

## LECTURING IN MEDICINE : THE INTERACTIVE WAY

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### ABSTRACT

**Background:** Interactive lecturing involves an increased interaction between the teachers, students and the lecture content. The use of interactive lectures can promote active learning, heighten attention and motivation, give feedback to the teacher and the student, and increase satisfaction for both. This article describes a number of interactive techniques that can be used in large group presentations as well as general strategies that can promote interactivity during lectures. The aim of this article is to describe the advantages and indications for interactive lectures, to discuss common fears and concerns about using this method of teaching, to outline a number of interactive techniques that can be incorporated into medical teaching at all levels, and to highlight general guidelines for successful interaction and audience participation. **Materials and Methods :** The data from various journals and other sources were collected regarding the techniques used in lecturing in medicine and were thoroughly reviewed. **Results:** It was agreed that interactive lecture indeed has a lot of benefit to both the students and to the teachers **Conclusion:** It was concluded that in order to have an effective implementation of the interactive lecture the teacher should be willing to take risks, be thoroughly prepared and remain flexible.

**KEYWORDS :** Interactive Lecturing, feedback, heightens attention

### INTRODUCTION

#### What is interactive lecturing?

Interactive lecturing involves a two-way interaction between the presenter and the participants. It refers to increased discussion among the participants. Interaction can also refer to a student's involvement with the material or the content of a lecture; it does not necessarily mean that the audience has to do all of the talking. In all cases, however, interactive lecturing implies active involvement and participation by the audience so that they are no longer passive in the learning process. Interactive lecturing also implies a different way of approaching the teacher's role. In giving this type of presentation, the 'instructor' frequently becomes a 'facilitator' or 'coach', and more often than not, has to modify the

lecture content to allow for discussion and to try new techniques. It is important to note, however, that the number of students in the audience does not dictate whether the lecture can be interactive.

#### Why give an interactive lecture?

Lectures as a method of teaching and transmitting information have come under increasing criticism. (1) One of the major reasons for this critique is the observation that lectures are less effective than other methods when instructional goals involve the application of information or facts or the development of thinking skills (2). In addition, students are frequently seen as passive recipients of information, and as a result, not engaged in the

learning process. However, while many teachers accept the notion that other teaching methods might be better than lectures for encouraging students to be more actively involved in learning, and for promoting the application of knowledge, few have the time, resources or opportunity to use small group methods that promote such involvement and application (3). Also, when done effectively, the lecture can transmit new information in an efficient way, explain or clarify difficult notions, organize concepts and be thinking, model problem solving, and foster enthusiasm and a motivation for learning. The value of interactive lecturing rests on the premise that active participation and involvement is a prerequisite for learning beyond the recall of facts, and that students must be attentive and motivated in order for learning to occur. In summary, interactive lecturing promotes the following characteristics of effective learning.

#### **Active involvement**

Educational research has shown that students who are actively involved in the learning activity will learn more than students who are passive recipients of knowledge (5). As said earlier, interactive lecturing can promote active involvement with the material or the content, with the teacher, or with classmates/peers. Indeed, even students who do not talk in class are often stimulated by questions or problem-solving exercises as they think about what they would answer in a particular situation.

#### **Increased attention and motivation**

Other studies in education have demonstrated that increased attention and motivation enhance memory (6). Attention span studies have shown that students' interest and attention in the traditional lecture diminishes significantly after 20 minutes (7). By changing pace and incorporating a variety of techniques that arouse attention, interactive lectures can stimulate interest and help to maintain attention. By encouraging applications to 'real life' situations or focusing on controversial issues, interactive lectures also motivate students to read and learn more.

#### **A 'different' kind of learning**

In addition to increasing student involvement, attention and motivation, interactive lecturing promotes a 'higher level' of thinking (8). This includes the analysis and synthesis of material, application to other situations and evaluation of the material presented. Interactive lecturing can facilitate problem-solving and decision-making, communication skills and 'thinking on your feet'. This is particularly important in medical education where the application and use of information is as important as the retention and recall of facts.

