Original Research Paper

Volume : 5 | Issue : 7 | July 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

Can We Teach More When We Teach Less? Interactive Lectures, as an Active Learning Vehicle, in Comparison to Traditional Ones

Medical Science

KEYWORDS : Active teaching & learning, *interactive lectures, *traditional lectures.

Ahmad AbdulAzeem Abdullah MD — Department of Surgery, Faculty of Medicine, University of Tabuk, Saudi Arabia.

Mohammed Elnibras, MD — Department of Surgery, Faculty of Medicine, University of Tabuk, Saudi Arabia.

Ibrahim Albalawi MD — Department of Surgery, Faculty of Medicine, University of Tabuk, Saudi Arabia.

ABSTRACT

This study is designed to assess usefulness of interactive lectures in an undergraduate surgical module. Emphasis was also drawn on the advantages of interactive lectures to students` learning.

Materials and methods: This is a quantitative descriptive study conducted during the surgical module taught to the 6th year medical students (N=28) at the faculty of medicine in the University of Tabuk in 2014. The module comprises 35 lectures, seven of which were designed as interactive sessions, which include different types of exercises posed to the students at regular intervals throughout the teaching activity. At the end of the module, students` satisfaction with interactive lectures and the aspects in which these lectures were useful to their learning was assessed through a specially designed questionnaire with Likert type scale.

Introduction:

"What mater in education is what the student learn, not what the teacher teaches"

(Harden, Susette & Dunn, 1984) (6)

Lecture is one of the oldest teaching methods utilized in the field of education (1). Lectures have been advantaged for the efficiency of transmitting information to large classes over a relatively short time thus reflecting some economic value to institutions and less demand on teachers (1, 2). However, there is growing criticism and uncertainty of the value of traditional lectures in the current era of education (3, 4, 5). An expression of this criticism is manifested in the major reforms applied to the design of educational curricula in some new medical schools, which employ active learning processes like problem-based learning, student-centered learning and integrated teaching (6). Traditional lectures involve the passive transmission of information and it does not engage the students actively in the learning process (7). This teaching approach, which is tagged as teacher-centered, is less capable of developing the students as life-long learners, an essential criterion required of tomorrow's doctors (6, 8). Some drawbacks of traditional lectures have been reported in the literature of medical education. The ability of the students to concentrate in lectures drops significantly only after 20 minutes of its start and continues to drop thereafter (1, 9). This may directly limit the students` ability to recall more than one fourth of the information presented in lectures (10). It has also been argued that lectures are even not better than other teaching activities, like seminars, in imparting large amount of information to students over a similar time and conditions (11). There is also evidence that students are reluctant to attend traditional lectures towards their advanced years of education and, that those students also rate these didactic lectures as the least favored teaching activity (11). Many reports have also proved poorness of lectures as a mean of changing attitudes and stimulating thought (11). Despite all that, evidence is still showing that lectures fill most of the modern educational programs (11). Lueddeke explains this by the adverse effects brought to the field of education when wrong believes and traditions rather than scientific approaches predominates and govern the practice of teaching (12).

In view of the above-mentioned criticism, educationists have investigated different ways and methods in order to combat these shortcomings and alleviate their consequences. Many educational programs have recommended making lectures more interactive (4, 11, 13). Biggs and tang have suggested a better educational outcome of didactic lectures if they are converted into an interactive sessions (4). Harden and his colleagues have mentioned that active engagement of students in the learning process is motivating and builds in them the capacity of continuing learning in the future (6). White etal, have added that in a collaborative classroom environment, students can learn from their peers who represent a learning resource just like a lecture, text or a teacher (14). It has been found that changing the mode and activity during a lectures is positively reflected on the students `ability to recall the information presented later on (9, 15, 16, 17). It also helps instructors to grape students` attention for a longer time (9). It also enables instructors to gauge students` understanding and therefore allow them to reinforce positive points and further clarify and explain poorly understood areas (9). It may also give chance to instructors to review the structure of lectures and make appropriate modification through feedback from the students (9). White and his colleagues have highlighted some of the benefits attributed to active learning, which include better retention of content, deeper understanding, increased motivation to learn and development of lifelong learning skills (14). It has been argued that interactive lectures result in reduction in the amount of information intended to be transmitted to the students because some time has to be reserved to exercises and interaction. However, Huxham and his colleagues have shown that introduction of exercises in lectures is still beneficial to students` learning (11, 17, 18). Irby also advocated reducing the content of lectures to focus mainly on basic concepts and principles (19). Many strategies have been advocated to convert traditional lectures into more useful interactive sessions. One of these is to include work along exercises, which involve posing questions at regular intervals throughout the lecture time. This would initiate group discussion about the important principles and concepts presented in the lecture and, towards the end of the session, the students are asked to summarize part of or the entire lecture (1, 4, 5). Other strategies may include the use of concept mapping exercises (Pudelko etal, 2012) and the audience response systems (15, 20, 21).

