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Keywords

Lecture, dissonance, learning process, university teaching and learning practices

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Challenging The Primacy Of Lectures: The Dissonance Between Theory And Practice In University Teaching

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Abstract

Current practice in universities foregrounds the traditional lecture, tutorial, examination approach to teaching. The nature of currently-accepted practice in course design and administration is considered through an examination of the influence on universities of historical views about knowledge. These findings are contrasted with current research about learning and learning environments, and the dissonances explored in terms of the concepts of theory-in-use and espoused theory. Recommendations are then made about appropriate ways to design educationally-sound learning environments in higher education. Finally, this paper questions why lectures are largely viewed as the core of the learning process, and why university teaching and learning practices continue to be resistant to, and often inconsistent with, fundamental principles of learning developed through sustained scholarly enquiry.

Introduction

Higher Education Systems around the world are under increasing pressure as they attempt to educate increasing numbers of students. Prior to the 1980's, higher education was for the elite - the most intelligent or privileged 10-15% of the population, who had the interest, motivation and ability to learn largely on their own. However, in the early years of the 21st century, higher education is for the masses. In Great Britain, the participation rate for young people rose from approximately 12% in 1979 to approximately 32% in 1999 (HEFCE 2001). In the United States, the number of 18 to 24 year olds enrolled in post-secondary education increased from 25.5% in 1967 to 35.5% in 2000 (Postsecondary Education Opportunity 2001). In Australia, the number of students in higher education rose from 329,523 in 1980 to 695,485 in 2000 (DEST 2001).

While governments have promoted the increase in enrolments, they have generally not provided universities with sufficient levels of funding to manage the increased student numbers, and many universities have been slow to develop new revenue streams to boost government grants. As funds per student have decreased, workloads and student/staff ratios have increased, placing pressures on institutions and their staff. In Australia, the Australian Vice-Chancellors' Committee reports that funding per effective full-time student fell by 12% from 1983 to 2000 (2001: 8), despite student numbers doubling (2001: 39). From 1989 to 2000, student/staff ratios increased from 14.5 to 19.9 (2001: 34).

A second factor impacting on universities has been the need for students to work while studying. A recent report (McInnis and Hartley 2002) indicated that 72.5% of Australian university students have paid employment during semester, working an average of 15 hours per week. In addition, a relatively large proportion of Australian university students are mature-aged, with only 27.2% aged under 20 (Australian Vice-Chancellors' Committee 2001: 39).

As a consequence, students are demanding more flexibility in the way they study. They want to access their learning activities in ways which fit in with their work and family commitments (McInnis and Hartley 2002 Ch 6). Meeting these student needs has placed even more pressure on universities, compounding the problem of lower funding with added demands of flexibility of study.

A third factor is the impact that Information and Communications Technology (ICT) has had on universities. ICT has enabled alternative approaches to teaching and learning, but universities are still grappling with how to take best advantage of these alternatives (Collis and van der Wende 2002; Seufert and Euler 2004).

These three factors (funding shortages, changing student demographics and ICT) are driving universities to reform the way in which they carry out their core business – educating students for a changing world. Universities are attempting to become more efficient, and, by better meeting the needs of students and employers, to become more sustainable. Unfortunately, in too many cases, this reform has involved the reduction or removal of educationally-valuable, but expensive teaching activities, such as field trips and tutorials. Sometimes, ICT has been used to replace face-to-face activities, but, often, this has been an unreflective replication of existing activities (Collis and van der Wende 2002; Harris, Yanosky et al. 2003).

This paper argues that reform of university teaching requires re-examination of fundamental assumptions about how universities function and consideration of empirical research about how students learn. It commences by analysing the influence of historical views of knowledge, considering how this informed views about the nature of university teaching. The paper then critiques the traditional, lecture/ tutorial/ examination approach to teaching at university, considers research about learning, and then questions why university teaching and learning practices continue to be resistant to, and often inconsistent with, fundamental principles of learning developed through sustained scholarly enquiry.

Universities and Knowledge

Humankind's view of knowledge has evolved through the ages and it is appropriate to consider how these views have shaped the nature of university teaching. Three historical periods can be distinguished: the pre-modern, the modern and the post-modern.

Universities first came into existence approximately 1000 years ago, during the dark ages. At that time, in the pre-modern period, in the western world, knowledge was understood to be revealed in a metaphysical sense through faith in God, and the Church and universities were the 'holders' and controllers of knowledge. This notion of control of knowledge pervades the culture of universities even today.