#### **Feedback to the teacher and the student**

The importance of feedback to learning has been frequently noted (9). Interactive techniques allow teachers to receive feedback at a number of levels: on student needs (at the beginning, middle or end of a lecture), on how the information has been assimilated, and on future learning directions. Students, on the other hand, can get feedback on their own knowledge or performance. For example, computerized audience response systems allow for the rapid collection and broadcast of students' responses to questions (9). Quizzes at various intervals during the lecture also allow for immediate feedback.

#### **Increased student and teacher satisfaction**

In a recent study of surgical teaching, Papp & Miller (1996) found that faculty who involve students in their lectures by questioning were perceived more favourably by students than those who did not. This method of teaching arouses student attention and allows for instant feedback on whether the lecture material has been understood. It also promotes a higher level of thinking, problem solving and application of material taught. Indeed, interactive lecturing is a way to capitalize on the strengths of small group learning in a large group format (10).

#### **What prevents us from giving interactive lectures?**

##### **Fear**

Whereas most teachers accept the theoretical benefits of interactive lectures, many will not engage in such lectures for a number of reasons. Most frequently,

teachers report a fear of losing control when giving such a lecture. They fear that if the class is allowed to participate actively and ask questions, the presenter will no longer be 'in control', of either the students or the material, and that chaos may reign. Fear of not covering all of the material, or of sacrificing important content, is another commonly encountered lament. It is true that the 'number of facts' need to be reduced in order for a lecture to become interactive; we also know that if we present too much information, students will retain less (11). Additional fears include anxiety about not knowing the answer to a question posed by the students, concern that a 'dominant' group will take over and apprehension that no one will respond to a question asked.

### **The 'context' of learning**

Time constraints are frequently mentioned as a reason for not giving an interactive lecture; but again, this concern is more commonly related to the fear of not 'covering' all of the material. Audience expectations, the subject matter and the physical setting may also hinder an attempt to be interactive. Many teachers believe that the basic sciences cannot be taught interactively, and that it is easier to teach the clinical sciences using this format. Others believe that undergraduate students, because of their more limited knowledge, cannot participate in an interactive lecture, which may appear more appropriate for postgraduate students and practicing physicians. And yet, teaching experiences and the relevant literature do not support this position.

### **What are commonly used interactive techniques?**

The following section provides an overview of the most commonly used interactive techniques in medical education. Although the indications and limitations of these diverse methods may differ, the common ingredient to all is the goal of increasing student participation, attention and motivation in the lecture process. These methods include the following.

#### **1. Breaking the class into smaller groups**

Small group teaching has distinct advantages over lecturing in terms of promoting comprehension, application and problem solving (12). Yet, for many of its proponents, small group teaching is not a cost

effective method of teaching. Incorporating small groups into lectures can, therefore, be beneficial for promoting the discussion of ideas and concepts, for examining issues and presenting alternatives, for encouraging the application of new concepts, and for fostering problem solving and communication skills. The general strategy is to break the class into small groups, using a judicious rearrangement of seating if necessary (13). Small groups of two and four people may be formed among neighbours without any movement while larger groups can be formed quite quickly. The selection of the most appropriate grouping will largely depend on what you wish to achieve. Small groups may be asked to discuss a limited topic for a few minutes or they may consider broader issues for a longer period of time. The small groups can also join to form larger groups to further discuss the same topic or to consider a different approach to the same task (14). Although breaking the class into small groups is a powerful and very effective technique, it is not frequently attempted. Once tried, however, more traditional lectures seem far too silent!

#### **2. Questioning the audience**

Questioning the audience is probably one of the most frequently used interactive techniques. It is also the easiest to implement. Questions can stimulate interest, arouse attention, serve as an 'ice breaker', and provide valuable feedback to the teacher and student alike (15). Questioning can take many forms.

- Straightforward questions: the value of effective questioning has been highlighted by many authors (16). Some examples of straightforward questions include the following: 'What are the common causes of right lower quadrant pain?' 'Which therapy would you choose for the treatment of hypertension, and why?' In asking questions of the audience, it is important to remember to pose them in a non-threatening way, to wait for a response, and to make sure that more than one student has an opportunity to respond! Another way of using questions is to allow students to ask questions of the teacher. It is far more useful to intersperse the lecture with time for questions, from both the teacher and students.

