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Lectures:

Pedagogic considerations
for effective lecture design

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This guide aims to support the case for the structure and purpose of a lecture being decided on clear pedagogical grounds, consistent with overall programme aims and the commitment to thoughtful and inclusive teaching at Lancaster University.

It explores the multifaceted purposes of lectures, offers insights from research into lecture practice, and evidence-informed recommendations for effective practice. The guide is intended to support those involved in making decisions about structures and designs for learning and teaching at module and programme levels.

General points

The term lecture does not precisely describe any one particular form of teaching delivery. It can often refer to larger classes, and has traditionally been associated with a transmission mode of teaching. But years of educational research and development – in conjunction with academics' ongoing enhancement of their practices – have led to increasing variety in what is described as a lecture. This includes the important acknowledgement that there may be clear disciplinary differences in the purpose of a lecture and these should be respected, where pedagogically based.

Decisions on the appropriate form and duration of a lecture should be made at module and programme level, taking account of the coherence of the full student experience. However, this does need to be taken in balance with any practical parameters or requirements. As we increase the variation in teaching session lengths, we increase the logistical problems of timetabling. This is not, however, only a logistical issue, it also impacts on our other pedagogical commitment to ensuring the greatest possible student choice. This further reinforces the importance of decisions about teaching sessions being based firmly on pedagogical merit.

Types of lecture

These four general categories are proposed to assist academics to think about the *purpose* of a lecture in context with determining the appropriate structure and length. These are not fixed categories with impermeable barriers. They are a heuristic device to aid thinking through the purpose of a teaching session.

Information-Based

To ensure students have information about a topic which they are likely to apply in other sessions (e.g. labs, tutorials or workshops) or in their independent studying.

Examples

- Establishing the building blocks of disciplinary knowledge (important in STEM)
- Ensuring understanding of health and safety requirements and procedures for lab work.

Worked Examples

Demonstrating how to work through different questions or problems, as is common in many STEM disciplines.

Examples

- Demonstrating how to approach mathematical problems or formulae.
- Demonstrating how to write up a lab report.
- Demonstrating the process involved in a particular activity.

Engagement

To inspire interest and engagement in a topic or area of debate; generally distinguished from the Information-Based approach by dealing with debates, contested ideas and conflicting arguments or theories.

Examples

- Sharing insights into a subject where there may be no agreed 'information' to pass on, but rather contested knowledge and dynamic debates. Here there may be a particular emphasis on nurturing students' abilities to understand the minds of others – e.g. theories about society or philosophy that may be unfamiliar and which they do not have to agree with, but nonetheless should be prepared to engage with.

Interactive/Hybrid

Deliberately moving between modes of teaching in order to achieve set aims that are better done in one session than divided between sessions; e.g. where rather than separating theory and application it is useful to move back and forth between the two.

Examples

- Combining different tasks. E.g. An Information-Based session may then lead to a practical task or mini buzz groups, or even individual quiet reflection on what has been said – and then move on either into a question and answer format and/or back to more input.

Types of lectures: considerations

- These four broad types *do not* represent a progression from least interesting to most interesting. Any teaching format needs to be engaging for students.
- It may, however, be that they do demonstrate a spectrum in terms of the length that would best achieve these different aims.
- Information-Based and Worked Examples may normally be best in a smaller one-hour slot.
- Engagement might be one or one and a half hours depending on the topic and programme aims.
- A two-hour slot is more likely to be appropriate only where a genuine range of modes of delivery is important within the one session.
- The four types do not represent fixed alternatives. As such a Worked Example could also inspire Engagement. Engagement may require moving between Information-Based and more discursive and contested ideas.
- The principles of thinking through the purpose of a lecture and considering how the students will experience it remains broadly true whether delivered in-person, online or in dual mode.
- A very large lecture (in student numbers) does not need to be passive or didactic, and there is a lot of excellent educational research and development which now evidences student-focused or personalised approaches to large lectures – including using technology such as text walls (e.g. Padlet, Mural) and other personal response systems – even low-tech options such as red and green cards like Ready, Steady, Cook (McArthur & Huxham, 2013).

Insights from the research

The points highlighted in this section reflect a balance of perspectives from what is a wealth of research insight into lecture practice in Higher Education. A helpful summary of arguments for and against lectures can also be found in French and Kennedy (2017). What this brief commentary signals, however, are that contrasting positions and perspectives on lecturing demonstrate the importance of enabling different approaches to suit different disciplines (though potentially they may still learn from one another).

Student engagement and activity in lectures

Students, like everyone, struggle to concentrate for long periods of time without a change of focus or tempo. Even though we may sit through a three-hour film, few films simply feature the same type of scene throughout – they are broken up with different images and approaches to encourage interest and sustain concentration. A lot of educational literature rests on research which suggests that after about 10-15 minutes a student's concentration can start to wane (Stuart & Rutherford, 1978). This does not mean we teach everything in 15-minute sessions. Rather it points to the need to factor in some change of pace, different activity or even a quick pause for students to gather their thoughts.

