social support services would be desirable. The recurrent issue of authoritarianism in classrooms calls for concern in healthcare educational institutions in developing countries. Perhaps, as a supplement to the huge investments in educational innovation in medical schools, more emphasis should be placed on the teachers' beliefs and attitudes as a means of promoting effective learning environments (19). Health professions education is based on factual learning. However, factual overemphasis inhibits deep learning and acquisition of competencies (20, 21). To promote competency based education and satisfactory learning, content revision might be advisable. Kettunen (22) emphasized the importance of students' satisfaction in managing for quality in higher education. According to Stukalina (23), quality is a critical factor in modern higher education management.

This article adds to the evolving literature on educational environment measurement in Africa and in physiotherapy education in particular. It recognized the key issues affecting physiotherapy education in Zambia to include the triad of lack of social support, teacher authoritarianism, and factual overload which are pervading issues in health sciences education in developing countries.

The limitation of this study is that the design was primarily quantitative. A qualitative study is recommended for a deeper exploration of the issues raised. Such a study may also be extended to the academic and non-academic staff for a more inclusive understanding of the issues impinging on teaching and learning in the undergraduate physiotherapy programme.

Conflict of Interest

The author declares no conflict of interest.

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