

TEACHING AND LEARNING ACTIVITIES: EXPANDING THE REPERTOIRE TO SUPPORT STUDENT LEARNING

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Introduction

This chapter reports on the use of a practical exercise to help lecturers to consider expanding the repertoire of activities that they use in their teaching. It sets the discussion within the framework of a particular set of assumptions about the nature of higher education and the characteristics of teaching in a higher education context. It outlines the instrument and the exercises used with participants in the workshops for academic staff from three higher education campuses. It includes observations about the processes that occurred. The chapter concludes by outlining the value of the exercise, suggesting practical ways it can be used at individual and group level, both by lecturers and staff developers, and offering suggestions for further work.

Context and background

In setting out the rationale for this chapter a number of basic assumptions that create the framework in which it is situated must be stated. The first is to declare some definitions. I declare these as premises. They relate to a definition of teaching, a theoretical paradigm and a view on the nature of the higher education endeavour. This is important to the individual teacher because we work out of our theoretical paradigms, values and definitions, whether they are explicit or implicit.

A definition of teaching

Ramsden says (Ramsden 1992:5) that "The aim of teaching is simple: it is to make student learning possible." For the purposes of this paper teaching is taken to mean a set of activities that makes learning possible in students. While the aim is simple, the activity is complex because it involves an array of understandings from discipline perspectives to which students are being introduced and in which they are invited to operate. It is not a value free activity but is undertaken within one or more possible paradigms or world views. This paradigm, defined as "an internally consistent orientation from which a conceptual and operational approach to functioning in the world is constructed" (Pearse 1983:158) influences the way it is conducted. Making explicit ones own definitions and paradigm(s) can illuminate the choices made in teaching.

A theoretical paradigm

Two such paradigms of teaching are identified and discussed by Kolitch and Dean in their critique of student ratings of instruction in the context of North American higher education (Kolitch and Dean 1999). They describe a “transmission model of teaching” and an “engaged critical model of teaching”. They acknowledge that the use of paradigms “to capture the complexity of teaching and learning is widespread” and draw parallels with similar dichotomies in other writings (Barr & Tagg 1995; Trigwell & Prosser, 1996; Kember and Gow, 1994).

The **transmission model** characterizes the activity of teaching as the imparting of knowledge and the activity of learning as the absorbing of knowledge and, writing in 1999, Kolitch and Dean considered that this remained the dominant model in classrooms in North America.

The *engaged critical model of teaching*, on the other hand, sees teaching and learning more in terms of a dialogue. Students, each with a unique life experience, and the teacher, also with a unique life experience, engage in a mutual and creative dialogue.

While a critical engaged model is often thought of in terms of a social change model of education, one of its defining attributes is its focus on the work of learning, the need for the student to engage with the object of study in order to achieve understanding and create knowledge.

This paper is written from the standpoint of the latter model. It rejects the transmission model as a candidate for dominant paradigm of teaching in higher education but respects it as a tool, among other tools, that can be brought into service when needed. The reasons will be apparent from the assumptions about the nature of higher education set out below.

One of the key benefits of the learning pyramid exercise discussed below is that it allows teachers, to access the models and definitions they are operating through dialogue about very practical teaching and learning activities. This awareness can, in turn, assist them in seeing the value of alternative paradigms as well as broader repertoires of methods and activities.

The idea of higher education

In a book entitled *The Idea of Higher Education*, Barnett endeavours to outline a theory of higher education (Barnett 1990). He searches thinkers from Plato through Newman to Jaspers finding some important points of continuity in the evolving understanding of higher education and establishes what he describes as “the minimal educational conditions for an educational process to justify the title ‘higher education’”. These, he says, are logically necessary conditions an institution must fulfil in order to be an institution of higher education. For our purposes they are what define the teaching process in higher education. He says Higher educational processes promote:

1. A deep understanding by the student of some knowledge claims.
2. A radical critique by the same student of those knowledge claims.
3. A developing competence to conduct that critique in the company of others.
4. The student’s involvement in determining the shape and direction of that critique (i.e. some form of independent inquiry).
5. The student’s self-reflection, with the student developing the capacity critically to evaluate his or her own achievements, knowledge claims and performance.
6. The opportunity for the student to engage in that inquiry in a process of open dialogue and cooperation (freed from unnecessary direction).

