

## Original Article

# Evaluation of the Learning and Teaching Environment of the Faculty of Medical Sciences, College of Medicine, University of Nigeria, Enugu Campus

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### ABSTRACT

**Purpose:** The study aimed at evaluating the learning and teaching environment of undergraduate students of the Faculty of Medical Sciences, University of Nigeria. **Methods:** The study was a descriptive, cross-sectional survey. The Dundee Ready Education Environment Measure (DREEM) questionnaire was self-administered to the final year medical students during the second semester of 2013/2014 academic year. The 50-items of the questionnaire were sub-divided into five sub-groups: perception of learning, perceptions of teachers, academic self-perceptions, perceptions of atmosphere, and social self-perceptions. **Results:** The questionnaire was completed by 128 out of the 139 students (92.1%). Of the maximum score of 200, the total mean score was  $101.82 \pm 20.36$  SD. The mean  $\pm$  SD score of students' perception of learning was  $25.97 \pm 4.18$  (maximum score, 48). The mean  $\pm$  SD score of teachers was  $24.40 \pm 4.74$  (maximum score, 44), whereas that of students' academic self-perception, perception of atmosphere, and social self-perception was  $19.96 \pm 5.29$  (maximum score, 32),  $19.02 \pm 7.69$  (maximum score, 48), and  $11.86 \pm 4.22$  (maximum score, 28), respectively. **Conclusion:** The overall mean score shows that the students' perception of their learning environment was more positive than negative according to the practical guide of McAleer and Roff on the interpretation of DREEM questionnaire. However, there are problematic areas revealed by this study that will inform policy formulation and remedial intervention.

**KEYWORDS:** *Environment, learning, medical students, nigeria, teaching*

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## INTRODUCTION

The assessment of the learning and teaching environment is a vital and effective means of acquiring student feedback that ultimately benefits students, teaching staff, and university administrators alike. In the field of education, a curriculum is broadly defined as the totality of student experiences that occur in the education process.<sup>[1]</sup> The curriculum's most significant manifestation is the educational and organizational environment, which encompasses everything that happens at the educational institution. There is a proven connection between the environment and students' achievement, satisfaction, and success.<sup>[2]</sup>

Research surveys evaluating the impact of students' perception fall within the 3P model proposed by Biggs.<sup>[3]</sup> This model conceptualizes the learning process as an interactive system comprised of three sets of variables: the learning environment and student characteristics (presage), students' approach to learning (process), and learning outcomes (product). Furthermore, this model proposes that presage factors (for example, perceptions of the learning environment) can also directly influence learning outcomes. According

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to Bloom, the learning environment is a network of physical, social, as well as intellectual forces and factors that surround, engulf, and present a challenge to individual students.<sup>[4]</sup>

According to Genn, “Considerations of the climate in the medical school, along the lines of continuous quality improvement and innovation, are likely to further the medical school as a learning organization with the attendant benefits.”<sup>[2]</sup> The Dundee Ready Education Environment Measure (DREEM) was developed to assess such an environment and is widely used to evaluate the educational climate in health and medicine.<sup>[5]</sup> Several investigators within<sup>[6]</sup> and outside Africa<sup>[7]</sup> have reported variable favorable and positive findings with regard to the perceptions of medical students’ of their learning environment by using DREEM as the research instrument. However, to the best of our knowledge, no data are currently available in Nigeria on the perception of medical students of their learning and teaching environment. This study aims to highlight scientifically some of the problems with the teaching environment that faculty had over the years observed/known anecdotally as well as seeking to fill the gap in information by making both a theoretical and practical contribution to the existing literature on this topic with a focus on Nigeria. The findings of this survey will be useful for evidence-based interventional/remedial policy formulation and effective implementation by stakeholders in medical education, which in turn will improve the quality of academic learning and output among this subset of university students in Nigeria.

## METHODS

### Study participants

The University of Nigeria was founded in 1955 and was open for academic activities in 1960. Located in the southeastern geo-political zone of Nigeria, it comprises the Nsukka and Enugu campuses. The faculty of medical sciences is one of the five faculties at the College of Medicine, University at Enugu. The College of Medicine runs a 6-year (divided into two semesters) program for medical and dental students, which is divided into an initial 3 years of pre-clinical studies and 3 years of clinical studies. It is headed by the Dean at the faculty level and a Provost at the college level.