## **Brainstorming:**

Brainstorming refers to that process whereby students generate a list of issues in response to a special question or topic and judgment of the responses is initially suspended (17). Brainstorming can be used at different points in the lecture. At the beginning, it can be used to invite everyone in the group to participate and to put them at ease. For example, the lecturer might start a presentation by asking the class to list all the possible complications of diabetes. While this is happening, the teacher or a student can scribe these responses on a blackboard or transparency, for critical review after an initial phase of accepting all ideas and statements. Brainstorming at the beginning of a session has the added benefit of providing an evaluation of the students' knowledge of a particular area prior to teaching. Brainstorming in the middle of a lecture can be helpful to change the pace, to regain the group's attention, or to apply certain 'facts' presented so far. For example, the teacher might ask the following: 'What are the common side effects of antidepressant medication?' Brainstorming at the end of a lecture allows the students to summarize the information discussed, to develop a framework for the material covered, and to provide feedback on what was understood or learned.

**Rhetorical questions:** rhetorical questions have been defined as those questions that are asked merely for effect with no answer expected (Webster's Dictionary, 1977). Rhetorical questions stimulate thought without requiring an answer. They are frequently introduced at the beginning of a lecture or particular segment of the lecture, to stimulate interest in the subsequent presentation.

**Surveying the class :** This technique is particularly useful for identifying audience needs and interests, for allowing teachers to assess the students' baseline level of knowledge around a particular topic, and for arousing motivation. For example, asking the students how many of them have ever had of nutritional anemia at the beginning of a class on anemia gets their attention very quickly.

**Quizzes and short answers:** Quizzes or short answers can be used at the beginning or end of a class to

provide a 'check-up' on learning, to summarize or synthesize the information presented, and to point out gaps in understanding for both the teacher and the student. Testing students at the end of a lecture can help to increase their retention of the information covered (18).

## **3. Using audience responses**

Interactive computer systems are one of the newer ways by which to promote interaction in a large group (19). By using this method, audience attention is quickly aroused and the learner can receive immediate feedback on his/her knowledge in an anonymous fashion. Students can also compare their responses to their classmates in an easy and effective manner (20). An alternative approach to the interactive computer system, that is much less costly, is the use of Flash cards. For example, the teacher can project a 'multiple choice' or 'true or false' question on the overhead projector, and for each response, the students raise a different coloured card.

## **4. Use of clinical cases**

Clinical cases can be used in different ways to bring relevance to the discussion (21). Indeed, this is probably the second most common method (after questioning) used by medical teachers. The use of cases heightens interest and promotes problem solving in an effective manner. It also encourages clinical reasoning and makes the learning of medicine 'real', important for junior students with limited clinical experience and for seasoned practitioners who can easily see application to their own clinical practices. During the lecture, students can be asked to analyze or discuss a case that is presented on paper, on video or live. Case presentations can be structured in different ways, and the objectives for its use should be clearly delineated beforehand.

## **5. Use of written materials**

Written materials are helpful to assist in the organization of key concepts, to promote the retention of information, and to remove pressure on the teacher to 'cover everything'. For example, handouts of slides (Amato & Quirt, 1990) allow students to participate more in thinking about the concepts under discussion rather than writing down

every word of the lecture. The literature on handouts (22) suggests that students achieve higher test scores from lectures accompanied by handouts, that students appreciate them, and that the design of the handout can influence note-taking practices. In an interactive lecture, handouts can also structure the discussion and/or supplement the lecture content. The timing of when to distribute the handout often depends on its purpose. It is used prior to the lecture if the student is to come prepared with a fund of knowledge; it is more effective at the outset of the lecture if the handout is incomplete; and it is most valuable at the end of the lecture if the handout contains supplemental information for further reading. Critical to its success, however, is the use of the handout in class.

#### **6. Organizing debates, reaction panels and guests**

Debates can be conducted in a number of ways. For example, the class can be divided in two (e.g. along the two sides of the lecture hall) and the students on either side can be asked to support two different sides of the issue (23). Although neither side may contain the whole truth, it can be energizing to defend a particular perspective. Students choosing a middle ground should be invited to defend their reasoning. Summary arguments could be made by several students from each 'side'. Alternatively, a number of students can be chosen from the class to debate an issue in front of the class (24). Peer-led debates and discussions have the advantage of enlisting class support and interest.

