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Medical students’ evaluation of physiology learning environments in two Nigerian medical schools


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How We Teach

Anyahie US, Nwobodo E, Oze G, Nwagha UI, Orizu I, Okeke T, Anyanwu GE. Medical students’ evaluation of physiology learning environments in two Nigerian medical schools. Adv Physiol Educ 35: 146–148, 2011; doi:10.1152/advan.00106.2010.—The expansion of biomedical knowledge and the pursuit of more meaningful learning have led to worldwide evidence-based innovative changes in medical education and curricula. The recent emphasis on problem-based learning (PBL) and student-centred learning environments are, however, not being implemented in Nigerian medical schools. Traditional didactic lectures thus predominate, and learning is further constrained by funding gaps, poor infrastructure, and increasing class sizes. We reviewed medical students’ perceptions of their exposed learning environment to determine preferences, shortcomings, and prescriptions for improvements. The results confirm declining interest in didactic lectures and practical sessions with preferences for peer-tutored discussion classes, which were considered more interactive and interesting. This study recommends more emphasis on student-centered learning with alternatives to passive lecture formats and repetitive cookbook practical sessions. The institutionalization of student feedback processes in Nigerian medical schools is also highly recommended.

education; feedback; teaching

MEDICAL EDUCATION leading to the award of Bachelor of Medicine and Bachelor of Surgery (MBBS) degree in Nigeria is a 6-yr program consisting of 12 mo of basic sciences, 18 mo of preclinical study, and the rest spent in clinical departments. The preclinical period is for the basic medical sciences courses (Anatomy, Biochemistry, and Physiology), which run concurrently. In the Physiology Department, during these 18 mo, preclinical students are exposed to 6–7 h/wk of a supervised learning experience made up of didactic lectures (3 h), a tutorial (1 h), and laboratory practical sessions (2–3 h). The students then have time in the evening for private studies. Over time, an increasing population of students and funding gaps are limiting practical classes and making tutorials impracticable. Didactic lectures are thus the predominant supervised learning environments for the students. Financial constraints of both students and departments limits the ability to procure textbooks and recent literature, poor internet penetration limits access to other learning resource, and, therefore, dictated lecture notes are thus the major source of resource for the students. Additionally, a poor and erratic electricity supply limits the time for student’s personal independent study. In the two medical schools used for this research, transfers of students into the medical program at the second year of study increased class sizes above the approved limits, thereby making the classroom environments uncondusive for didactic lectures and copying of dictated notes, and the students organize peer-tutored discussion classes to augment the lectures.

Medical education is currently undergoing innovative evidence-based changes in teaching and learning environments around many parts of the world, and these include an increasing emphasis on student-centered learning as opposed to traditional didactic lectures and repetitive “cookbook” practical sessions (1, 18, 20). Implementation in Nigeria, however, appears limited; for instance, despite reported gains of active learning, especially PBL, it remains unimplemented in many Nigerian medical schools, and reports of teaching/learning review projects remain unapproved and unimplemented in some institutions (18). Student feedback processes are absent, and, presently, learning achievements are assessed largely by examinations of some sort. These have inherent limitations since the examinations are set and graded by the same teachers. Also, many medical curricula emphasize memory recall rather than understanding and, thus, mostly assess students’ abilities to remember (1). The student’s own goal is obviously to pass and progress, and medical students in Nigeria are not involved in the evaluation of either their teachers or their academic program.

This research aims to evaluate aspects of the learning environments available to students in two medical institutions in Nigeria. The goal of the study was to determine appropriate student-centered interventions that can improve the learning of physiology in Nigerian medical schools. It is expected that this report can feed into innovative changes in the medical curriculum in Nigerian medical schools as increasingly more medical educators take an interest in the alignment of the medical curriculum to the learning goals of medical education.