A cross-sectional descriptive survey was performed to assess the medical students’ perception of their learning and teaching environment. Students who had spent a minimum of 2 years at the Faculty of Medical Sciences, University of Nigeria, and who consented to participate in the study were included. The study population consisted of all final year (6<sup>th</sup> year) medical students on

block posting in the second semester of the 2013–2014 academic year.

### Study instrument

The study instrument was the English version of the DREEM questionnaire [Appendix 1]. DREEM is a questionnaire with 50 items that assesses five domains:<sup>[8]</sup> students’ perception of learning (12 items, with a maximum score of 48), students’ perception of teachers (11 items, with a maximum score of 44), students’ academic self-perception (8 items, with a maximum score of 32), students’ perception of the atmosphere (12 items, with a maximum score of 48), and students’ social self-perception (7 items, with a maximum score of 28). Each item is rated on a five-point Likert scale from 0 to 4, where 0 = strongly disagree, 1 = disagree, 2 = unsure, 3 = agree, and 4 = strongly agree. There are nine negative items (items 4, 8, 9, 17, 25, 35, 39, 48, and 50), which are corrected by reversing the scores; thus, after correction, higher scores indicate disagreement with the corresponding item. Items with a mean score of  $\geq 3.5$  are considered to represent “true positive points” of the environment; those with a mean score of  $\leq 2$  are considered to indicate problem areas; scores in between these two limits indicate aspects of the environment that could be enhanced. The maximum global score for the questionnaire is 200, and the global score is interpreted as follows: 0–50 = very poor; 51–100 = many problems; 101–150 = more positive than negative; 151–200 = excellent.<sup>[2]</sup>

After the approval by the Ethics and Health Research Committee of the University of Nigeria Teaching Hospital, Enugu, DREEM, along with a respondent information sheet, was handed to all the students present in the class during a routine lecture. The information sheet gave a brief introduction of the aim of the study and of DREEM. The questionnaire was anonymous; it was to be voluntarily self-administered. Since it was anonymous, a separate consent form was not collected. In the event that questionnaires were returned filled, consent was implicit; non-consent was presumed when questionnaires were returned blank. The data were handled and stored in accordance with the tenets of the Declaration of Helsinki (1964, amended in 2008).

### Statistical analysis

The data were entered into a Microsoft Excel spreadsheet (Microsoft Co., Redmond, WA, USA), and Statistical Package for Social Sciences version 17.0 (SPSS Inc., Chicago, IL, USA) was used for analysis. The mean and standard deviation were calculated for all of the items. For each of the five domains, scores were calculated as the cumulative total of individual responses for all of the items in that

domain; for the comparison of the domain scores, the scores were expressed as the percentage of the maximum score possible.

## RESULTS

Of the 139 students present, 129 returned a completed form, so the participation rate was 92.1%.

The total mean score was  $101.82 \pm 20.36$  (maximum score, 200). The mean score for students' perception of teaching/learning was 25.97 (maximum

score, 48). The mean score for students' perception of teachers was  $24.40 \pm 4.74$  (maximum score, 44), whereas that for students' academic self-perception, perception of the atmosphere, and social self-perception was  $19.96 \pm 5.29$  (maximum score, 32),  $19.02 \pm 7.69$  (maximum score, 48), and  $11.86 \pm 4.22$  (maximum score, 28), respectively.

Table 1 shows the interpretation of the mean scores of the DREEM subscales.

Table 2 shows a profile of the problem areas.

None of the items have mean scores which indicated that they represented "true positive points" of the environment.

**Table 1: Interpretation of the scores for the DREEM subscales**

Subscale	Mean±Standard Deviation	Interpretation
Perception of learning	25.97±4.18	Progressing in the right direction
Perception of teachers	24.40±4.74	Progressing in the right direction
Academic self-perception	19.96±5.29	More positive than negative
Perception of the atmosphere	19.02±7.69	More positive than negative
Social self-perception	11.86±4.22	Not a positive environment