#### **7. Using simulations and role plays**

Simulations and role plays allow students to try out a real-life situation in a 'safe setting' and to receive feedback on their experiences (25, 26). By presenting students with a situation that they are likely to face in the future, simulations can heighten attention and clinical relevance, and involve students at a number of levels in the lecture format. Role-plays can also be used creatively in large classes. For example, students can be asked to role play a doctor-patient encounter and receive feedback from their peers. Alternatively, the teacher can role-play a particular patient problem and ask the students to take a history.

Simulations can be used effectively as well. In a presentation on Parkinson's disease, the teacher can demonstrate a number of abnormal gaits, and students can be asked to identify the differences among them.

#### **8. Using films and videotapes**

Film clips or videotaped vignettes can be used as a trigger to promote discussion or to stimulate student thinking. Most often, the objective is to elicit an emotional as well as a cognitive response in the viewer and to 'trigger' meaningful discussion (27, 28). For example, a short videotaped segment can be used to illustrate a challenging patient interview and the students may be asked to react to what they saw. Films or videotapes used for this purpose should usually be brief in duration and present only part of a situation in order to promote further inquiry or discussion. Videotapes are also useful for examining student attitudes and skills (28, 29).

#### **9. Audiovisual aids**

Certain audiovisual aids facilitate interaction more than others. Overhead projectors, for example, allow the presenter to maintain eye contact with the audience, to record audience responses, and to change the order of the presentation, which is not easily achieved when using 35 mm slides. Flipcharts and whiteboards allow for the creation of diagrams or content during the lecture and easily permit the scribing of students' answers to questions, problem-solving exercises or debates. Multimedia presentations and computer-assisted learning also promote interactivity.

#### **10. Using effective presentation skills**

Although the focus of this discussion is not on effective presentation skills per se, the presence or absence of such skills can determine the effectiveness of an interactive lecture. Clearly, if one does not have eye contact with the students or scan the audience, the lecture cannot be interactive! Similarly, the physical setting (e.g. a long, steep lecture hall versus one where members of the audience can see each other) can hinder or facilitate interaction.

## CONCLUSION

The following general principles may help them to become more interactive.

1. Be willing to take risks and overcome your fears. As we have stated earlier, giving an interactive lecture can be very risky, but taking the risk is worthwhile if it will promote the student learning. Identify your fears, be willing to take a risk and maintain your sense of joyfulness in the classroom. Most of all, be prepared for the unexpected!
2. Prepare and practice: It takes longer to prepare an interactive lecture than a traditional one because of the need to study the material in detail and more importantly to choose your methodology carefully.
3. Be clear in your objectives and cut down on your material: It is always important to have clear objectives; this becomes even more important in an interactive lecture. Remember that less is more; consider your three most important 'points' and build your lecture around them. Do not try to cover every topic in complete detail; when worried about 'leaving out' too much material, or not 'covering' everything, use handouts to supplement the material. Always ensure that your methods match your objectives.
4. Prepare students for their role in interactive lectures. As teachers, we cannot assume that students will know how to participate in a lecture or what behaviour is appropriate. Accustomed to being passive, students must learn to become active participants in the process of learning, and we must prepare them to do this over time. Setting rules at the beginning of your lecture and outlining how your session will be conducted is one way of preparing your students for taking an active role in the process of learning.
5. Remain Flexible and do not overdo it: Many teachers, once introduced to the concept of interactive lecturing, want to immediately apply their newly acquired skills. Remember to focus

on one new technique at a time, and to remain flexible. Finally, be prepared to abandon your prepared agenda!

As Frederick (1986) has said, the lecture method is here to stay. By using interactive techniques and strategies, students will become more involved in the learning process, retain more information and be more satisfied. So will the teacher!

