

Conventional Teaching in Basic Science: An inner view

Sukhendu Dutta

*Department of Anatomy, Sri Guru Ram Rai Institute of Medical & Health Sciences,
Patel Nagar, Dehradun-248001 Uttarakhand, India*

Abstract: Conventional teaching became debatable since early nineteenth century due to many factors. The most important was lack of basic science teacher that initiated to involve clinical teachers to teach basic sciences. Due to paucity of subject expert teacher, different forms of teaching modules were adopted namely problem-based learning, problem-solving learning, task-based learning, and so on. In mid nineteenth century controversy raised regarding outcome of new horizon of teaching. Therefore an effort was made to find out the opinions of the students and teaching fraternity about the applicability of conventional lecture based teaching by a subject expert in anatomy as well as other basic science subjects through literature survey. It is observed that conventional teaching, guided by subject expert is well appreciated by the students and that has been reflected in National Board of Examination part –I and United State Medical Licensing Examination. There are some inherent demerits also observed. To overcome weakness, study result suggests to adopt hybrid module of teaching that is combination of the merits of conventional and problem-based or problem-solving teaching. Horizontal integration is essential to correlate basic science subjects for firm foundation of basic knowledge before entering into clinical field. Care should be taken that under no circumstance novice is over loaded by the transmission of factual knowledge.

Key words: Conventional teaching, Problem-based Learning, Problem solving Learning, Self directed learning, Integrated teaching, Hybrid problem based learning

Introduction: The traditional curriculum is discipline oriented and each discipline has its own logical structure and sequence, which is complimented by standard text book [1-2]. The characteristics of conventional curriculum are subject expert provided learning objectives and assignments, large group lectures, structured laboratory experiments [3-6] In conventional school, individual department decides about the content coverage of that subject and emphasis is being given on factor-analytic studies [7-9] According to Cariaga et al (1996)[4], conventional curriculum is essential for less self-realized students because it provides more structured format of teaching and most significant feature is conducting frequent examinations. There is a modification of traditional curriculum over the time period, with an incorporation of small group learning.

Aim of the conventional school teaching: The aim of conventional method of teaching is to expose all students to an identical knowledge, and to develop same interests [10]. The core concept is firm foundation of the basic science before entering into clinical field.

Role of a teacher: Role of a teacher in higher education is organizing students' activity towards teaching techniques: lectures, practical, and tutorials. Moreover teaching should incorporate to find out students' misunderstandings and has to correct them. According to Lisa et al (2000) [11], a teacher should not simply teach

what one thinks is best; rather assess the learners perspectives on learning. A subject expert should enlighten the novice regarding significance of detail knowledge and at what extent one has to know, which makes learning process easier and relevant to a novice [12-14]. According to Marton and Saljo, (1976) [15], 'good teacher' is the one who makes learning process more readily available to students. Hence teacher must inform students at the end of lecture class what are the books or literatures to refer for the same topic.

Educational theory of conventional teaching: Humanistic approach is necessary to teach medical students because humanistic relationship between student and teacher is almost similar to doctor-patient relationship [16-17]. Hence teacher is a role model to students in concern to humanistic skill, attitude and dedication as well as caring skill [18-20] Teaching becomes effective, when there is presence of careful and reflective thought by a teacher and active involvement of the student [21].

Merits: Lecture helps students to understand new information. Therefore lecture remains as an important component in all models of teaching-learning strategies including problem-based curriculum [22-23]. Moreover, when lecture is prepared with proper planning, a larger component can be covered in lesser time and becomes relevant due to exponential growth of basic sciences knowledge [9]. According to Harmon (1993) [24], conventional curriculum is more stable because it is practiced for many decades and least expensive in terms of cost, time and effort [25-26]. Students of conventional school adopt "forward-directed" reasoning skill. Therefore they make less erroneous statements in comparison with their counter part of PBL school students [27-28]. They are continuously getting benefits from subject experts and learn factual knowledge of concern subject.^{29,30} Hence they perform better in examinations.³¹ There are reports of better performance in concern to diagnostic skills, basic mechanism of disease process and that reflected in post-course examinations [29,32-33]. There is significant difference in academic achievement as measured by the National Board of Medical Examinations (NBME) Part-I and USMLE that students of traditional school scored higher in comparison with the students of PBL school [5,28,32,34]. It is observed that students of conventional school rated their training more positive in concern to basic sciences and clinical medicine.