The Age of Enlightenment, beginning the modern period, transcended the traditionalism and mysticism associated with thinking in the pre-modern period. In this period, knowledge was seen as being attained through reason, and was a product of original thinking. The modern period commenced the separation of church and state, distinguishing earthly matters from spiritual problems. The epistemology was objectivist, with knowledge seen as having its own existence, leading to the notions of neutrality, objectivity and detachment underlying much of present day scientific research. These concepts continue to underpin much currently accepted practice in universities.

More recently, the post-modern period has challenged the notion of the neutral observer. Knowledge is seen as being constructed and contextual, rather than existing independently, waiting to be discovered. The epistemology is constructivist, allowing multiple views of reality, depending on the characteristics of the individual. These understandings inform much current research about how people learn and coexist. Each of the three historical periods continues to influence practice in universities, and this is explored in the body of this paper.

A number of authors (Duffy and Jonassen 1992; Marra and Jonassen 1993; Reeves and Hedberg 2002) have contrasted the objectivist and constructivist epistemologies. Reeves (1994; 1997) has pointed out that these contrasting views about the theory of knowledge are not dichotomous, but, rather, continuous. In applying these concepts to educational technology, Reeves distinguishes, in particular, between a pedagogical philosophy, instructivism, which is based on an objectivist epistemology, assuming the learner is an empty vessel to be filled with content, and a constructivist pedagogical philosophy, where the learner constructs their own knowledge.

Both the objectivist and constructivist epistemologies can be taken to extremes. Radical objectivists believe that reality exists in an absolute sense, while radical constructivists believe that reality does not exist outside our imaginations. However, a post-modern perspective leads one to question the absolute nature of both these beliefs. In that sense, none of the distinctions made in this paper should be seen as dichotomies, but, instead, as continua.

The next section uses these considerations to analyse the nature of traditional approaches to university teaching, to inform the endeavours of universities to achieve more effective and sustainable education.

Traditional Teaching

In most university subjects, the dominant mode of teaching consists of lectures, tutorials and laboratory practical sessions (Laurillard 2002: 81), with assessment strongly focussed on examinations.

Bligh's (1972) work, based on numerous studies relating to the lecture method concludes that lectures *"can be used to teach information, including the framework of a subject, but an expository approach is unsuitable to stimulate thought or change attitudes"* (: 223).

While lectures may be wanting in terms of engaging students in more active learning, tutorials provide an opportunity for students to discuss aspects of the subject in detail. However, where economic pressures force large class sizes, or tutors lack facilitation skills, tutorials often become mini-lectures.

Laboratory sessions give students practical experience, but often there is little connection to theoretical material.

Assessment is an important contributor to successful university learning, but the potentially rich array of assessment methods is often ignored in favour of the exclusive use of examinations in traditional university teaching. Rowntree (1987) has questioned effectiveness of examinations:

“The traditional three hour examination tests the student’s ability to write at abnormal speed, under unusual stress, on someone else’s topic without reference to his customary sources of information, and with a premium on question spotting, lucky memorisation, and often on readiness to attempt a cockshy at problems that would confound the subject’s experts” (: 135).

Laurillard’s (2002: 86-89) conversational framework provides a useful model for understanding the relationship between lectures, tutorials and laboratories. However, in many cases, there are weaknesses in the traditional approach to teaching at university, with its emphasis on lectures, and lost opportunities to make use of other learning situations. A contributing factor is that, in the absence of formal teaching qualifications, many university lecturers tend to teach in the didactic way that they were taught.

Lectures and lecturing are consistent with a pre-modern view of controlling knowledge. They are also consistent with a modern view of knowledge, with a tacit adoption of an objectivist epistemology, a focus on transmission of content, and for learners to be passive recipients of knowledge. As Fetherston (2001) concludes *“The unspoken assumption behind this approach is that delivery of the content results in learning of the material”*, through a process of osmosis.

While some teachers see their responsibility as laying out ‘knowledge’, in the form of content, they are not always confident that learning will occur. Instead, they *hope* students will learn (Phillips and Baudains 2002: 15). In this scenario, the teacher’s responsibility is to ‘teach’, which implies determining the content, and controlling its sequence. The teacher assumes a pre-modern position of power, while the learner has the responsibility to ‘learn’. If a student fails, it is their fault (Laurillard 2002: 11).

