

Medical students' Perceptions of the Educational Environment in an Offshore Indian Campus of a Malaysian Medical School

Bhat, P.P.¹, Rajashree, R.², Javali, S.B.³, Rajasekar, H.B.⁴

Abstract

Background: Educational environment is one of the main determinants of student learning, especially in a student-centered curriculum. This study was undertaken as a mid-program evaluation of the educational environment of a new medical program - USM-KLE International Medical Programme (USM-KLE IMP), which is an offshore campus of Universiti Sains Malaysia. The program follows an innovative, integrated, curriculum having Problem Based Learning as prescribed by the Malaysian university, and commenced in 2010.

Methods: Towards the end of the academic year 2012-13, the Dundee Ready Education Environment Measure (DREEM) inventory was administered to the undergraduate medical students of all three years.

Results: Out of 186 students, 177 (95%) responded, 33.33% (n=59) were males and 66.66% (n=118) females. The mean scores in the domains of students' perceptions of learning, perceptions of teachers, academic self-perceptions, perceptions of atmosphere, social self-perceptions and total mean DREEM scores were 33.2 (Maximum 48), 29.6 (Maximum 44), 21.9 (Maximum 32), 34.1 (Maximum 48), 18.1 (Maximum 28) and 137 (Maximum 200), respectively. The highest score was for the item "the faculty are knowledgeable" with a mean score of 3.44 ± 0.64 . Twelve items had scores of more than 3.0, and three items had scores below 2.0.

Conclusion: The results of the study indicate that the perception of USM-KLE IMP students towards their educational and learning environment is "more positive than negative" and that the program is moving in the right direction.

Key words: Programme evaluation, DREEM

Introduction

Effective student learning is dependent on many factors, out of which the educational environment is of prime importance (Genn, 2001a; 2001b; Hutchinson, 2003).

It is agreed among medical educators that the effects of the educational environment, both academic and clinical, are important determinants of medical students' attitudes, knowledge, skills, progression and behaviors. An educational environment comprises the 'conditions, forces, or factors within or exogenous to an educational setting capable of influencing the setting or those within it', and these may or may not be part of the formal educational governance system (Marchant, 2013). Studies have highlighted the importance of understanding the educational environment for effective management of learning development and change within the health professions. The quality of the educational environment is indicative of the effectiveness of an educational program. Educational environment sub-scales correlate positively with academic success, and satisfaction with educational programs. Meaningful learning occurs when the educational environment is suitable and conducive according to the

¹MD (Biochemistry), FAIMER fellow, PGDHPE
Associate Professor, Department of Biochemistry

²PhD (Neurophysiology), PGDHPE
Assistant Professor, Department of Physiology

³PhD, MPhil
Associate Professor in statistics, Department of Community
Medicine

⁴MD (General Medicine), FRCP (Edin)
Director, USM-KLE International Medical Programme

Corresponding Author:
Dr. Parineetha P Bhat
Professor, Department of Biochemistry
The Oxford Medical College, Hospital and Research
Center, Karnataka, India

Email: drparibhat@gmail.com

students' perceptions. These perceptions can be a basis for implementing modifications and thereby bring about necessary changes in the educational environment (Aghamolaei & Fazel, 2010).

Context and setting

The 'USM-KLE International Medical Programme' (USM-KLE IMP) is an offshore campus of University Sains Malaysia (USM). The university has its School of Medical Sciences located in Kubang Kerian, Malaysia. This offshore 5-year Doctor of Medicine (M.D.) program is conducted at Belgaum, Karnataka, India. The curricula being followed in both the medical schools are similar. Upon completion of their studies, students are awarded the USM M.D. degree. The course is customized to the needs of a medical career in Malaysia. The five-year course is designed to be integrated, problem-based and community oriented (Arzuman, 2011). The program is divided into 3 phases. Phase I - 1st year; Phase II - 2nd and 3rd years; Phase III - 4th and 5th years.

The instructional methodology is student centered including different teaching learning methodologies such as problem based learning and small group discussions, which contrast with the traditional teacher-centered, large group teaching which occurs in most of the medical schools in India. The curriculum is based on the SPICES model (Student oriented, Problem-based, Integrated, Community oriented, Electives, and Systematic). There is both horizontal and vertical integration of subjects/disciplines (Arzuman, 2011). It commenced in 2010 and the first batch of students has just completed the third year IN 2013.

Need for the study

In a student-centered curriculum, the quality of the educational environment is a key determinant of student learning. Moreover, the World Federation for Medical Education (WFME) in its Global Standards for Quality improvement of Basic Medical Education has underlined the importance of evaluation of the educational environment as an important component of program appraisal of medical education programs (WFME, 2012). The USM-KLE IMP being a new program, it was essential that the program be evaluated periodically and at regular intervals to look for successful implementation of the program.