Demerits: Some teachers of conventional school do not design a compatible learning environment due to their biasness towards the selection and transformation of information from literature. Moreover some students may remain silent in the lecture class and not able to understand a word that has been spoken by teacher because in this system students and teachers are not equally involved. Even some students complain that some teachers dislike any question regarding the topic being taught [35-40]. The significant weakness is non flexibility in the time table to allow proper integration [41]. In the conventional schools some students may not use other resources because some teachers dictate note in the lecture class and often it leads to

over loading information. Moreover, this kind of teaching is not available in post-graduate teaching [42-43]. Importance and/or attention is not being given to critical analysis, clinical reasoning, self-directed learning or problem solving and also systemic thinking skills. Therefore, when problem is given to the conventional school students, they used basic science inferences haphazardly [10,14,27]. According to Newble and Clarke (1986) [44], teaching approach of the traditional school is not ideal because it limits patient contact in small groups, especially in first and second year students [45]. Moreover teamwork is one of the most neglected areas in the traditional medical schools [46]. Students of conventional school, in spite of understanding each other, they compete among themselves; hence it is less humane in nature. Moreover, it is non-interactive lecture format of teaching. Therefore students often mention “non-relevant, passive, and boring” words about their pre-clinical experience [47-48]. Hence they undergo stress and anxiety, which is health warning environment. Any educational system, which is an enjoyable learning process and does not lose the basic knowledge and skills, must be a good approach [3,48] Hence hybrid problem based learning (combination of conventional lectured and problem based learning) is an ideal approach to teach basic science subjects [21].

Conclusion:

- Lecture should be an essential component to teach basic science subjects to guide a novice, at what extent one has to know the subject concern.
- Small group tutorial is essential after didactic lecture of a particular topic.
- To motivate and create more interest towards the basic subject knowledge, clinical problem should be discussed in small group.
- Emphasis should be given on self-directed learning, clinical reasoning skill and to learn critical analysis.
- Humanistic approach is essential in teaching-learning process.

References

1. Jayawickramarajah PT. Problems for problem-based learning: a comparative study of documents. *Med Educ* 1996;30:272-282
2. Phil Race. Task-based learning. *Med Educ* 2000; 34: 335-336
3. Albanese MA, Mitchell Susan. Problem-based learning: a review of literature on its outcomes and implementation issues. *Acad Med* 1993; 68: 52-81
4. Cariaga-Lo LD, Richards BF, Hollingsworth MA, Camp DL. Non-cognitive characteristics of medical students: entry to problem-based and lecture-based curricula. *Med Educ* 1996; 30:179-186.
5. Enarson C, Liza CL. Influence of curriculum type on student performance in the United States medical licensing examination step 1 and step 2 exams: problem-based vs. lecture-based curriculum. *Med Educ* 2001; 35: 1050-1055.
6. Kaufman DM. Problem-based learning – time to step back? *Med Educ* 2000;34: 509-511
7. Irby DM. Clinical teacher effectiveness in medicine. *J Med Educ* 1978;53:808-815
8. Irby DM, Rakestraw P. Evaluating clinical teaching in medicine. *J Med Educ* 1981; 56: 181-186

9. Albanese Mark. The decline and fall of humanism in medical education. *Med Educ* 2000;34:596-597
10. Finch PM. The effect of problem-based learning on the academic performance of students studying podiatric medicine in Ontario. *Med Educ* 1999;33: 411-417.
11. Lisa M Vaughn, Raymond C Baker, Thomas G DeWitt. The adult learner: a misinterpreted species? *Acad Med* 2000; 75: 215-216
12. Dahle LO, Forsberg P, Svanberg-Hard H, Wyon Y, Hammar M. Problem-based education: development of a theoretical foundation and a science-based professional attitude. *Med Educ* 1997; 31: 416-424
13. Patel VL, Georen GJ, Scott HM. Biomedical knowledge in explanations of clinical problems my medical students. *Med Educ* 1988; 22: 398-407
14. Shahabudin SH. Content coverage in problem-based learning. *Med Educ* 1987; 21: 310-313.
15. Marton F, Saljo R. On qualitative differences in learning: II – As a function of learner's conception of the task. *Br J Educ Psych* 1976; 46: 115-127.
16. Hekelman FP, Roberts Blasé J. Excellence in clinical teaching: the core of the mission. *Acad Med* 1996; 71: 738-742
17. Sachdeva M. Medical education into the 21st century. *J Internal Medical Sciences Academy (JIMSA)* 2004;17: 13-15
18. Ficklin FL, Browne VL, Powell RC, Carter JE. Faculty and house staff members as role models. *J Med Educ* 1988; 63: 392-396.
19. Irby DM. What clinical teachers in medicine need to know. *Acad Med* 1994; 69: 333-342
20. Maheux B, Beaudoin C, Berkson L, Cote L, Marchias JD, Jean P. Medical faculty as humanistic physicians and teachers: the perception of students at innovative and traditional medical schools. *Med Educ* 2000;34: 630-634
21. Dutta S, Singh LC, Saxena SK. Application of integrated seminar in conventional medical school. *JMS* 2007; 21(2):102-106
22. Daine EH, Beverly BT, Barbara DA. Responding to perceived needs of the twenty-first century: a case study in curriculum design. *Med Teacher* 1989;11: 157-167
23. Kusum Kumar, Jonathan D, Kathy D, Dimitri A. Teaching of pathology in United States Medical schools, 1996/1997 survey. *Hum Pathol* 1998; 29: 750-755.
24. Harmon Bickly. Comparison of problem-based and traditional curricula still not possible. *Acad Med* 1993;68(7); 545
25. Barrows HS. A taxonomy of problem-based learning methods. *Med Educ* 1986; 20: 481-486.
26. Khan I, Fareed A. Problem-based learning variant: a transition phase for a large Institution. *J Pak Med Assoc* 2001;51:271-274
27. Patel VL, Georen GJ, Norman GR. Effects of conventional and problem-based medical curricula on problem solving. *Acad Med* 1991;66: 380-389
28. Vernon DTA. Attitudes and opinions of faculty tutors about problem-based learning. *Acad Med* 1995;70: 216-223
29. Eisentaedt RS, Barry WE, Glanz K. Problem-based learning: cognitive retention and cohort trait of randomly selected participants and decliners. In research in medical education. *Acad Med* 1990; 65 (suppl.-9): S11-S12
30. Howard J Zeitz, Harold Paul. Facilitator expertise and problem-based learning in PBL and traditional curricula. *Acad Med* 1993; 68: 203-204.
31. Diana Dolmans. Students as teachers. *Med Educ* 2000; 34: 11-12
32. Alison Jones, Patricia JMA, Paul A O'Neill. Perception of how well graduates are prepared for the role of pre-registration house officer: a comparison of outcomes from a traditional and an integrated PBL curriculum. *Med Educ* 2002; 36:16-25