METHODS

Study Areas

College of Medicine, University of Nigeria, Enugu Campus (Enugu, Nigeria) This medical school was established in 1970 and is funded and run by the Federal Government of Nigeria. Admission is mainly through a national University Matriculation Examination (UME), but both interuniversity and intrauniversity transfers from related academic programs are approved by the institution. Also, students with a previous first degree can be admitted through a direct entry mode into the second year of the 6-yr medical program. The average yearly admission into this medical school varies between 200 and 250 students.
**Table 1. Student exposure and value perceptions of the learning environments in both medical schools**

<table>
<thead>
<tr>
<th>Learning Environments</th>
<th>Percentage of Students Exposed</th>
<th>Percentage of Students Perceiving the Environment to Be of the Greatest Value</th>
<th>Percentage of Students Perceiving the Environment to Be of the Least Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>100</td>
<td>8.9</td>
<td>1.8</td>
</tr>
<tr>
<td>Practical sessions</td>
<td>100</td>
<td>0.0</td>
<td>93.2</td>
</tr>
<tr>
<td>Peer-tutored discussion classes</td>
<td>86.51</td>
<td>85.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Private study</td>
<td>100</td>
<td>16.1</td>
<td>1.3</td>
</tr>
<tr>
<td>Internet</td>
<td>42.86</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Supervised tutorials</td>
<td>17.46</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Departmental seminars</td>
<td>1.59</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Others (e.g., faculty seminars/workshops)</td>
<td>14.29</td>
<td>0.0</td>
<td>3.7</td>
</tr>
</tbody>
</table>
and textbooks; however, achieving understanding requires a more active engagement than is commonly achieved in either the lecture halls or during personal study. The active engagement may account for the students’ preference for peer-tutored discussion sessions, which has opportunities for interactions, and brings together many different understanding of a subject matter for scrutiny. However, the actual value in knowledge acquisition and authenticity of facts learned from such environments could not be ascertained by the present study.

Independent Study

The use of private study is universal and supported, but the limitations of our study population centered on the lack of reference materials and basic infrastructure like electricity. The most used resource materials in our study population appear to be dictated lecture notes, which are often copied in very uncomfortable conditions due to inadequate space and lack of electricity, among other resource constraints.

Practical Sessions

Animal-based laboratory exercises in physiology provide active learning experiences, but over time, their use in the laboratory has been reduced (8), and there are funding difficulties in Nigerian universities (1). Interest in laboratory exercises by students appears poor from our results, and the reasons were mainly poor equipment/manpower support. Also, a previous report (20) has shown that traditional laboratory exercises presents students with a tightly scripted protocol that they are expected to follow, making them physically engaged but not mentally. Student understanding of the overall concepts in practical sessions is thus poor, and their primary concern is obtaining the expected results and writing prescribed reports. Worldwide, animal experiments in physiology are declining (1, 8); however, attempts to completely replace them with computer models has met opposition despite concerns regarding animal rights (20). However, innovations like inquiry-based learning models are being promoted to better stimulate the cognitive development of physiology laboratory concepts (13) and should be encouraged. We agree with the assertion that “if the objective or program can be met with experimental work, it must be included” (20) Students should be encouraged to work together, but in small groups that allow for better interactions and efficient supervision (3).

Conclusions

This work supports the call for improvement of learning environments that encourage lifelong learning and integrative reasoning (23). Emphasis should be on student-centered learning with alternatives to traditional didactic lectures and repetitive cookbook practicals together with the institutionalization of student feedback processes (18). Such new approaches need more support and funding from government and university authorities and may pose significant threats to the authority of the teacher, but the challenge to teachers is to develop ways for students to collaborate in different teaching settings. In this way, their communication skills are enhanced, use of professional language developed, and understanding of concepts is subjected to the critical questioning of fellow students and staff (20). Computers can provide additional learning resources (15), and expansion of their use is supported. It may appear difficult to innovate changes in a strictly traditional setting (17, 18), but student perceptions show that the effective management of educational change is crucial, with a willingness to explore possibilities despite cultural and traditional barriers. Passive lecture formats are boring for students, monotonous for teachers (6), and negatively affect performance (9), and we must find ways to reduce their usage.

DISCLOSURES

No conflicts of interest, financial or otherwise, are declared by the author(s).

REFERENCES