The educational value and effectiveness of lectures

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Lectures have been criticised for being outmoded, ineffective and inefficient

INTRODUCTION

Before 1850 medical students learned primarily through an often unstructured apprenticeship system, whereas after 1850 teaching was increasingly by way of structured formalised lectures.[1] However, the Flexner Report (1910) on *Medical Education in the USA and Canada* criticised the emphasis on 'memorisation of facts' and 'cramming of knowledge' and recommended that, for more in-depth understanding of how to apply the knowledge in practice, students should participate in active learning through laboratory work and clinical experience, rather than lectures.[1] Only after 1950 did learning through applied situations become more common, with lectures being replaced or combined with small group teaching, problem-based learning, case-based discussions, role-play and simulation.[1] Although the proportion of lectures in relation to other teaching methods can vary considerably between medical schools, Exley and Dennick point out that the lecture remains 'the cornerstone of many undergraduate courses'.[2]

After briefly outlining the main arguments against lectures I counter these and argue in favour of the educational value and effectiveness of lectures, a teaching method that involves a continuous formal oral discourse on a particular topic.[3]

MAIN ARGUMENTS AGAINST LECTURES

Lectures have been criticised for being outmoded, ineffective and inefficient because attention span sharply declines after at most 15–20 minutes,[3,4] largely because of lack of interactivity leading to passivity and inefficient recall, with a five per cent retention rate against 10 per cent for reading and 50 per cent for group discussion.[4] With no reliable feedback lecturers cannot take into account individual needs, check understanding and adjust accordingly.[4]

Lectures have also been criticised for being autocratic and authoritarian in form and style[3,4] and for being influenced by teacher's bias.[4]

Lecturalgia or painful lecture (inaudible, long, boring, tedious, monotonous, material delivered too quickly, poorly organised, not at the appropriate level, assuming too much knowledge and no emphasis on key points) is another argument against lectures.[5]

Not infrequently, it is concluded that lectures are less effective than other teaching methods for promoting thinking skills and changing values and attitudes;[3,4] however, it must be admitted that lectures can be as effective in conveying information or transmitting knowledge.[3,4]

MAIN ARGUMENTS FOR LECTURES

As medical students have to retain a lot of background knowledge over a long period of time, lectures are a cost-effective way of acquiring the necessary background knowledge. If lectures are compact and well structured, a lot of knowledge can be transmitted to a lot of students[1,6] who firmly expect to attend them.[2] Indeed, despite the fact that outmoded lectures have often been removed, to be replaced by problem-based learning courses 'designed to be run without lectures', many tutors have had to reintroduce them because of student demand.[2]

Although efficient use of resources, cost-effectiveness in reaching a great number of students and student demand are more to do with economic than educational arguments, the educational value of lectures comes from a proven track record going back to at least the Ancient Greeks, as well as 900 years of university teaching.[2] More specifically, lectures can do the following:

- Enable students to learn how to take notes and summarise key points; they structure the field of knowledge.[2,7]
- Provide new information not found in standard texts.[2,3]
- Provide a synthesis of various sources and clarify complex information.
- Relate theoretical knowledge to the context of medical practice.[2,6]
- Provide the lecturer's personal overview.[2]
- Involve students by way of activities and interactive handouts.[2]
- Motivate and inspire.[3]

ATTENTION SPAN

It is commonly held that a main limitation of lectures is that, in a lecture, the level of attention steadily declines after at most the first 10–15 minutes,[3,8] and the more complex the lecture the greater the decline.[3,7] This belief has been shown to be without foundation.[8] As far as Petty's pronouncements about the amount of information retained from different learning activities is concerned, the lack of any verifiable source for this information has done nothing to prevent its popularisation.[4] When students are fully engaged their attention span seems infinite, regardless of the teaching method.

Another alleged limitation of lectures is that they do not cater for individual needs unless the students have the opportunity to ask questions.[2,9] However, as Exley and Dennick[2] argue, lectures can be effective if they are made more interactive with pauses, activities, questioning and reviews of what has been said. Buckley[6] suggests that video clips, demonstrations and real objects can also be used, whereas Bligh[3] and Dent[7] explain that, after a rest period, the level of attention in lectures increases again before starting to decline again after a further 7–10 minutes. Thus, a greater complexity of the content should be matched with more pauses, activities, questioning and reviews.