While Barnett argues that such a conception of higher education is being undermined from various angles, it remains a working model for thinking about teaching and learning in higher education and investigating ways of enhancing it.

In respect of the transmission model of teaching, it alone would seem inadequate to the challenge of bringing students to the later levels of learning required by Barnett’s concepts of higher education, while the engaged critical model may well allow that possibility.

Teaching and Learning

The first section of the chapter set out the framework and assumptions. Working within this framework of Barnett's criteria, and on the basis that the goal of teaching is to promote student knowledge this section explores the role of teaching in promoting learning. In the context of a discussion about possible links between research and teaching, Lewis Elton offers some helpful insights. He distinguishes between learning (verb) and learning (noun) (Elton 2001) and goes on to elaborate on how learning (noun) can be achieved.

Now, there is a very basic point of learning theory, namely that learning with understanding, so-called 'deep' learning, requires learners to integrate new knowledge with existing knowledge For this to happen, students must be actively involved in the learning process and come – at least in part – to own it. (Elton 2001:19)

Knowledge is achieved through learning (verb), and involves information or content, reflection and dialogue. Teaching is effective if it facilitates learning.

In an interesting paper on professional development in the use of ICT, Littlejohn makes two interesting observations that are applicable more widely than in the ICT context in which they are made (Littlejohn 2002).

The first observation is the identification of three levels at which online learning may operate. These are transmitting information, encouraging reflection and finally dialogue. The parallel is clear; in direct teaching too we need to ensure that these three levels are encompassed. The second insight is that it is a mistake to decide on the medium before we have thought of the message. If the messages are varied, it may be that the media need to be varied too.

While it is not clear that a varied repertoire of teaching methods is a reliable indicator of teaching quality (Coffey and Gibbs 2002), it is probably safe to suggest that different activities are appropriate to different objectives and to different learning styles. In a teaching development context it is certainly worth offering colleagues an opportunity to reflect on the activities they most often incorporate into their teaching and consider their effectiveness for the purposes for which they employ them.

A wide array of activities

The array of possible teaching and learning activities and methods is extensive. Whether in handbooks on teaching and learning in higher education, in courses, long and short, certificated and otherwise, a wealth of advice is available to the beginning teacher and the experienced practitioner seeking renewal. The volume of material is in itself a problem.

Educational developers often find that simple tools that provide a stimulus for reflection on experience are valuable in helping colleagues to explore their approaches to teaching in order to enhance their practice.

The remainder of the chapter describes a tool for reflection on some of the activities that are included within the term 'learning and teaching activities'. It reports on an exercise used in workshops for staff seeking to improve their teaching. While other activities were included in the workshops, the Learning Pyramid provided a useful image of a comprehensive range of activities and offered a good basis for a practical exercise with groups.

What is the Learning Pyramid?

The learning pyramid is an image that maps a range of teaching methods and learning activities onto a triangular image in proportion to their effectiveness in promoting student retention of the material taught.

The research base for the pyramid is difficult to establish conclusively. It was developed and used by the National Teaching Laboratory Institute at their Bethel, Maine campus in the early

nineteen sixties, when that organization was part of the National Education Association's Adult Education Division. NTL believes it to be accurate but says that it can no longer trace the original research that supports the numbers. NTL acknowledges that in 1954 a similar pyramid, with slightly different numbers appeared on p. 43 of a book called *Audio-Visual Methods in Teaching*, by the Edgar Dale. The Learning Pyramid seems to have been modified but has always been attributed to NTL Institute. NTL allows free use of the Pyramid and asks for it to be cited as developed by NTL Institute for Applied Behavioral Science, 300 N. Lee Street, Suite 300, Alexandria, VA 22314. 1-800-777-5227.