Various efforts have been made to measure the quality of the educational environment. Most of the studies include the use of questionnaires

(Seabrook, 2002; Whittle *et al.*, 2007) and more recently the use of qualitative approaches (Whittle *et al.*, 2007). Of these, the Dundee Ready Educational Environmental Measure (DREEM) (Roff, 1997) inventory is specific to the unique environment experienced by undergraduate students in medical and healthcare related courses. It is non-culturally specific and allows quality assurance comparisons between courses as well as within components of a course (Whittle *et al.*, 2007). Many studies have evaluated and validated this inventory. (Denz-Penhey *et al.*, 2009; Bassaw *et al.*, 2003; Till, 2004) This paper reports a mid-program evaluation of the education environment using the DREEM inventory.

The specific aims of this study were

1. To know the perceptions of undergraduate medical students regarding the education environment in an offshore international medical program using the DREEM inventory
2. To identify the probable problem areas, that can help plan for further remedial action
3. To identify whether there is any difference between the perceptions of students according to the years spent in medical education- Years-1/2/3
4. To identify whether there are any differences, in perception, between the males and females.

Methods

The institutional ethical committee approved the study proposal. The participants included all students studying at USM-KLE International Medical Programme. Written informed consent was obtained from the participants using separate forms in which the purpose of the study and its consequences were clearly explained. Clear instructions were given to all participants of the study. The data collection was done in the month of June 2013.

The DREEM inventory contains 50 statements relating to a range of topics directly relevant to education climate. Pre-validation was done to look for the understanding of the statements by administering the DREEM inventory to five students from each batch (n=15). The students were asked to comment on the statements, which they found difficult to understand. Following their suggestion, a list of difficult words (nine words like espouse, authoritarian etc.) along with their meaning (in English and

Malay language) was attached to the inventory. This inventory was administered to all the 186 students studying at USM-KLE IMP. The analysis of data was done using the guide developed by McAleer and Roff (2001).

Each of the 50 items is scored 0-4 on a 5-point Likert scale, with 4 for Strongly Agree, 3 for Agree, 2 for Uncertain, 1 for Disagree and 0 for Strongly Disagree. Negative statements are scored in reverse, so that high scores on these items indicate disagreement i.e. a positive result. The statements are also subdivided to provide an indication of student perceptions of five separate elements of the educational environment:

1. Perceptions of learning (PoL)
(12 questions, Maximum score: 48)
2. Perceptions of teachers (PoT)
(11 questions, Maximum score: 44)
3. Academic self- perception (ASP)
(8 questions, Maximum score: 32)
4. Perceptions of atmosphere (PoA)
(12 questions, Maximum score: 48)
5. Social self- perceptions (SSP)
(7 questions, Maximum score: 28)

The inventory yields two types of information: mean total scores for the 50-item scale or each of its five subscales, and individual item mean scores for each of the 50 items. The overall score can range from 0-200; the maximum score indicating an ideal educational environment as perceived by the student. An overall score between 0-50 considered as "very poor", between 51-100 as "plenty of problems", between 101-150 as "more positive than negative", and between 151-200 as "excellent". Further one can look at the individual item scores and items that have a mean score of 3.5 or over are real positive points. Any item with a mean of 2 or less should be examined more closely as they indicate problem areas. Items with a mean between 2 and 3 are aspects of the climate that could be enhanced. These scores can also be used in conjunction with other variables like gender and year of study, and the results can be used to identify strengths and weaknesses in the institution's educational environment as perceived by the students.

Data Analysis

The data on each item were entered into the SPSS 21.0 version statistical software. In order to develop a continuous variable that could be utilized and for the convenience of statistical

analysis, the total DREEM score was estimated by computing 4 for strongly agree, 3 for agree, 2 for uncertain, 1 for disagree and 0 for strongly disagree for the positive items and the reverse scores were given for the negative items. The total mean DREEM scores for the different years and gender, the mean scores for the different domains according to year and gender were calculated. The independent sample t-test was performed to determine if a statistical difference existed between the two sample means (male and female). One way ANOVA test was used to test the difference between more than two sample means (years of study and domains). The statistical significance was set at 5% level of significance ($p < 0.05$).

Results

Out of the 186 students enrolled at USM-KLE IMP, 177 (95%) responded. The response rates were 100% (44/44), 91% (76/83), 96.6% (57/59) for years 3, 2 and 1 respectively. Further, 33.33% ($n=59$) of the respondents were males. The total mean DREEM score was 136.9 ± 15 . The mean scores for the five domains of the DREEM questionnaire according to the years of study and gender are presented in Table 1. The total mean DREEM score of year 2 was slightly higher (139.8 ± 15) as compared to year 1 (135.3 ± 14) and year 3 (133.7 ± 17). The difference was found to be not statistically significant ($p > 0.05$). The total mean DREEM score of males (138.7 ± 20) was higher when compared to females (135.8 ± 12), but the difference was not statistically significant (p value > 0.05). The domain scores of students of different years and gender were compared and the differences were not statistically significant (p value > 0.05).