33. Coulson RL. Problem-based student-centered learning of cardiovascular system using the problem-based module (PBLM). *Physiologist* 1983;26: 220-224
34. Friedman CP, de Blied, Greer DS et al. Charting the winds of change: evaluating innovative medical curricula. *Acad Med* 1990;65:8-14
35. Abdul-Ghaffar TA, Ken Lukowiak, Usha Nayar. Challenges of teaching physiology in a PBL School. *Am J Physiol*. 1999; 277 (Adv Physiol Educ 22). S140-S147.
36. McCrorie P. Tales from tooting: reflection on the first year of the MBBS graduate entry programme at St. George's Hospital Medical School. *Med Educ* 2001; 35: 1144-1149.
37. Ronchetto, John R, Tom A Buckles, Robert M Barath, James Perry. "Multimedia delivery systems: A bridge between teaching methods and learning styles." *Journal of Marketing Education*, 1992;14 (Spring):12-21.
38. Diaz DP, Cartnal RB. "Students' Learning Styles in Two Classes: Online Distance Learning and Equivalent On-Campus." *College Teaching* 1999;47(4): 130-135
39. Remmen R, Van Puymbroeck H, Denekens J, Scherpbier AJJA, van der Vleuten CPM, Hermann I, Bassaert L. Evaluation of skills training during clerkships using student focus groups. *Med Teach* 1998;20: 428-431
40. Guilbert JJ. Comparison opinion of students and teachers concerning medical education programmes in Switzerland. *Med Educ* 1998; 32: 65-69
41. Heylings DJA. Anatomy 1999-2000: the curriculum, who teaches it and how? *Med Educ* 2002; 36: 702-710
42. Birgegard G, Lindquist U. Change in student attitude to medical school after the introduction of problem-based learning in spite low rating. *Med Educ* 1998;32: 46-49
43. Savage R. Problem-based learning has been used for years in general practice in London. *BMJ* 1995;311: 1643
44. Newble DI, Clarke RM. The approaches to learning of students in a traditional and in an innovative problem-based medical school. *Med Educ* 1986; 20: 267-273
45. Boyd FR, K.Patrick Ober, Liza CL, Martha G.C, James P, Mary MF, Randall R, Daniel JZ. Rating of students' performances in a third-year internal medicine clerkship: a comparison between problem-based and lecture-based curricula. *Acad Med* 1996;71:187-189
46. Thomas RE. Problem-based learning: measurable outcomes. *Med Educ* 1997;31: 320-329
47. Walton JN, Clark DC, Glick N. An outcomes assessment of the Hybrid-PBL course in treatment planning. *J Dent Educ* 1997; 61 (4): 361-367.
48. Bligh J. Problem-based, small group learning: an idea whose time has come. *BMJ* 1995; 311: 342-343

*All Correspondence: Dr. Sukhendu Dutta, Department of Anatomy, Sri Guru Ram Rai Institute of Medical & Health Sciences, Patel Nagar, Dehradun – 248001, Uttarakhand, India
E-mail: dutta8suk@hotmail.com