An often unstated assumption of the traditional teaching approach, arising from a modern view of knowledge, is that lectures are the core of the educational process. This view is reinforced by administrative policies, which define a subject by the number of lectures it comprises, where workload allocations are defined by number of student contact hours, and where tutorials are, largely, conducted by casual staff. Laurillard (2002: 93) claims that the traditional lecture approach is “legitimised only by 800 years of tradition”.

However, with people with a broader range of academic ability taking part in higher education, it can be expected that a proportion, perhaps a large proportion, of students will have difficulty in learning material presented to them through lectures. As Laurillard (2002) argues, the success of lectures *“depends on the lecturer knowing very well the capabilities of the students, and on the students having very similar capabilities and prior knowledge. Lectures were defensible, perhaps, in the old university systems in which students were selected through standardised entrance examinations. Open access and modular courses make it most unlikely that a class of students will be sufficiently similar in background and capabilities to make lectures work as a principal teaching method.”* :93)

The Graduate Careers Council of Australia conducts annual Course Experience Questionnaires which contain scales for good teaching and overall satisfaction. In 2003, from a sample of over 92,000, only 46.7% agreed that they had experienced good teaching, and 68.4% expressed overall satisfaction with their study experience (Graduate Careers Council of Australia 2004). These results indicate that a substantial number of students are dissatisfied with the traditional university experience.

In the light of the above critique of traditional university practice, and accompanying student dissatisfaction, it is appropriate to consider research into how people learn.

Research about Learning

In 2000, the US National Research Council published a literature review of research results, over the previous 30 years, across several disciplines, into how people learn (Bransford, Brown et al. 1999; Bransford, Brown et al. 2000). Amongst the key findings of this comprehensive review of research, three themes stand out as having most relevance to tertiary education, namely expert performance, transfer of learning and the design of learning environments. These are discussed in more detail below.

Expert Performance

An important goal of tertiary education is for novices to become experts in particular discipline areas. Bransford et al. (2000) distinguish between novices and experts in the following way:

“Understanding expertise is important because it provides insights into the nature of thinking and problem solving. Research shows that it is not simply general abilities, such as memory or intelligence, nor the use of general strategies that differentiate experts from novices. Instead, experts have acquired extensive knowledge that affects what they notice and how they organize, represent, and interpret information in their environments. This, in turn, affects their abilities to remember, reason, and solve problems.” (:31)

They conclude that:

- experts are able to notice meaningful patterns of information;
- experts have in-depth and organised content knowledge, which reflects deep understanding;
- experts' knowledge reflects 'contexts of applicability', rather than isolated facts or propositions; and
- experts are able to retrieve important aspects of their knowledge relatively easily (Bransford, Brown et al. 2000: 31).

On the other hand, experts were found to have varying levels of flexibility to new situations, and there was no guarantee that they could instruct others about their area of expertise.

This finding has important implications for universities. For tertiary students to become experts, they need to attain a deep, organised and contextualised understanding of their discipline, and the learning environment needs to support this.

Transfer of Learning

For learning to be effective, it needs to have a long-term impact on other aspects of knowledge or skill acquisition – it needs to be transferable to other contexts. Bransford, Brown, & Cocking (1999) synthesised several key conclusions:

- *“Skills and knowledge must be extended beyond the narrow contexts in which they are initially learned;*
- *“It is essential for a learner to develop a sense of when what has been learned can be used;*
- *“Learning must be guided by generalized principles in order to be widely applicable. Knowledge learned at the level of rote memory rarely transfers; transfer most likely occurs when the learner knows and understands underlying principles that can be applied to problems in new contexts;*
- *“Learners are helped in their independent learning attempts if they have conceptual knowledge;*
- *“Learners are most successful if they are mindful of themselves as learners and thinkers ... in essence, this is how human beings become life-long learners”.*

These characteristics closely match those of 'deep learning' reported in the tertiary learning literature (Ramsden 1988; Gibbs 1992; Ramsden 1992; Biggs 1999).

Given the salience of research into learning to become experts, and transfer of learning, it is germane to consider the design of environments which enable deep learning, and the teaching approaches that can lead to deep learning. The "deep learning" research identifies the relationships between how learners learn and how teachers teach, with several key principles:

- transmission approaches lead to surface learning;
- depth of learning is determined by the nature of the learning activities; and
- surface and deep approaches are reactions to the teaching environment.