Young et al (2009) found that this loss of concentration among students was similar to that of a someone monitoring automated equipment, and is best resolved by short breaks or change in activities. They do not, however, argue that such concentration breaks must be interactive activities. This view is reinforced by Huxham (2005) who argued that the assumed benefits of always having interactive windows in lectures is not empirically grounded.

Indeed, research by O’Keefe et al (2017) of neuroscience students indicated that they valued not feeling rushed in a lecture. One student said: “Allow time for students to take notes in class (i.e., don’t speed through the whole lecture)”. Another student said that a lecture should: “ask us to think rather than talk at us.”

A student sitting listening can still be an active learner if they feel engaged with rather than talked at. Freeman et al (2014) found a positive correlation between exam performance and active learning in lectures for STEM students. In addition, students learning by didactic modes were 1.5 times more likely to fail.

The educational role of the lecture

Lectures have faced increasing criticism in some educational literature. The Harvard physicist, Eric Mazur, said that it is practically ‘unethical’ to lecture at all (French & Kennedy, 2017). However, such criticisms generally assume didactic and transmission mode lectures. Bligh’s influential, *What’s the use of lectures?* (1998) argued strongly that lectures could be used for transmission but not for other forms of engagement.

Whilst the risk of falling into a didactic approach to lecturing exists, the argument that this is of principal concern now seems somewhat out-dated. This is not least because we now have a range of ways of transmitting information to large numbers of students outside of a direct teaching context, many of which we have become adept at during the rapid upskilling and adoption of digital modes of education since 2020. Thus, transmission of information on its own is now rarely the only justification for a lecture format.

In contrast, Fulford and Mahon (2020) make a philosophical defence of the lecture as learning to engage with the minds of others. They do so because they see higher education in specific terms:

“Coming to know how you stand in the world, and in particular, how you stand in relation to your subject, is a fundamental task of what it means to become a university student.” (p. 372)

What the lecture format offers is not just the transfer of information but constructing a situation which must actively involve both parties. Students learn through a lecture to see how someone else structures an argument or analyses a text and they are then required to make a response to this – even if only silently. It helps them to grow in confidence in terms of their own engagement with disciplinary knowledge and academic debate:

“This mode has particular relevance for teaching and learning in the Humanities where the lecture is to be understood not as a mode of dissemination, but as a special form of human encounter where the voice of one is modulated specifically for the hearing of another. With this understanding in play, we consciously resist any unhelpful characterisation of the university lecture as a teaching format that delivers, i.e. as a teaching format that involves one confident central speaker possessing knowledge of her expert area and thereafter broadcasting this knowledge to a less-than-expert audience.” (p. 366)

What students value from lectures

There have been other arguments reinforcing the usefulness of lectures, even those which are largely information-based. For example, work from Lancaster University’s *Understanding Knowledge and Student Agency* project (part of the ESRC Centre for Global Higher Education) found that STEM students highly valued the lecture as a way of gaining knowledge, seeing worked examples and building their understandings of the discipline. Students were also clear that they value: being able to ask questions; explanations such as working through examples/problems; and support for study outside (resources that would help them apply knowledge elsewhere or study independently). Case et al (under review).

There is considerable research to support the view that large lectures (with many students) do not necessarily have to be didactic spaces and can actually well suit particular forms of personalisation and engagement. See McArthur and Huxham (2013) for a discussion of high and low tech options such as coloured cards or text walls

using mobile phones. Also Beekes (2006) found that overseas students, particularly from Confucian-influenced countries, were better able to engage when lectures included some use of personal response systems.

More generally, Game and Metcalfe (2009) argue that the sheer volume and diversity of a large lecture can open up positive opportunities. This has some resonance with Fulford and Mahon's argument that lectures can provide a rich environment to engage with the minds of others. Education is after all, according to Jerome Bruner (1996), all about the extraordinary human capacity for intersubjectivity – for understanding the minds of others.

Recommendations for core principles of lecture design for learning

- The lecture must have a clear purpose understood within the wider module and programme.
- Choice of lecture format and design should be pedagogically-led.
- Even Information-Based formats must consider the student experience and are unlikely to be purely didactic.
- Consider ways to link student learning beyond the lecture to the next place they go or their independent study. For example, boot grit feedback is a quick and easy method that seeks to pick up small misunderstandings from a lecture before they become larger problems (McArthur & Huxham, 2013; McArthur et al., 2011).
- Consider ways to alleviate concentration decay by varying pace, introducing interactivity, changes of task, or even a few minutes of quiet catch-up time. Even if lectures are recorded it is better to prevent lapses of concentration than try to cure them through repeat viewing (though there may be other advantages to repeat viewing).
- Colleagues should be assured that we are not arguing for novelty for the sake of it: a clear but reasonably traditional approach which takes account of the student perspective can nurture engagement and have great educational merit.
- Any teaching session, however successful, benefits from periodic reflection and reconsideration of core aims and approaches.
- Peer observation of teaching offers an excellent and safe space to exchange examples of good practice. We should consider promoting systems that ensure local ownership and a sense of a safe place to share teaching experiences. One of the most important forms of professional learning is through the informal sharing of stories (Orr, 1996).

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