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Retaking the lecture theatre: a model for effective student learning in a traditional environment.

Ruth Pickford and Heather Clothier

Introduction and context

This paper is not advocating the large lecture as a solution to the challenges posed by widening participation and large undergraduate cohorts. However, where the lecture theatre is to be retained as a resource the FeFiFoFun (F⁴) model addresses many of the shortcomings of the traditional lecture. At the heart of the model is the exploitation of the lecture, not primarily as a medium of dissemination, but of inspiration and motivation, supporting a diverse student population in student-centred learning through dialogue and engagement of both cognitive and affective domains.

Drivers

Inclusivity.

Given the range of learning styles and cultures represented in many lecture theatres the traditional lecture format may fail to meet the needs of many students. In particular, international students and students with disabilities may struggle. Students whose first language is not English may have problems with oral delivery and research at Leeds Met University suggests that some students with dyslexia may "have difficulty in processing sequential symbolic information" (Powell, Moore, Gray, Finlay and Reaney 2004). In such a diverse student population it is difficult to identify commonality (other than perhaps the culture characterised by the ubiquitous Microsoft Windows!). Given the increasing diversity of the student population and the rising expectations of students adept at processing multiple messages and multiple media simultaneously it can be argued that it is beneficial to design a lecture theatre 'interface' that exploits the whole range of channels available.

Student centredness.

Alan Rodgers (2005) suggests that "the more active the student-learners are, the more effective is the learning process" and that the most effective learning methods are student-centred activities "especially those in which the student participant engages with the teacher and/or the material directly". If we can redesign the lecture to be an active engagement between student, key material and teacher, whereby pace and direction are influenced by the student then we potentially have a useful learning environment.

Designing for good teaching

Murray (1997) points to research evidence that identifies 3 qualities of good teaching: Enthusiasm and expressiveness, clarity of explanation, and rapport and interaction. Whilst these characteristics may, of course, be attributable to the personality of individual lecturers it is sensible to focus on these as goals in the design of a lecture. Enthusiastic elucidation and interaction is more important than dissemination of large quantities of information.

The F⁴ Model

The F⁴ model for lecture design and delivery is based on a belief that:

- In order to effectively teach students it is important to discover what they know and what they don't know (**Feedback**) -Fe
- A priority is to identify and elucidate key points (**Fixation**) - Fi.
- Summative assessment can be a valuable resource for engaging students (**Formative-summative assessment**) - Fo.
- Students are more likely to attend a lecture if they want to be there (**Fun**).

Formative-Summative Assessment and Feedback

The F4 model is independent of the feedback mechanism used but one particularly powerful approach, the Colourcard feedback system (Pickford and Clothier, 2003) integrates frequent, formative assessment, without the burden of marking, into the lecture. It requires each lecture to be structured around a series of milestone multiple-choice questions. Milestones are identified at the lecture design stage as those critical points at which student understanding needs to be ascertained. The question is displayed at the front of the lecture theatre with colour coded options and each student holds up a card which corresponds to the colour of the selected option. By using carefully designed questions, the lecturer is able to identify problems in student learning and to address these problems immediately before proceeding to the next milestone. Participation in student to lecturer interaction is encouraged by the direct relationship between the content, format and process of the lecture interaction and that of an end of module summative assessment. This summative assessment element is therefore designed principally to be formative in shaping student behaviour within the lecture.

Fun

According to adult learning theory learning can be most effective if one's emotions are engaged in the learning process (Boud and Garrick 1999, Mentowski 2000). It follows then that a lecture may be a more holistic learning experience if students invest on an emotional level. Given that students associating positive emotional experience with a lecture programme are perhaps more likely to attend than those experiencing negative emotions it is sensible to strive to incorporate mainly enjoyable elements into the lecture.

If we are aiming to manage the emotions of learners then music is an excellent tool. It is possible to measure emotional response to music with a heart-rate monitor, "we actually physically feel these feelings and that goes beyond words" (Dibben 2006) and there is some evidence of a link between music and cognition: "Music can lift our mood, and certain kinds of music can temporarily boost specific kinds of intelligence" (Lamont 2005).

Another powerful tool is the story. Jan Stewart suggests that when a person is listening to a story both sides of the brain are working. "A good story uses "visual, auditory, kinesthetic and olfactory words to give the story depth and stimulate the right brain to enrich the meaning of the story and store it in the memory for easy recall". Jarvis, Dyson and Burchell (2004) refer to the "quality of the silence" during storytelling and describe how students report a feeling of relaxation "you get a sense of achievement, you absorb it, you understand it and you could retell it".

Other resources which have been used to evoke feelings, support permanence and to trigger post lecture recall of critical material include drama, dance, poetry, careful use of humour, games and quizzes. Ideally the lecturer should select a toolkit of resources for each lecture that they are comfortable using and from

which they choose those that are best suited to student need at the milestone points.