While there remains a level of discomfort around the use of an instrument with such a tenuous research base, NTL is a reputable organization and is happy to have its name – and reputation – associated with the pyramid. Moreover, it is used as a stimulus for reflection only. In the context of our workshops, its purpose was to promote discussion and analysis, which it did with great success.

The methods included in the pyramid are:

- Lecture
- Demonstration
- Group Discussion
- Practical activity by students
- Use of Audio-Visual aids
- Student Reading
- Student presentations
- Peer tutoring by students

In addition to the research base issue, thought was given to the clarity of the terms used. Coffey and Gibbs have reported difficulty in regard to misinterpretation of terms in the context of their repertoire of teaching methods (Coffey and Gibbs 2002). In the context of a practical exercise in a workshop setting, the clarity issue seemed unlikely to cause problems. Indeed, the generic nature of the items was likely to promote discussion and sharing of experience, a positive benefit in the context.

Finally, in preparing to use the pyramid, there is an issue to be considered in relation to a counter intuitive nature of its layout. We tend to see the pinnacle or apex as the most important. As the pyramid places at the apex the method it holds to be least effective, the reader may experience a certain conceptual dissonance. This proved useful in the workshops because it provoked thought. It looked right according to the transmission paradigm, until the figures were displayed.

Ultimately, in spite of these concerns, the pyramid proved extremely useful as a stimulus for reflection and discussion of teaching methods, their uses and relative effectiveness, when used in teaching development workshops with experienced staff and beginning teachers in higher education institutions in Ireland. It was used in a series of workshops with staff in three institutions in Ireland in the course of 2003 and this report is based on these workshops. The groups brought together staff with varying lengths of experience, from different disciplines, including Humanities, Computer Science and Nursing.

The Exercise

The exercise was designed for use in developmental workshops and involved three stages. Following an opportunity to reflect individually, participants working in small groups were asked to discuss the relative values of the teaching methods. Prepared cards of equal sizes were used as stimuli. On each card, one item from the pyramid was written, and through their discussion

participants were asked to arrive at a consensus as to the order in which the pyramid should be reconstructed. The groups then shared the reasons for their particular weighting and finally compared whole group consensus with the pyramid as set out in Appendix 1

The primary purpose of the exercise was to support individual reflection on a range of activities that might contribute to their students learning and to consider the effectiveness of these methods in relation to the single dimension of how effectively it might promote retention by learners of the material concerned. The group negotiation in the exercise aimed at promoting a discussion of the reasons behind the ranking of particular activities, thus accessing theoretical positions and value judgements which contributed to the deliberations. The theoretical aspect was not cued or signalled in any way at the outset but arose naturally from the work of ranking the items.

Observations on the exercise

The following observations are of a qualitative nature, reflections on the process of the exercise and a sharing of the experience of the workshops. They are offered as insights from a staff developer's viewpoint that may assist in colleagues own reflection on their teaching and learning support activities and on the theoretical or value positions that underpin their choices.

In each of the groups the exercise was undertaken enthusiastically and the participants debated energetically the relative value of each activity. Through the iterative process moving from individual, through small group to larger group debate, consensus generally moved closer to the model. More important however, was the quality of engagement in the discussions and the openness of participants to learn from the experiences of their colleagues as that experience led to insights into why one method might have more impact than others.

The relative weightings given in the model are set out in Table 1 below.

Tab. 1: Relative weightings given to activities in the learning pyramid

Activity	Average Retention Rate
Lecture	5
Reading	10
Audio-Visual	20
Demonstration	30
Discussion Group	50
Practice by doing	75
Teach others / Immediate use of learning	90

In general, participants rated lecturing as more highly effective than the pyramid, although not as highly as one might expect, given the dominance of the lecture in higher education. Colleagues were well aware of difficulties related to large numbers, attention span and problems with interactivity. An important benefit came from the participants sharing ways of solving these difficulties based on their own practice. Especially fruitful was the interaction of staff with different levels of experience and from extremely diverse disciplines. The experienced participants had practical solutions to contribute and alternative perspectives from diverse subject areas supplied keys to issues for participants.