## REFERENCES

1. Douglas, k., Hosokawa, m., Lawler, f. a practical guide to clinical teaching in medicine newyork: springer: 1988
2. Feden, p.d. about instruction: powerful new strategies worth knowing, educational horizons, 1994; 73:18-24.
3. Foley, r, Smilansky, j. teaching techniques new York: McGraw hill: 1980
4. Frederick, p. the lively lecture and variations, college teaching, 1986; 34:43-50.
5. Frederick, p.student involvement: active learning in classes, in: m.g. weimer (ed) new directions for teaching and learning, teaching large classes well, san Francisco: jossey-bass.1987; 32:45-56
6. Gage, n,Berliner, d educational psychology dallas: houghton-mifflin.1991
7. Gibbs, g., Habeshaw, s. Habeshaw t. improving student learning during lectures, medical teacher, 1987; 9: 11-20.
8. Gibbs, g., Habeshaw, s. Habeshaw t. 53 interesting things to do in your lecture Bristol, UK, technical and educational services1988
9. Handfield-jones, r., Nasmith, l., Steinert,y, Lawn, n. creativity in medical education: the use of innovative techniques in clinical teaching, medical teacher, 1993; 15:3-10.
10. Herbert, c.p. teaching prevention by debate, family medicine, 1990;22:151-153.
11. Jackson, m. w, Prosser, m.t. less lecturing, more learning, studies in higher education,1989; 14:55-68.
12. Jason, h, Westberg, j.providing constructive feedback boulder, co, a cis guidebook for health professionals.1991

13. Jason, h., Westberg, j. making the most of instructional presentations: using the audience response system. kalamazoo, mi, upjohn1995
14. Kimmel, p. abandoning the lecture: curriculum reform in the introduction to clinical medicine, the pharos, 1992; 55:36-38. Knox, a. b. helping adults learn San francisco, jossey-bass1986
15. Kraft, r.g. group-inquiry turns passive students active, college teaching, 1985;33:149- 154.
16. Kroenke, k. the lecture method: where it wavers, american journal of medicine, 1984;7:. 393-396.
17. Laidlaw, j.m. twelve tips for lecturers, medical teacher,1988;10:13-17.
18. Lowman, j. mastering the techniquesofteachingsan francisco, jossey-bass1984
19. Mannison, m., patton, w. Lemon, g. interactive teaching goes to uni: keeping students awake and learning alive, higher education research and development, 1994;13:35-47.
20. Mckeachie, w. teaching tips lexington, ma, d.c. heath and co.1994
21. Meyers, c. Jones,t.b. promoting active learning:strategies for the classroom san francisco, jossey-bass.1993
22. Michaelsen, l.k., Watson, w., cragin, j.p. Fink, l.d. team learning: a potential solution to the problems of large classes, exchange:the organizational behaviorteaching journal, 1982; 7:. 13-21.
23. Murray, h.g. effective teaching behaviours in the college classroom, in: j. smart (vol. ed.) higher education: handbook of theory and research,newyork, agathon press.
24. 1991; 7,135-172
25. Newble, d, Cannon, r. a handbook for medical teachers boston, kluwer academic.1994
26. Papp, k.k, Miller, f.b. the answer to stimulating lectures is the question, medical teacher, 1996;18, pp. 147-149.
27. Ramsden, p. learning to teach in higher education (london, routledge).1992
28. Russell, i.j., Hendricson,w.d, herbertr.j. effects of lecture information density on medical student achievement, journal of medical education, 1984;59, pp. 881- 889.
29. Saroyan, a, Snell, l. variations in lecturing styles, higher education, 1997;33:85-104.
30. Schwartz, p. active small group learning with a large group in a lecture theatre: a practical example, medical teacher, 1989;11:1-86.
31. Schwenk, t., Whitman, n. the physician as teacher baltimore, williams and wilkins.1987
32. Amato, d.,Quirt, i. lecture handouts of projected slides in a medical course, medical teacher,.1990;12,:292-296.
33. Beard, r. ,Hartley, j. teaching and learning in higher education, london, harper and row.1984
34. Bligh, d. what's the use of lectures? middlesex, england, penguin.1972
35. Butler, j.ause of teaching methods within the lecture format, medical teacher, .1992;14:11- 25.
36. Cox, k. &Ewan, c. the medical teacher edinburgh, churchilllivingstone.1988