REVIEW OF RESEARCH IN LEARNING ENVIRONMENT

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ABSTRACT:
Educational environment of an institution is the environment experienced or perceived by students and teachers. Individual students and teachers will respond differently to these subtle elements in their learning experience. Curriculum's most significant manifestation and conceptualisation is the environment. There is a proven connection between the environment and the valuable outcomes of students' achievement, satisfaction and success. If one wants to describe, assess or get a handle on the curriculum in a medical school, then the educational and organisational environment or total milieu associated with the curriculum and the medical school needs to be studied. Educational environment is one of the most important determinants of an effective curriculum. Educational environment fosters scholarly or intellectual activities; it encourages friendliness, co-operation and supportiveness. It also fosters the learning, growth and development of students. Students' perceptions of their educational environment are a useful basis for modifying and improving the quality of educational environment. Several research groups over the years have attempted to identify and quantify the presence and impact of rather intangible aspects of a learning environment. Each study has used different survey questionnaires to solicit student reactions. (*JUNMEC 2008; 11 (1): 7–11*)

KEYWORDS: Learning environment, curriculum, climate, medical school

Introduction

What is Learning Environment?

Learning environment or 'climate', 'ethos', 'ambiance' and 'atmosphere' of an institution is the environment experienced or perceived by students and teachers. Individual students and teachers will respond differently to these subtle elements in their learning experience. An educational environment has a 'personality'; studying this unique personality enables faculty, administrators and students to answer the main question, "What is medical education here really like?" Climate could easily be judged as a somewhat vague and ethereal concept. The climate of an educational environment, like the concept itself, is rather intangible, unreal and insubstantial, yet climate, in its effects, is pervasive, substantial and very real and influential (1).

Genn (2001) explained educational environment as follows:

"Curriculum's most significant manifestation and conceptualization is the environment, educational and organizational, which embraces everything that is happening in the medical school. There is a proven connection between the environment and the valuable outcomes of students' achievement, satisfaction and success. If one wants to describe, assess or get a handle on the curriculum in a medical school, then the educational and organizational environment or total milieu associated with the curriculum and the medical school needs to be studied. Educational environment is one of the most important determinants of an effective curriculum." (2)

"The university is a habitat, a society, a community, an environment, an ecosystem. It should be judged by the quality of life that it fosters, the opportunities for growth and experiment and exploration it provides, the concern for growth and enrichment and for culture that it exemplifies. The question is not just: 'What does your machine produce?' but also: 'How does the garden grow?" (3).

Educational environment/climate can be divided into three parts (4):

1. The physical environment (facilities, comfort, safety, food and accommodation)
2. The emotional climate (security, positive methods and reinforcement)
3. The intellectual climate (learning with patients, follow-through, evidence-based and up-to-date knowledge and skills)

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Why is Learning Environment important?

The General Medical Council (GMC) has initiated major innovations in the undergraduate medical curriculum and improvement of the learning environment is one of the major goals of the changes (5).

The United Kingdom (UK) Standing Committee on Postgraduate Medical Education stated that:
"A working environment that is conducive to learning is critically important to successful training." (6)

Entwistle (1995) explained that: "Learning is a process that is not easy to comprehend. Learning is influenced by the way in which the student goes about learning and studying as well as the conduciveness of the learning environment." (7)

Besides having a beautiful, modern and up-to-date infrastructure, a school or institution of higher learning must also have a modern and up to date learning environment. Emotional and social conditions of the institution which make up the psychological environment are extremely important because these affect the well being of the students and also the staff of the institution or universities. A calm and supportive environment is an essential prerequisite for successful learning. It was reported that students who perceived their learning environment as positive are more likely to develop effective learning strategies. Satisfaction with learning environment can encourage desirable approaches to learning – deep learning – vice versa (8).

Students' perceptions of their educational environment are a useful basis for modifying and improving the quality of educational environment. Continuous quality improvement and innovation are very essential in a medical school (9).