Unsurprisingly, reading was consistently rated as more highly effective by the participants than in the pyramid. Discussions centred on whether reading was an active learning method, and as such more effective than other methods. The placing of this item felt like an ambush. It may be that in terms of learning styles, academic groups tend to favour the read/write dimension and so were unaware that this preference is not universal. The centrality of the reading list is already being challenged by internet resources, though this material is often text based and so it remains in the reading domain. This appears to be an extremely important issue, especially in the

context of widening participation and diversity of students. It is beyond the scope of this chapter to investigate the issue but it would certainly merit further exploration.

There was also considerable debate about the ordering of 'teaching others' and 'practice by doing'. Generally, by the conclusion of exercise the consensus was that order given in the pyramid model was correct. An appreciation of the clarity of understanding needed to teach material, the interactivity and feedback from learners, were identified as important factors in arriving at this view. This suggests that teachers need to think about providing opportunities for students to undertake peer tutoring or to give presentations to their peers with greater frequency than is currently the norm.

Participants felt it was an interesting exercise that helped them to reflect on their approaches to teaching and consider whether they might broaden the range of activities they included in the student learning experience. The visual image acted as an important stimulus, with participants seeming to plot their experience onto it as onto a map and then finding ways of extending their territory. Although the activities listed were practical, and the introduction to the exercise offered no cue to a more theoretical discussion, the act of ranking the items as a group led the participants into the areas of values and theory.

The practical nature of the exercise, where participants could physically move the items, discuss the order and change the placement was helpful. It was possible to try things out, see how it looked without committing irrevocably to an answer. The physical movement also played a role as the group members walked round their space and repositioning the cards until consensus was achieved.

The workshop evaluations were extremely positive and participants clearly enjoyed the experience and felt they benefited from it. Benefits included the opportunity to share with colleagues and hear practical suggestions for dealing with specific issues. The creation of networks was also considered helpful as a focus for an ongoing dialogue and mutual support. While these might be true of any developmental workshop, the specific benefit of the learning pyramid exercise was that participants shared knowledge about actual teaching and learning activities in specific contexts. Thus it moved teaching more into the public domain and away from the privacy, often isolation, that can affect teachers and it did this in a manner that linked theory with practice. Perhaps this, above all is what made it so important.

Conclusions

This chapter is premised on the view that higher education needs to fulfil a particular set of criteria. These criteria have appeared in many guises as institutions adapted to their societal contexts: the version used here – Barnett's – reflects many earlier iterations. These particular criteria centre around knowledge. Teaching in all its diversity serves to promote knowledge in those who learn. In helping students to learn, to inform themselves, to integrate their new knowledge, to engage in critical reflection, evaluation and dialogue, teachers in higher education need to draw on a diversity of activities and methods.

The chapter reports on the use of the learning pyramid in a practical exercise with groups of staff and considers what benefits it offered to participants in understanding their teaching and in expanding their repertoires. In passing, it is probably worth noting that the pyramid exercise itself occupies the three base categories of the structure. Reflecting on observations of the exercise and the in-depth and creative dialogue engaged in by participants, a number of general conclusions are possible.

- Clearly the experience confirms that it is useful to reflect on practice and consider how broad a range of activities are routinely included in the teaching repertoire.
- The practical stimulus offered a useful and safe opportunity to reflect on the potential of various activities in teaching and on opportunities to move beyond a narrow segment of those activities

- The exercise seemed particularly beneficial for experienced staff whose reflection on that experience was helpful both for their own development and for less experienced colleagues.
- It worked well with groups that mixed staff with experience and those with less experience; this situation can often present a challenge to educational developers and so the exercise is particularly useful in these contexts.
- It worked well with groups that mixed staff from backgrounds as diverse as Computer Science, Nursing and Outdoor Pursuits and allowed a creative interchange of ideas. Although not all the elements were relevant to all, the selection was sufficiently comprehensive to facilitate dialogue.
- The terms used in the pyramid were generic, but at the same time sufficiently precise to be recognizable across a wide range of subject specialisms.
- The access the pyramid provided to a grounded dialogue around values, aims and theoretical issues represents a major benefit

Given the positive response of participants to the exercise and the benefits that have been identified, it is worth considering what further work might be undertaken. These include applications to practice and additional investigations that could be undertaken.