The domain scores for all the participants ($n=177$) were compared on a percentage basis (Table 1) because of the different maximum score for individual domains. The highest percent score is for students' POA (71%) and the lowest percent score is for students' SSP (64.6%). The scores were also compared based on the individual items. Of the 50 mean item scores, twelve items had mean scores of 3.0 and more, three items had mean scores of 2.0 and below for all the students, as shown in Table 2.

The students scored item no. 2 "the faculty are knowledgeable" the highest, with a mean (SD) score of 3.44 (0.63), and the next item with a mean (SD) score of 3.28 (0.64) was item no.15 "I have good friends on this course". At the other end, the item with the lowest mean (SD) score of 1.79 (0.96) was item no.25 "the teaching emphasizes factual learning".

Discussion

The total mean score of 137/200 (Table 1) is “more positive than negative” though not “excellent”. This score is comparable to the total mean scores achieved in different international schools like Dundee (139)(Al-Hazimi *et al.*, 2004), Koirala Institute of Health Sciences, Nepal (130) (Roff *et al.*, 2001), KSAU-HS, Saudi Arabia (131) (Zawawi & Elzubeir, 2012), International Medical University, Malaysia (133) (Lai *et al.*, 2009) and Monash University, Australia (137) (Brown, 2011). Further, the perceptions did not change significantly depending on the number of years spent in medical education (Table 1). Though in some studies (Lokuhetty *et al.*, 2010) there are some significant differences in the perceptions of male and female students such a finding is not evident in the present study (Table 1).

To better define the weakness and strengths, the five domain mean scores were comparatively interpreted (Table 1). According to the guide of McAleer and Roff (2001), all the

students perceive “a more positive approach” (34/48) for their learning, “moving in the right direction” (29/44) for their teachers, “feeling more on the positive side” (22/32) for their academic self-perception, “a more positive attitude” (34.1/48) for the atmosphere and “not too bad” (18.2/28) for their social self-perception (Table 1).

These sub scores are comparable to the scores of other medical schools (Demirören *et al.*, 2008) with innovative curricula. The domains, students’ PoA and PoL received higher scores compared to the other domains (Table 1), and this can be attributed to the non-traditional integrated, student-centered curriculum, which provides many opportunities for the students to interact and learn. The domain, students’ SSP received the lowest score (Table 1), and the reason for this could be that this institution being an offshore campus, all the students who are Malaysians are staying in a different country, India, which is culturally and socially different from their home country.

Table 1: Mean (SD) scores according to domains in all the years and according to gender

Domain (Maximum Score)	Year-1 (n=57)	Year-2 (n=76)	Year-3 (n=44)	Males (n=59)	Females (n=118)	All Students (n=177)	%
Perception of Learning (48)	33.0 (4.2)	33.7(4.2)	32.5(5.2)	33.9(6.0)	32.8(3.4)	33.18(4.5)	69.1
Perception of Teaching (44)	29.7 (3.7)	30.1(4.3)	28.4 (5.1)	29.2(5.0)	29.7(3.9)	29.59(4.3)	67.2
Academic Self Perception (32)	21.7(3.1)	22.3(3.3)	21.5(3.2)	22.7(4.0)	21.5(2.7)	21.9(3.25)	68.4
Perceptions of Atmosphere (48)	33.2(3.6)	35.1(4.5)	33.6(4.7)	34.9(5.2)	33.7(3.8)	34.1(4.3)	71
Social Self Perception (28)	17.7(3)	18.6(2.7)	17.7(2.9)	18.0(3.3)	18.1(2.6)	18.11(2.8)	64.6
Total DREEM Score (200)	135.3(14)	139.8(15)	133.7(17)	138.7(20)	135.8(12)	136.9(15)	68.4

In the present study, no item received a mean score ≥ 3.5 (Table 2), which shows that there is scope for improvement in all the domains of the environment. The main strengths of the program can be deduced from the twelve statements that received scores of ≤ 3.0 as given in Table 3. The main strengths being in the curricular delivery aspects that relate to the faculty- that the faculty are knowledgeable, go well prepared for their teaching sessions, who

encouraged students to participate during teaching sessions, encourage students to be active learners, make the teaching sessions comfortable and conducive for asking questions and also do not give scope for cheating.

