



CHANGING TRENDS IN EDUCATION OF HEALTH SCIENCES. AN OVERVIEW

Dr. Amitha M. Hegde¹ | Dr. Y. Rajmohan Shetty² | *Dr. Adrija Kar³

¹ Senior Professor and Head, Department of Pedodontics, A B Shetty Memorial Institute of Dental Sciences

² Senior Professor, Department of Pedodontics, A B Shetty Memorial Institute of Dental Sciences

³ Post Graduate, Department of Pedodontics, A B Shetty Memorial Institute of Dental Sciences

*Corresponding author

ABSTRACT

Education earlier was more of an observation and blind acquisition of knowledge from the teacher to the student rather, from the leader to the follower. Over the years, researches, classroom teaching, practical exercises took over observational strategies and recently evidence based learning, e-learning, problem based learning, biomedical informatics are becoming more prevalent. This review paper intends to discuss the various changes in the field of education of medical and health sciences, the various assessment methods in medical sciences and their effect. The use of technology and various methods of learning in support of education is not, therefore, a causal or engineered set of practices, rather, it requires creativity and adaptability in response to the specific and changing contexts in which it is used and therefore should be implemented carefully.

INTRODUCTION

From the time of Sushruthas, when the knowledge of medicine was limited to very few learned scholar and priests, to an era where there are numerous medical, dental and various allied health sciences institutions in each and every part of the country, the system or mode of imparting education has changed. Earlier it was more of an observation and blind acquisition of knowledge from the teacher to the student rather, from the leader to the follower. Over the years, researches, classroom teaching, practical exercises took over observational strategies and recently evidence based learning, e-learning, problem based learning, biomedical informatics are becoming more prevalent.

Medical education, with its intensive pattern of basic science lectures followed by an equally exhaustive clinical teaching programme, was rapidly becoming an ineffective and outdated way to prepare students, considering the explosion in medical information and new technology and the rapidly changing demands of future practice. The complexity of today's society is characterized by an infinite, dynamic and changing mass of information, the massive use of the internet, multimedia and educational technology, a rapidly changing concept demanding a more flexible mass of people who will be directed towards a growing proportion of knowledge-intensive work in teams and lifelong learning. As a consequence, today's information community expects graduates not only to have a specific knowledge base but also to be able to apply this knowledge to solve complex problems in an efficient way. This review paper intends to discuss the various changes in the field of education of medical and health sciences, the various assessment methods in medical sciences and their effect. The standards of imparting education can also be changed by promoting scientific education like implementing changes in lectures, having well equipped laboratories where the students can design and conduct experiments, and adequate training by the educated faculties for the students for delivering a better care and treatment to the patients. The impact of evidence based learning and problem based learning on the knowledge of student and the development of profession will be emphasised including the importance of the traditional continuing educational activities like conferences, CMEs and CDEs, workshops etc.

SCIENTIFIC LEARNING

Scientific teaching involves active learning strategies to engage students in the process of science and teaching methods that have been systematically tested and shown to reach students in various fields. The various scientific teaching methods followed or are available for health science education are discussed below.

E-LEARNING

The role of the Internet as a source of information and learning for students in the field of health sciences and doctors has grown exponentially since the inception of the worldwide web (www).¹ One factor which is responsible for this growth is the increasing and complex information needs. The tremendous growth in medical knowledge is a challenge for the majority of professionals as well as students, who are expected to maintain their knowledge on the most recent advances in medicine. The Internet offers a new dimension for facilitating education for doctor students. Barnes suggests that Internet technologies provide innovative opportunities for providing and accessing medical education in the 21st century.² It is suggested that this will enable CME

providers to move beyond the parallel and ineffectively linked systems for education and clinical care in order to develop a more fully integrated practice learning environment.³ Very little evidence is there on Internet or distance learning for medical education. Researches concludes that the online learning courses are comparatively better and favourable than classroom instruction and on-line participants express high satisfaction.

EVIDENCE BASED LEARNING:

It is a combined use of ones' clinical expertise and documented evidences.

Evidence-based refers to any concept or strategy that is obtained from or informed by objective evidence.

The practice of evidence based learning in medical field means using individual's clinical expertise or judgement which he or she has achieved during the course of their practise through experience along with knowledge or information acquired from clinical researches or studies.

Advantages:

- It can help us in providing best possible methods or procedures to diagnose and treat a case
- When we use this approach the chances of failure are comparatively less
- We can expect more accurate or expected outcomes

Disadvantages:

- It is necessary to make sure that the evidence which we are taking as a reference is true and there are no manipulations of facts.

PROBLEM BASED LEARNING:

In problem based learning (PBL) students use facts from the problem case or scenario to define their own learning objectives. Subsequently they do independent, self directed study before returning to the group to discuss and refine their acquired knowledge. Thus, PBL is not about problem solving as such, but rather it uses appropriate problems to increase knowledge and understanding of a particular situation.

It is useful in a way that it makes person to think over the problem and finding solution for it. It develops an individual's thought process and makes learning easier.