Rationale and context:
The study is conducted in the faculty of medicine in the University of Tabuk which is a newly established medical school. Most of the lectures currently implemented in the school are in the traditional didactic form. The value of these lecture in enhancing learning and understanding of our students have been questioned. This study is among other efforts run by the school to investigate the use of more effective and feasible teaching and learning activities as part of our intention and strive to achieve excellence in our educational activities.

This study aims to investigate the usefulness of interactive lectures to students` learning in comparison to traditional lectures in our setting. The study particularly looks at whether interactive lectures are useful to students` learning and, if so, in what aspect?

Methods:
The study is designed as a quantitative descriptive one. Study participants were the 6th year female medical students, who were 28 in number, during the surgical module in 2014.

The surgical module taught to the 6th year medical students comprises 32 lectures 7 of which have been designed as interactive teaching sessions by inclusion of different types of exercises at regular intervals throughout the lecture time. The interactive lectures were designed and conducted by the author. The rest of the lectures in the module are taught in the traditional didactic method as they used to be and by the same teachers.

At the beginning of each interactive lecture students receive an exercise sheets which contains questions in different formats (e.g. MCQ, diagrams and graphs, concept maps) about the content of the lecture. Questions have been organized so that they are presented in timely-based manner in relation to the sequence of information presented in the lecture. One minute paper is also attached to the exercise sheet in which students are asked to provide feedback about the quality and content of the lecture. The content of the lecture was reduced to some extent to give chance for introduction of the exercises in order to cope with the allocated time.

The interactive lecture is conducted in the following sequence:

- Students are asked to record in the one minute paper what they expect to learn in the lecture regarding the topic presented.
- Then the objectives of the lecture are displayed and read out clearly.
- A warming session commences in which the students are asked questions about the basic science informa tion regarding the clinical topic and if they have any previous experience with patients in their families who may have the clinical condition discussed in the lecture.
- Presentation of the content of the lecture is then com menced. Pauses are made at pre-adjusted points throughout the entire session in which students are given question to answer whether individually or in groups (18). This may take the form of a competition sometimes to add excitement and increase motivation.
- Towards the end of the session students are asked to summarize the important points discussed in the lec ture.
- A question-answer session is then run to clarify areas which require further discussion.
- Objectives are revisited again to allow students exam ine what has really been achieved in view of these ob jectives.
- At the end the students are asked to complete the "one minute paper" attached by reporting what has been learned, what still requires further clarification and which of the objectives has been discussed ad equately and which one was not.

At the end of the module, students` views regarding usefulness of interactive lectures to their learning is collected through specially designed questionnaire with Likert scale type.

Results:
Twenty eight female students were asked to complete the questionnaire and 25 have responded (response rate 89.3%).

Figure (1) shows that fifteen students have rated the interactive lectures as "very useful" (60%) and 9 students have rated it as "some useful" (36%) while one student have responded as "not sure" (4%).

Figure (1) shows the responses of the students` to the aspects in which interactive lectures were useful to their learning. All students agreed that interactive lecture was useful because it enhances integration of basic and clinical information. 24 students (96%) thought that it increases their understanding of the content of the lecture. Other responses have pointed to agreement of the students that interactive lecture is useful in that it: enhances retention of the presented information (92%), it allows them to give feedback regarding the content and quality of the lecture (92%), it is exciting and motivating to learn (88%) and it allows for communication and sharing views in the class with the teacher and their colleagues (76%).