In considering implications for individual practice a number of practical applications suggest themselves:

- The pyramid can be used as a stimulus for individual reflection and internal dialogue about teaching and learning. The repertoire of activities can be plotted onto the image, offering an opportunity to assess the strength of that repertoire
- The pyramid can act as a stimulus to reflection on theoretical paradigms, and allow consideration of links between these and practice
- The results of an individual reflection can be written up for a teaching portfolio, and it may be especially useful in this context because of its capacity to link theory and practice – often a difficult issue for practitioners.
- Students may find the analysis interesting: it might well provide an added incentive to students to participate in discussions, presentations and peer tutoring schemes.
- Colleagues working in course teams or on departmental planning groups may find it useful as a support for implementing a varied diet of learning activities for students, especially in more traditional environments.

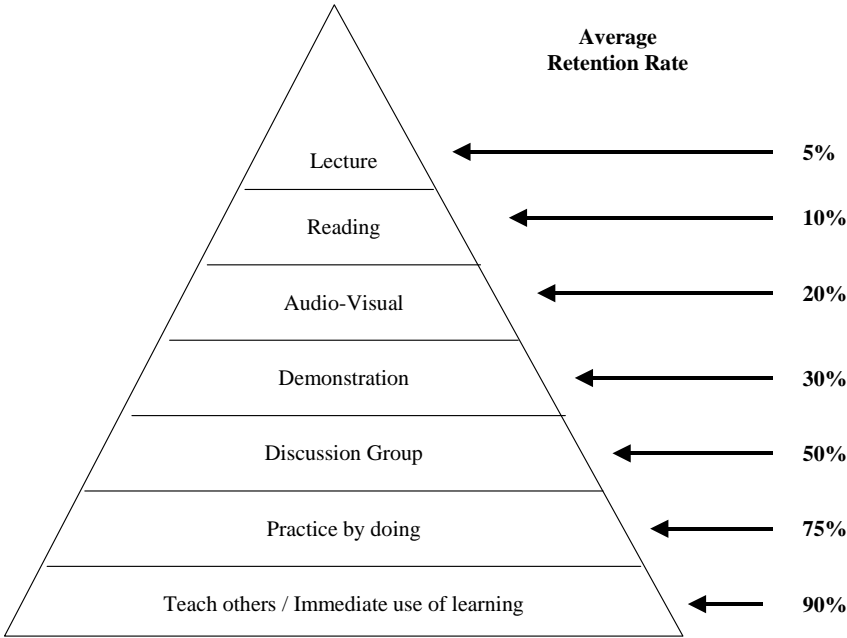
As regards further investigations, activities to increase our knowledge of the impact of the exercises offer one possibility. In future iterations with other staff groups a more structured approach to the responses of participants would support verification of the findings here. An investigation of impact in the longer term with those groups of staff who engaged in the workshop offers another possibility. A wider study of the range of activities in use among academic staff, based on the pyramid categories is a further possibility. Finally, the role of reading in student learning is undoubtedly an area for investigation.

This chapter has set out with a view about what teaching in higher education seeks to achieve. It has argued that theoretical paradigms, assumptions about, and definitions of teaching influence our practice and the outcomes we, and our students, achieve. It has offered a practical way for individuals and groups to explore their practice and the theoretical models that underpin it so that they can make choices about changing, extending or refocusing their teaching repertoire to achieve their educational aims and support students in achieving their potential.

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The Learning Pyramid?



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