**Table 2: Profile of problem areas (mean≤2) of learning environment among the medical students**

Subscale Items	Mean score±SD
Students perception of Teachers	
The teachers are good at providing feedback	1.41±1.08
The teachers get angry in class	1.70±1.09
The students irritate the teachers	1.78±1.08
Students' Academic Self perception	
I am able to memorize all I need	1.80±1.20
Students' perception of atmosphere	
The atmosphere is relaxed during the lectures	1.18±1.27
I feel able to ask the questions I want	1.91±1.20
The atmosphere is relaxed during seminars/tutorials	1.71±1.31
The enjoyment outweighs the stress of studying medicine	0.81±1.07
The atmosphere motivates me as a learner	1.31±1.09
I am able to concentrate well	1.71±1.21
The atmosphere is relaxed during ward teaching	1.24±1.14
The school is well timetabled	1.46±1.27
I find the experience disappointing	1.83±1.17
Cheating is a problem in this school	1.22±1.29
Students' perception of social Atmosphere	
There is a good support system for students who get stressed	0.88±1.17
I am too tired to enjoy this course	1.67±1.25
I am rarely bored on this course	1.58±1.21
My accommodation is pleasant	0.88±1.19
I seldom feel lonely	1.99±1.31

## DISCUSSION

Obtaining student feedback is not only a relatively simple procedure, but is also the one that has considerable credibility for several reasons. First, a number of raters provide their input, so its reliability is usually quite high.<sup>[9]</sup> Second, ratings are provided by those who have consistently observed the teacher over many hours, so they are based on representative behavior. Finally, observations about student learning, the object of instruction, are made by those who have been personally affected and therefore have high face validity.<sup>[9]</sup>

With regard to the present survey, students were keen on completing the questionnaire, as evidenced by the high participation rate of 92.1%. This is lower but comparable to that of a similar study conducted at Suez Canal University (96.9%).<sup>[6]</sup> The high participation rate in both studies is probably a result of the brief explanation of the purpose of study that was provided to the students and their belief that the study outcomes could influence a positive change in their learning environment. This is in contrast to the low response rate of 44.6% reported in a similar study at King Saud University.<sup>[10]</sup> The low participation in their study was probably because the students were afraid of participating and of its impact on their exam results (as a reflection of the authoritarian atmosphere in the school, evidenced by the lower DREEM score of 89.9).<sup>[10]</sup> Thus, optimal research atmosphere enhanced by creating confidence among study participants is suggested to improve participation rates especially in students-related surveys.

The total mean DREEM score in this study (101.82) is interpreted according to the practical guide by McAleer and Roff as being more positive than negative (101–150).<sup>[11]</sup> This is lower than the overall DREEM scores reported for the Faculty of Medical Sciences at Suez Canal University in Egypt (113.3),<sup>[6]</sup>

Nepalese Medical School (130),<sup>[12]</sup> Dundee Medical School (139),<sup>[13]</sup> and Miles and Leinster United Kingdom (142.9).<sup>[14]</sup> On the other hand, our DREEM scores were higher than those reported at King Saud University Medical School (89.9).<sup>[10]</sup> Overall, higher values of DREEM score are obtained in the medical schools in the west<sup>[13,14]</sup> when compared with those of Africa<sup>[6]</sup> and middle east.<sup>[10,12]</sup> This could be a reflection of the difference in the socio-economic status of the two groups that in turn can influence the quality of human and infrastructural resources available to the institutions for optimal teaching and learning environment.

In this study, the subscale scores indicate that four of the five items were equally perceived to be moving in the right direction and perceived as more positive than negative. However, the scores for subscale 5 (social self-perception) indicated that the students were not very happy with this aspect of the environment. This is in agreement with the findings reported for medical students at Suez Canal University, Egypt, according to which the social self-perception score was 14.2.<sup>[6]</sup> Moreover, the College of Medicine, King Saud University, reported that the social perception subscale score was the lowest, with a mean score of 13.<sup>[10]</sup> Several other related studies have reported the academic self-perception subscale to have the lowest score.<sup>[12,15]</sup> All these findings may reflect the burden of the heavy academic curriculum in medical schools. Institutional policy changes and implementation that will encourage religious, sporting, and entertainment activities among medical students and provide a student-friendly curriculum are strongly recommended.

In this study, no individual item scored more than 3.5. This means that no item qualified as a “true positive point,” according to the practical guide of McAleer and Roff.<sup>[11]</sup> Although some items were interpreted as “aspects of the environment that could be enhanced,” a total of 19 items scored less than 2 and were interpreted as “problem areas” [Table 2]. Out of the 19 items, three belonged to subscale 2 (students’ perception of teachers), one belonged to subscale 3 (academic self-perception), ten belonged to subscale 4 (perception of the atmosphere), and five belonged to subscale 5 (social self-perception). The three lowest scores of 0.81 (enjoyment outweighs the stress of studying medicine), 0.88 (there is a good support system for students who are stressed), and 0.88 (I am rarely bored on this course) are all stress-related problem areas. In addition, the low score obtained in subscale 2 could be due to the defective instructional method and teacher’s attitude that potentially can precipitate a stressful atmosphere for the students. Clinical teachers need to be trained in providing constructive feedback