Figure 1. Laurentius de Voltolina (1350s). *Henricus of Alemannia Lecturing his students.*

If lectures are compact and well-structured, a lot of knowledge can be transmitted to a lot of students

When students are fully engaged their attention span seems infinite

In a small group discussion, a tutor can be authoritarian and oppressive

AUTHORITARIANISM, LECTURALGIA AND INTERACTIVITY

Brookfield and Preskill[9] underline that all too often lectures are set up in opposition to discussions, with lectures being presented as a symbol of authoritarianism and oppression and discussions as a symbol of independent thinking and liberation. However, they point out that, in a small group discussion, a tutor can be authoritarian and oppressive by tightly controlling the discussion, reframing, summarising and responding differently to contributors, whereas 'a liberating teacher will illuminate reality even if he or she lectures'.[9]

Steps to take to avoid the lecturalgia highlighted by McLaughlin and Mandin[5] are to pay attention to judgement, organisation and delivery of content, as well as to encourage interactivity.[2–4,7]

In a specifically medical education context, Kaufman[10] advises the use of interactive handouts with key points and space for students' notes, multiple-choice or very short answer questions requiring higher-level thinking. He also suggests that students discuss their answers with their neighbours before being asked by a show of hands to indicate how they responded to the questions, after which the correct answer to each question is given to the students – which can be 'modernised' by using electronic keypads. This not only makes students active contributors, but also checks understanding, activates prior knowledge and experience and, most importantly, offers opportunities and support for practice with self-assessment and feedback from tutors and peers.[10]

PROMOTING THINKING SKILLS, CHALLENGING ASSUMPTIONS, CHANGING ATTITUDES AND HIGHER-ORDER THINKING

Arguments against the educational value of lectures usually deem them 'unsuitable to stimulate thought or to change attitudes'.[3] This has been disputed by many theorists who assert that lectures can not only transmit knowledge, but also stimulate higher-order thinking and motivate students.[2,6,10] Brookfield and Preskill[9] point out that the effectiveness of lectures can be enhanced by introducing alternative perspectives and checking for unstated assumptions, starting with questions that are going to be answered and finishing by underlining questions that are left unanswered, as well as asking students to indicate the questions that they have in relation to the lecture. Buckley[6] underlines that several lecturers can model scholarly discussion as they lecture. Introducing alternative perspectives, checking for unstated assumptions and modelling scholarly discussion change the nature of lectures from more passive transmission of knowledge to more active, higher-order thinking.

Lectures can not only transmit knowledge, but also stimulate higher-order thinking

CONCLUSION

So far the literature surveyed has highlighted the need for lectures to be clear, well structured, expressive and interactive for maximum effectiveness. It has underlined the fact that, because of the nature of lectures, it is necessary that they not be used on their own, but in combination with other teaching methods such as seminars and discussions, and that the combination should depend on the learning objectives to be achieved, with a general principle that learning should be closely related to understanding and solving real-life problems as well as to encouraging higher-level thinking.

If the effectiveness of lectures is linked to higher-order thinking and embedding new knowledge in a meaningful context, then maximum effectiveness is achieved with a problem-oriented and highly interactive lecture. However, if lectures are to be supplemented by other teaching methods that focus on active learning, higher-order thinking and applying theory to practice to solve problems, then it seems odd that lectures become that which has to supplement them.

Custers and Boshuizen[1] point out that contextual, experiential and situational knowledge are certainly of great importance in medical education, but in a lecture about body processes, for example, if too much time is

spent trying to enable students to apply knowledge in practical contexts, there may not be enough time to transmit the theoretical knowledge that must be acquired *before* it can be applied. They suggest that, if knowledge is too 'contextualised', it has to be 'decontextualised' to be applicable.[1] A clear implication of this is that the 'traditional' model of lecture as a passive transmission of theoretical knowledge can be more effective than interactive and context-based lectures that are deemed to enhance higher-order thinking, but that need to be supplemented with 'traditional' lectures.

KEY POINTS

- The lecture remains the cornerstone of medical curricula as an efficient means of transmitting knowledge.
- The negative image of the lecture has given birth to a myth that all lectures must suffer from lecturalgia.
- Students' attention span lasts as long as their interest.
- Lectures can be as interactive as one likes but interaction alone does not mean engagement by the students.
- There is more to the lecture than the passing of notes from the lecturer's page to that of the student without going through the brain of either.[4]

Learning should be closely related to understanding and solving real-life problems

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