Educational environment research has shown that there is a high price to be paid for a dysfunctional learning environment. The adverse effects include stress, academic failure and dropout, and the cultivation of undesirable behaviour and attitudes. The potential benefits of an enhanced educational environment include comfort, confidence, responsibility, skills, knowledge, reinforcement, learning opportunities and models for practice (10).

Educational climate strongly affects student achievement, satisfaction and success. It is important to get regular feedback from students on how they experience the educational environment. Information obtained will provide a useful basis for strategic planning and resource utilization. Institutional remedial action should follow student's indication of areas of concern (11).

Research that has been done on learning environment

Several research groups over the years have attempted to identify and quantify the presence and impact of rather intangible aspects of a learning environment. Each study has used different survey questionnaires to solicit student reactions.

In order to develop an environment that is conducive to learning there are two prerequisites. One, what are the major elements that contribute to the particular learning environment? Two, what is the best available instrument that is needed to measure the learning environment to allow accurate assessment of the learning environment and to identify those areas that require immediate attention? The same instrument could subsequently be used to monitor the effect that any changes implemented have made.

Research began in 1930s with an interest in educational environment. Pace and Stern in 1958 developed an instrument to study educational environment by developing the MEI (Medical Environment Index) (12).

Levy *et al* (1973) surveyed the learning environment in a Georgia Medical School in the context of assessing curriculum change. Dimensions measured are desirability of learning situation, academic enthusiasm, goal direction, authoritarianism, breadth of interest, student interaction, and intellectual maturity (13).

Marshall in 1978 developed the MSLES (50-item) (Medical Schools Learning Environment Survey) to measure aspects of the learning environment relevant to student stress. Analysis from first administration to 93 first-year students at the Chicago Medical School indicated acceptable levels of reliability and validity (14).

Huebner (1981) designed and used the Medical School Environmental Stress Inventory (61-item) (MSESI) to measure student-reported stress. A total of 220 students at the University of Missouri-Columbia School of Medicine completed the questionnaire. Students described the major stressors as information – input overload, shortage of time, inadequate feedback regarding performance, and poor quality of interpersonal relationships (15).

Moore-West *et al* (1989) compared the perceptions of distress and attitudes toward the learning environment of students in innovative curricula and the traditional curricula using the Symptom questionnaire (SQ) and the Learning Environment Questionnaire (LEQ). The SQ was designed to measure dimensions of perceived

distress and the LEQ evolved from Marshall's medical School Environment Inventory consists of 5 subscales (1. The emotional climate subscale, 2. The nurturance subscale, 3. The student-student interaction, 4. The meaningful learning experience, 5. The flexibility subscale measuring an individual's perception of the learning environment). She found that the innovative-track students' perceptions of distress were significantly lower than those of the traditional-track students. Their expectations and perceptions of the learning environment were more positive, and they found their curriculum more meaningful and flexible than did traditional-track students. These findings suggest that a student-centered, problem-based approach may more effectively help students handle the stress associated with mastering a large body of information and coping with distressing situations such as those encountered by the practising physician (16).

Strayhorn and Frierson (1989) conducted a longitudinal study of first-year medical students at the University of North Carolina (UNC) School of Medicine to assess the correlations between the students' perceptions of the medical school learning environment and both their academic performances and their perceptions of well being using the 99-item questionnaire. They found that both the black and white students had similar perceptions of the learning environment's quality. Black students experienced more stress but found more support from faculty, class advisors, and administrators (17).

Mosley *et al* (1994) used the Medical Education Hassles Scale-R to assess stress, Coping Strategies Inventory (CSI) (85-items) to assess coping thoughts and behaviours in response to stress, Center for Epidemiologic Studies-Depression scale (CES-D) to assess well-being, and the Wahler Physical Symptoms Inventory (WPSI) to measure somatic complaints to 69 third-year students completing a psychiatry clerkship at the University of Mississippi School of Medicine. They reported that clinical level of depression was found in 23% of the students (18).