Other strengths are related to the curricular contents itself like relevant content, student centered, curriculum that teaches empathy and

helps students to develop competence. The atmosphere is also motivating, providing opportunities to develop good friends. All these strengths are usually seen in non-traditional integrated curricula that have different instructional methodologies like; problem based learning and small group teaching. On the other hand, three items that received mean scores of less than 2.0 (Table 2) are, "The faculty are authoritarian", "The teaching over

emphasizes factual learning", and "I am able to memorize all I need". The first two statements point towards a lingering background of traditional curriculum where the faculty sometimes could be more authoritarian emphasizing more factual learning. Lower scores on the third statement could be because the students realize the vastness of the subject which is difficult to memorize.

Table 2: Individual item scores for all participants (n=177)

Items	Mean	SD
Students' perceptions of learning		
1 I am encouraged to participate during teaching sessions	3.06	0.67
7 The teaching is often stimulating	2.85	0.74
13 The teaching is student centered	2.79	0.83
16 The teaching helps to develop my competence	3.10	0.73
20 The teaching is well focused	2.88	0.77
22 The teaching helps to develop my confidence	2.98	0.71
24 The teaching time is put to good use	2.93	0.80
25 The teaching over emphasizes factual learning	1.79	0.96
38 I am clear about the learning objectives of the course	2.63	0.86
44 The teaching encourages me to be an active learner	3.01	0.69
47 Long term learning is emphasized over short term learning	2.90	0.81
48 The teaching is too teacher centered	2.28	0.93
Students' perception of teaching		
2 The faculty are knowledgeable	3.44	0.64
6 The faculty espouse a patient centered approach to consulting	2.70	0.70
8 The faculty ridicule the students	2.73	0.90
9 The faculty are authoritarian	1.85	1.10
18 The faculty have good communication skills with patients	2.69	0.86
29 The faculty are good at providing feedback to students	2.58	0.94
32 The faculty provide constructive criticism here	2.50	0.83
37 The faculty give clear examples	2.85	0.66
39 The faculty get angry in teaching sessions	2.65	0.97
40 The faculty are well prepared for their teaching sessions	3.03	0.77
50 The students irritate the faculty	2.55	1.03
Students' academic self-perceptions		
5 Learning strategies which worked for me before continue to work for me now	2.49	0.92
10 I am confident about my passing this year	2.80	0.75
21 I feel I am being well prepared for my profession	2.63	0.77
26 Last years work has been a good preparation for this years work	2.84	0.75
27 I am able to memorize all I need	1.82	0.87
31 I have learnt a lot about empathy in my profession	3.19	0.73
41 My problem solving skills are being well developed here	2.94	0.64
45 Much of what I have to learn seems relevant to a career in healthcare	3.21	0.63

Students' perceptions of atmosphere			
11	The atmosphere is relaxed during clinical teaching	2.45	0.87
12	This course is well timetabled	2.68	0.95
17	Cheating is a problem on this course	3.29	0.97
23	The atmosphere is relaxed during lectures	2.88	0.74
30	There are opportunities for me to develop interpersonal skills	2.95	0.70
33	I feel comfortable in teaching sessions socially	3.01	0.55
34	The atmosphere is relaxed during seminars / group discussions	2.81	0.80
35	I find the experience disappointing	2.91	0.85
36	I am able to concentrate well	2.60	0.80
42	The enjoyment outweighs the stress of the course	2.55	0.92
43	The atmosphere motivates me as a learner	2.96	0.67
49	I feel able to ask the questions I want	3.02	0.74
Students' social self-perceptions			
3	There is a good support system for students who get stressed	2.42	0.88
4	I am too tired to enjoy the course	2.59	0.90
14	I am rarely bored on this course	2.07	1.17
15	I have good friends on this course	3.30	0.64
19	My social life is good	3.02	0.68
28	I seldom feel lonely	2.13	1.09
46	My accommodation is pleasant	2.59	1.12

Table 3: Items with a mean score of 3.0 and more– strengths of the program

Item no*	Item
2	The faculty are knowledgeable
15	I have good friends on this course
17	<i>Cheating is a problem on this course (reversed)</i>
45	Much of what I have to learn seems relevant to a career in healthcare
31	I have learnt a lot about empathy in my profession
16	The teaching helps to develop my competence
1	I am encouraged to participate during teaching sessions
40	The faculty are well prepared for their teaching sessions
49	I feel able to ask the questions I want
19	My social life is good
44	The teaching encourages me to be an active learner
33	I feel comfortable in teaching sessions socially

*Items arranged according to decreasing order of mean scores as given in Table-2

Conclusion

This study being a mid-program evaluation, reveals that the program is moving in the right direction according to the students, in all the domains, and there are only a few areas of concern that need to be addressed. The mean DREEM score is comparable to any other international medical school. This study also provides scores that can be used as baseline scores during future evaluation of the program. Overall, the positive perceptions outweigh the negative perceptions at USM-KLE IMP.

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