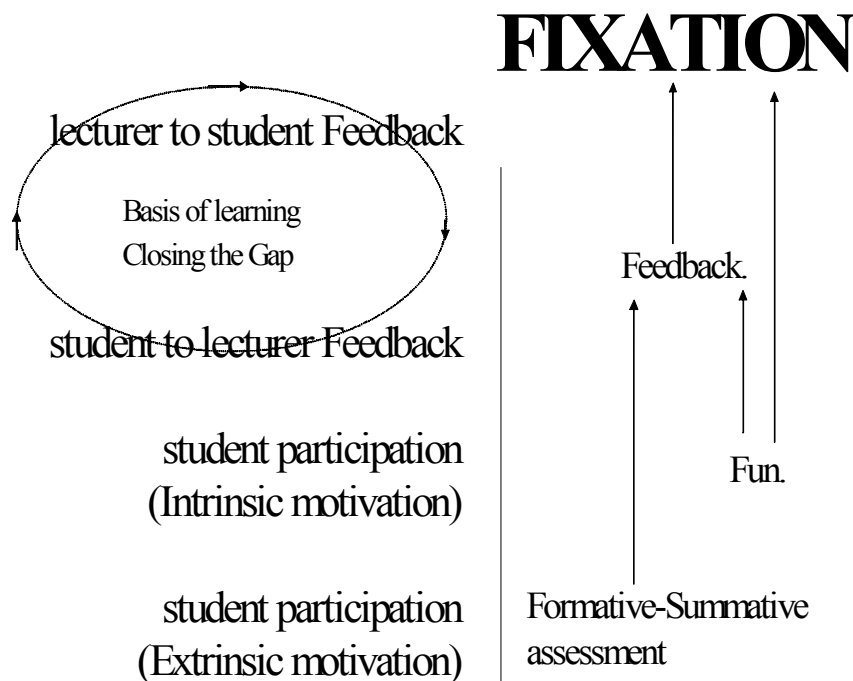
Fixation and the FeFiFoFun Model

Mentokwski (2000) states that "Learning that endures is transformative". There is little point of a lecture that is forgotten. Our goal in a lecture is to explore a concept through student-tutor dialogue and feedback and to associate this concept with both cognitive and affective triggers that can aid recall for subsequent use. Fixation refers to the internalisation of a concept in both the cognitive and affective domains.

Figure 1: The F⁴ model

Diagram illustrating the relationship between the 4 FeFiFoFun elements and identifying the contribution each element makes to student learning within the lecture.

F⁴ Integration



The principal characteristic of the F⁴ lecture is the integration of the four elements of feedback, fixation, formative-summative assessment and fun within the lecture. Student understanding of critical material (**fixation**) is checked at milestone points within the lecture. Student participation in this lecture dialogue is supported by desire (**fun**) and perceived necessity (**formative-summative assessment**). Lecturer **feedback** is immediate and the subsequent lecture pace and direction is determined by the student response. This immediate feedback in turn supports **fixation**, as does the use of a range of fun elements.

Designing an F⁴ Lecture.

The process of designing an F⁴ Lecture is a 6 step process. The design questions are:

1. What is the key point of this lecture?
2. What are the milestones in students understanding this key point?
3. What type of feedback mechanism is to be used at the milestones to check student understanding?
4. Which aspect of the summative assessment mirrors this feedback mechanism?
5. What are the milestone questions?
6. Which resources will be used to emphasise and explore the key point?

Recommendations.

It is imperative not to lose sight of what you are trying to achieve in the lecture. The F⁴ lecture is not primarily a forum for dissemination or delivery but an opportunity for added value via a mass event. Fixation on a small set of critical material (as opposed to syllabus dissemination) frees the lecturer to really focus on inspiring students as well as being able to address a concept fully. The lecture therefore becomes learning-driven (rather than time, syllabus or process driven) and supports permanence and deep learning. Therefore, whilst the planning and design of the lecture and the selection of resources is important, of more importance is the lecturer's flexibility at milestone points to react immediately to student need and not to stick to a predetermined script. Student engagement with the lecture is the critical success factor and the F⁴ approach works best if the rationale is explained to students.

The F⁴ model has been used successfully over a number of years in teaching large cohorts of first and second year students on information systems related courses at Leeds Metropolitan University and Sheffield Hallam University. Although a minority of students indicated through feedback that they had not perceived the benefits of the model the vast majority of feedback was positive and attendance at the F⁴ lectures was high.

Whilst it is of course possible to easily incorporate only a subset of the elements of the F⁴ approach into the lecture (many of our colleagues, for example, routinely use music or coloured cards) with benefit, fixation of key concepts is best achieved through adoption of the full model as described in this paper.

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