Dunn and Burnett (1995) used the Clinical Learning Environment (CLE) scale (23-items) to identify factors that characterize a clinical learning environment. This instrument has five subscales: staff-student relationships, nurse manager commitment, patient relationships, interpersonal relationships and student satisfaction. This scale provides the educator with a valid and reliable instrument to evaluate relevant factors in the CLE, direct resources to areas where improvement may be required, and nurture those areas functioning well (19).

The Center for Medical Education (CME) in Dundee, Scotland has developed an instrument or a diagnostic tool to assess learning environment. It is called the The Dundee Ready Education Environment Measure (DREEM). It is a very useful and flexible tool in that it is not culturally specific and can be used in a wide range of health professions institutions. It has been validated and tested in a range of settings and has proved to be a very useful 'diagnostic tool'. The (DREEM) instrument is a robust, 'culture free' and renowned tool which measure the quality of the educational environment and has been used by many researchers masters and doctoral students for the study of learning environment in their institutions (20–27). It has been validated and tested and has proven to be a very useful and easy to apply tool. Table I summaries the research utilising the DREEM as a diagnostic tool for the educational environment.

Sobral (2004) used the Course Valuing Inventory (CVI) to appraise how medical students perceive the meaning and value of their first-year experiences in medical studies and to identify the relationship between the CVI responses and the learners' attributes and expectations. The study involved 282 second-year students of a six-year medical programme over a four-year time frame (University of Brasilia, Brasilia, Brazil). Higher CVI scores related positively and significantly to female gender, stronger self-confidence as a learner, greater motivation to learn, meaningful orientation and reflection in learning. A separate test done showed that there was a significant relationship between the dimensions of CVI responses and the DREEM score (30).

Conclusion

Positive learning environment must be maintained and nurtured. In a supportive learning environment, the teacher encourages independence with learning, promotes critical thinking, promotes students' freedom to explore, and accepts differences among students in their approaches to solving problems. Regular evaluation and feedback will provide further valuable input for institution strategic planning. Institutional resources can be focused on those areas that urgently require remedial actions. Medical Schools must inculcate in our students the benefit s of lifelong learning and critical thinking.

Table 1 summarises the research utilising the DREEM as a diagnostic tool for the educational environment

No	Medical Institutions/Schools	Students surveyed	Total Mean Score (Reference)
1	UK Medical Schools	Undergraduate medical students	132/200 (6)
2	Arab Gulf University Arab United Emirates University		127/200,125/200 (21)
3	Nigerian Medical School	Undergraduate medical students (Years 4, 5 & 6)	118/200 (22)
4	Nepalese Health Professions	Undergraduate medical students (Years 1, 2 & 3)	130/200 (22)
5	University of Sao Paulo School of Medicine Faculty of Medical Sciences in Trinidad	First-Year medical students	124.4/200 (28)
6	Kasturba Medical College, India	Clinical years medical students	107.4/200 (29)
7	Canadian Memorial Chiropractic College (CMCC) Toronto, Canada	First, second and third year students	113/200 (27)
8	Medical School at King Abdul Aziz University; Saudi Arabia Umm Al-Qura University, Saudi Arabia; Sana'a University, Republic of Yemen; Dundee University Medical School, Scotland	Undergraduate medical students	102/200 107/2001 100/2001 139/200 (25)
9	Faculty of Medicine, University of Brasilia, Brazil	Second year medical students	123/200 (30)
10	Dental Training College, Malaysia	Dental nursing and dental Technology first and second year students	122/200 (61%) (26)
11	Birmingham University, England	Final year medical students	139/200 (70%) (31)
12	Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Langka	Pre-clinical, para-clinical year medical students	108/200 (32)

DREEM = The Dundee Ready Education Environment Measure

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