so that students are encouraged to take responsibility for their own learning.<sup>[16,17]</sup> Ability to give a timely and specific feedback is an important skill that sets students on the right path to learning. Excessively harsh criticism, on the other hand, or the absence of feedback of any kind, is considered to be discouraging and damaging to students’ self-confidence.<sup>[18]</sup> At a glance, most problem areas are as seen in subscale 4 border on the atmosphere of study. As collaborated by Youssef *et al.*, these findings reveal an obviously dysfunctional medical educational system that underscores the contradiction to our innovative educational pattern, with an overemphasis on factual learning and disconnect from the complaints of the students.<sup>[6]</sup> A comprehensive policy review involving all educational stake-holders (students, teachers and the government) that targets specific problem areas is hereby suggested.

Although this study has concentrated on a single center, single-class evaluation of students’ perception of learning and the teaching environment at a medical school/faculty of a Nigerian University, a multi-center study comparing different classes and centers in addition to the direct impact of these indices on academic performance will be worthwhile.

## CONCLUSION

The DREEM mean score for measurement of the learning and teaching environment at the medical school of the University of Nigeria Enugu was “more positive than negative.” Several individual items were interpreted as problem areas in four out of the five subscales of the study instrument. Therefore, there is a need for interventional policy formulation and implementation such as the provision of leisure and play facilities and the adjustment of medical school academic program to effectively address these problem areas, which will in turn help to improve the learning and teaching environment for medical students at this institution, and subsequently improve academic performance as well.

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## Conflicts of interest

There are no conflicts of interest.

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## APPENDIX 1

### The Dundee Ready Education Environment Measure (DREEM) Questionnaire

	Students' perception of learning	Scores
1	I am encouraged to participate in class	
7	The teaching is often stimulating	
13	The teaching is student-centered	
16	The teaching is sufficiently concerned to develop my competence	
20	The teaching is well focused	
22	The teaching is sufficiently concerned to develop my confidence	
24	The teaching time is put to good use	
25	The teaching over-emphasizes factual learning*	
38	I am clear about the learning objectives of the course	
44	The teaching encourages me to be an active learner	
47	Long-term learning is emphasized over short-term	
48	The teaching is too teacher-centered*	
Subtotal score		
	Students' perception of teachers	
2	The teachers are knowledgeable	
6	The teachers are patient with patients	
8	The teachers ridicule the students*	
9	The teachers are authoritarian*	
18	The teachers have good communications skills with patients	
19	The teachers are good at providing feedback to students	
32	The teachers provide constructive criticism here	
37	The teachers give clear examples	
39	The teachers get angry in class*	

Contd...

<b>Contd...</b>		<b>Scores</b>
<b>Students' perception of teachers</b>		
40	The teachers are well prepared for their class	
50	The students irritate the teachers*	
Subtotal score		
<b>Students' academic self-perception</b>		
5	Learning strategies which worked for me before continue to work for me now	
10	I am confident about my passing this year	
21	I feel I am being well prepared for my profession	
26	Last year's work has been a good preparation for this year's work	
27	I am able to memorize all I need	
31	I have learned a lot about empathy in my profession	
41	My problem-solving skills are being well developed here	
45	Much of what I have to learn seems relevant to a career in medicine	
Subtotal score		
<b>Students' perception of atmosphere</b>		
11	The atmosphere is relaxed during the ward teaching	
12	This school is well time-tabled	
17	Cheating is a problem in this school*	
23	The atmosphere is relaxed during the lectures	
30	There are opportunities for me to develop inter-personal skills	
33	I feel comfortable in class socially	
34	The atmosphere is relaxed during seminars/tutorials	
35	I find the experience disappointing*	
36	I am able to concentrate well	
42	The enjoyment outweighs the stress of studying medicine	
43	The atmosphere motivates me as a learner	
49	I feel able to ask the questions I want	
Subtotal score		
<b>Students' social self-perception</b>		
3	There is a good support system for students who get stressed	
4	I am too tired to enjoy this course*	
14	I am rarely bored on this course	
15	I have good friends in this school	
19	My social life is good	
28	I seldom feel lonely	
46	My accommodation is pleasant	
Subtotal score		