Figure (1): Students` perceptions to usefulness of interactive lectures to their learning. (N= 25).

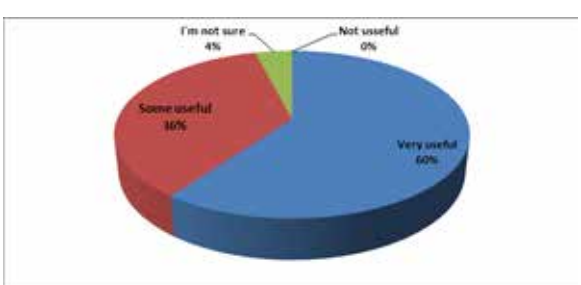
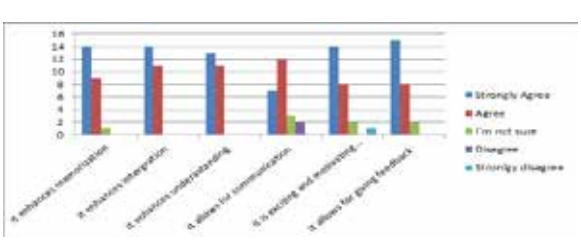


Figure No. (2): Students` responses to the aspects of usefulness of interactive lectures to their learning.



Volume : 5 | Issue : 7 | July 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

Discussion:
Results of this study which highlighted the usefulness of interactive lectures to students` learning, in comparison to traditional lectures, coincides with the finding of corresponding studies published in the literature (1, 9, 10, 11).

All students have agreed that interactive lectures were effective and useful to their learning because it involved exercises that integrate basic and clinical information. As already known, integration is essential and useful to understanding and consolidation of the information in the students` minds and has been implemented in the design of modern medical curricula (22).

It has been shown that interactive lectures enhances retention of the information and enables students to memorize the content of the lecture in the future, which corresponds with the finding of (9,10). This may attributed to the improvement in the students` concentration achieved by the interactive nature of the teaching session. The drop in the students` concentration in traditional lectures is reversed by inclusions of exercises, which change the mode of the lecture and set the concentration of the students refreshed back to higher levels (18). Thus, improvement in students` concentration is translated into higher ability of the students to retain the content of the lecture for longer time (1, 9).

Increased communication in the class during the interactive lectures was viewed positively by the students. It may allowed for exchange of ideas and trends of thinking between the students themselves on one side, and with the teacher on the other side. This refers back to the work of White etal who reported that in a collaborative learning environment students may learn from their peers in the same way as they can learn from the lecture or the teacher (14).

In accordance with what has been mentioned in the literature, interactive lectures were perceived by our students as more motivating and exciting teaching methods. During the lecture, students compete with each other, individually and in groups, to respond to the exercises and a prize like "hero of the session" is sometime presented. These small competitions, which may take the form of a game, bring some fun, humor and excitement to the classroom during the lecture and may explain the improvement in the students` learning. These positive criteria will add to the value of interactive lecture as an effective teaching method and would result in better learning on the students` side.

The "one minute paper" used in the interactive lecture was another advantage. It allows students to judge and feedback the teacher regarding the content and design of the teaching session. On the teacher`s side, this important feedback regarding the clarity of the objectives, principles and concepts discussed in the lecture is considered essential for the sake of future improvement and refinement of the design and quality of the activity. The author found that activity very useful as a tool for continuous monitoring and improvement of the quality of the teaching. Such improvement in the quality of teaching would be expected to produce equivalent enhancement in the students` learning (9, 10).

Finally yet importantly, the numerous advantages of interactive lectures root from the concept of active involvement of students in the learning process. According to White and his colleagues, this mounts from research taking place in the field for many decades that pointed to increased interest of students in learning and give rise to better short-term and long-term learning outcomes (14).

Limitations:
The authors is aware that the sample size is too small to make the results generalizable to other similar settings. In addition, the study investigated the students` satisfaction to interactive lectures, which represents only level one in Kirkpatrick hierarchy. Future studies that explore interactive lectures at deeper level are required.