Group learning facilitates not only helps in the acquisition of knowledge but also several other desirable attributes, such as communication skills, teamwork, problem solving, independent responsibility for learning, sharing information, and respect for others. PBL therefore can also be described as a group teaching method that combines the acquisition of knowledge with the development of generic skills and attitudes. Presentation of clinical material as the stimulus for learning enables the students to understand the importance of underlying scientific knowledge and principles in clinical practice.

BIOMEDICAL INFORMATICS

The discipline that involves itself with computers and communication, and their use in biomedicine, is known as medical informatics.³ Biomedical Informatics is the scientific field that deals with the storage, retrieval, sharing, and optimal use of biomedical information, data, and knowledge for problem solving and decision making. It touches on all basic and applied fields in biomedical science and is closely tied to modern information technologies, notably in the areas of computing and communication. The various disciplines of biomedical informatics are

1. Computer science (hardware and software)
2. Cognitive sciences and decision making
3. Management sciences
4. Clinical sciences
5. Basic biomedical sciences
6. Epidemiological and statistics
7. Bioengineering

All medical students should make use of computers to assist with portions of their standard curriculum and define themselves as "computer literate." The emphasis should mainly on familiarity with the machine itself, with word processing, databases, and electronic mail, and with bibliographic searching.

At this time of rapid change in our health care system, and hence in medical education, recognition of the strategic role of informatics education is dependent on visionary leadership and institutional commitment; those institutions making the greatest strides in this area have made broad commitments to integrated information technologies.³

EFFECT OF FORMAL CONTINUING MEDICAL EDUCATION SYSTEMS

Although physicians report spending a considerable amount of time in continuing medical education (CME) activities, studies have shown a sizable difference between real and ideal performance, suggesting a lack of effect of formal CME.⁴ The formal practices constitutes of workshops, conventions, rounds and didactic measures of education. The use of traditional CME activities such as lectures has been widely criticized.⁵ This criticism appears justified because didactic interventions analyzed in this review failed to achieve success in changing performance or health care outcomes. While such interventions may change other elements of competence, such as knowledge, skills, or attitudes, or may act as predisposing elements to change, didactic lectures by themselves do not play a significant role in immediately changing physician performance or improving patient care. In contrast, studies that used interactive techniques such as case discussion, role-play, or hands-on practice sessions are generally more effective changing those outcomes documented¹.

ASSESSMENT METHODS IN MEDICAL SCIENCES

Competence in medicine is defined as "the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individuals and communities being served."⁶

Goals of assessment

- Provide direction and motivation for future learning, including knowledge, skills, and professionalism
- Protect the public by upholding high professional standards and screening out trainees and physicians who are incompetent
- Meet public expectations of self-regulation
- Choose among applicants for advanced training

What to assess

- Habits of mind and behaviour
- Acquisition and application of knowledge and skills
- Communication
- Professionalism
- Clinical reasoning and judgment in uncertain situations
- Teamwork
- Practice-based learning and improvement
- Systems-based practice

Assessment methods:

Written examinations
 Assessments by supervising clinicians
 Direct observation or video records
 Clinical simulations
 Multi source ("360 degree") assessments
 Portfolios

Challenges:

Several domains of assessment are in its infancy and may be problematic or difficult to come into an exact conclusion. Further developments are required in this regard to improve the assessment systems.

CONCLUSION

Deploying new technologies usually introduces tensions, and scientific learning is no exception. Some wish to use it merely to perform pre-existing activities more efficiently or faster where as others pursue new ways of thinking and working that the use of such technology affords them. Simultaneously, we should not forget that its education and not technology that is important. But sometimes, we have to take risks, and 'see what happens.' Serendipity often adds to the excitement of teaching as well as learning learning. The use of technology and various methods of learning in support of education is not, therefore, a causal or engineered set of practices, rather, it requires creativity and adaptability in response to the specific and changing contexts in which it is used and therefore should be implemented carefully.

REFERENCES

1. Wutoh R, Boren S, Balas E. eLearning: A review of Internet-based continuing medical education. *Journal of Continuing Education in the Health Professions*. 2004;24(1):20-30.
2. Kemper K, Amata-Kynvi A, Sanghavi D, Whelan J, Dvorkin L, Woolf A et al. Randomized Trial of an Internet Curriculum on Herbs and Other Dietary Supplements for Health Care Professionals. *Academic Medicine*. 2002;77(9):882-889.
3. Shortliffe E. Medical informatics meets medical education. *JAMA: The Journal of the American Medical Association*. 1995;273(13):1061-1061.
4. Davis D, O'Brien M, Freemantle N, Wolf F, Mazmanian P, Taylor-Vaisey A. Impact of Formal Continuing Medical Education. *JAMA*. 1999;282(9):867.
5. Kanouse D, Jacoby I. When Does Information Change Practitioners' Behavior?. *International Journal of Technology Assessment in Health Care*. 1988;4(01):27.
6. Cox M, Irby D, Epstein R. Assessment in Medical Education. *New England Journal of Medicine*. 2007;356(4):387-396.