Conclusion:
Interactive lecture has been found useful to students` learning in our in accordance with the published literature. From the students` perspective, it was most useful because it addresses integration of basic science information in their relevant clinical context counting to more understanding. Other advantages include; better retention of and understanding of the content of the lecture, feedback and increased communication in the classroom during teaching. Despite the reduction in the content of the lecture to allow for more interaction, interactive lectures are still perceived as useful to the process of students` learning.

Conflicts of interest:
The authors declare no conflicts of interest. No fund was allocated for this work by any institution or body. The ethical committee in our medical college waived a demand for ethical approval for this study.

References:

1. **Wofford j. ABC of learning and teaching in medicine; teaching large groups. BMJ, 2003; 326: pp. 437-440.**
2. **Poirier C., Feldman R. Promoting Active Learning Using Individual Re sponse Technology in Large Introductory Psychology Classes. Teaching Psychology, 2007; 34: pp. 194-196.**
3. **Conroy, S., Carroll, W. 2009. Prescribing in paediatrics. Arch Dis Child Educ Pract Ed, 2009; 94: pp.55–59.**
4. **Biggs J., Tang C. Teaching for quality earning in universities. 4th edition, New York, McGraw Hill, 2011, pp. 133-159.**
5. **Knight J., Wood W. Teaching More by Lecturing Less. Cell Biology Edu cation. 2005; 4: pp. 298-310.**
6. **Harden, R., Sowden, A., Dunn, W. 1984. Educational strategies in cur riculum development: the SPICES model. Medical Education, 1984; pp. 284-297.**
7. **Tan, C., THANARAJ, K. 1993. Influence of context and preferred learn ing environments: approaches to studying physiology. Medical Educa tion, 1993; 27: PP. 143-159.**
8. **Mann, K. 2011. Theoretical perspectives in medical education: experience and future possibilities. Medical Education 2011; 45: pp. 60–68.**
9. **D`inverno D. Making lectures interactive. MSOR connections, 2003; 3(1): pp. 18-19.**
10. **Caldwell J. Clickers in the large classroom: current research and best-practice tips. Life science education, 2007; 6(1): pp. 9-20.**
11. **Huxham M. Learning in lectures; do "interactive windows" help? Active learning in higher education, 2005; 6(1): pp. 17-31.**
12. **Lueddeke, G. 2003. Professionalizing Teaching Practice in Higher Educa tion: A study of disciplinary variation and 'teaching-scholarship'. Studies in Higher Education, 2003; 28(2): pp. 214-228.**
13. **Livesey, E., Noon, J. 2007. Implementing guidelines: what works? Arch Dis Child Educ Pract Ed, 2007; 92: pp. 129-134.**
14. **White, C., Bradley, E., Martindale, J., Roy, P., Patel, K., Yoon, M., Worden, M. 2014. Why are medical students 'checking out' of active learning in a new curriculum? Medical Education, 2014; 48: pp. 315–324.**
15. **Pudelko, B., Young, M., Vincent-Lamarre, P., Charlin B. 2012. Mapping as a learning strategy in health professions education: a critical analysis. Medical Education, 2012; 46: PP. 1215–1225.**
16. **Latessa R., Mouw D. Use of an Audience Response System to Augment Interactive Learning. Family Medicine. 2005; 37(1): pp. 12-14.**
17. **Fry H., Ketteridge S., Marshal S. A handbook of teaching and learning in higher education. 2nd edition; Taylor and Francis, London, 2005. Pp. 66-75.**

18. **Eison, J., 2010. Using Active Learning Instructional Strategies to Create Excitement and Enhance Learning.** http://www.cte.cornell.edu/documents/presentations/Eisen-Handout.pdf.
19. Irby, D. 2014. Excellence in clinical teaching: knowledge transformation and development required. Medical Education, 2014; 48: pp. 776–784.
20. Yourstone S., Kraye H., & Albaum G. 2008. Classroom Questioning with Immediate Electronic Response: Do Clickers Improve Learning? Decision Sciences Journal of Innovative Education, 6(1): pp. 75-88.
21. Martyn M., 2007. Clickers in the classroom: an active learning approach. Educause Quarterly, 2: pp. 71-45.
22. Swanwick T. Understanding medical education; evidence, theory and ractice. 1st edition, London, Wiley Blackwell, 2010, pp. 11-12.