"Good teaching implies engaging students in ways that are appropriate to the deployment of deep approaches" (Ramsden 1992: 61).

Learning Environments

The empirical results reported by Bransford et al. (2000) indicate that learning environments should be student-centred, knowledge-centred, assessment-centred and community-centred.

A student-centred learning environment acknowledges that students use current knowledge to construct new knowledge, according to the constructivist epistemology discussed earlier (Duffy and Jonassen 1992; Marra and Jonassen 1993; Reeves and Hedberg 2002).

A knowledge-centred learning environment acknowledges that knowledge needs to be accessible and applied appropriately in order to think and solve problems. While content (facts and information) is needed, the emphasis is on the use of content to perform activities and solve problems.

An assessment-centric learning environment acknowledges that students focus their learning around what will be assessed. Assessment can be summative, which tends to emphasize memory of facts and formulas (Rowntree 1987), or formative which Bransford et al. (2000) conclude is consistently identified in the research literature as being important for:

- providing regular feedback;
- providing opportunities for revision; and
- improving the quality of thinking and understanding.

Bransford et al. (2000) identified that learning environments should promote a sense of community. This finding is in accord with the notion of social constructivism, based on work by Vygotsky (translated in 1978), who argued that learning involves social discourse between peers in the 'zone of proximal development'.

The research about learning discussed in this section is consistent with a post-modern, constructivist epistemology. More practically, the findings imply that, for effective learning to take place, the student should take part in activities which are intended to lead to learning. These activities are usually described in terms of outcomes or objectives (Allan 1996). She contends that there are "fundamental conceptual differences between outcome-led design and the traditional university approach which emphasises input and process" (: 104). The role of the teacher is, therefore, to design the learning activities, and to facilitate their productive use by the student (Laurillard 2002: 24).

The evidence presented here indicates that for effective learning to occur in a tertiary setting, the design of the learning environment should emphasise:

1. A constructivist pedagogical philosophy;
2. A deep approach to learning;
3. A student-centred approach to teaching; and
4. Outcomes-centred subject design.

Friellick (2002) has developed a similar, but more complex, ecological model of university teaching and learning, also emphasising the nature of knowledge, the student's approach to learning, the approach of the teacher, and the design of the course.

However, the analysis of what actually happens in common teaching and learning practice, as presented earlier in this paper, indicates that the system which supports teaching, and some teaching practice, is based on an instructivist pedagogical philosophy, which is well-acknowledged as leading to a surface approach to learning, arising from a teacher-centred approach to teaching a subject which is designed around content (see also Fetherston (2001).

There is, thus, a dissonance between the four elements of effective learning environments described here and the characteristics of learning environments in common practice. The four contrasting elements (pedagogical philosophy, approach to learning, approach to teaching and subject design) are shown in Table 1.

	Espoused Theory	Theory-in-Use
Pedagogical philosophy	constructivist	instructivist
Approach to learning	deep	surface
Approach to teaching	student-centred	teacher-centred
Subject design	outcomes-based	content-based

Table 1: Components of the Learning Environment in the Espoused Theory and the Theory-in-Use

A similar contrast has been previously noted by Jackson (1998), based on Argyris' (1976) concepts of Espoused Theory and Theory-in-Use, developed in the context of leadership education for adults. Argyris (1976) found that the majority of adults who had been taught, and theoretically understood, the concepts of the Espoused Theory were not able to apply the espoused theory, but reverted to their pre-programmed Theory-in-Use.

In this context, the constructivist, deep learning, student-centred, outcomes-based learning environment is the Espoused Theory – a theory based on a post-modern view of knowledge which should underpin practice. Contrasting this is the instructivist, surface learning, teacher-centred Theory-in-Use – an unexpressed theory arising from pre-modern and modern views of knowledge which guides practice in reality. In subsequent discussions, in the interests of brevity, the two contrasts will be referred to as the surface learning, teacher-centred approach and the deep learning, student-centred approach, respectively. As discussed earlier in the context of Reeves' work (1994; 1997), these distinctions indicate tensions between two extremes, rather than dichotomies.

Educational Design in Higher Education

This paper has argued that a learning environment which meets the characteristics of the deep learning, student-centred approach needs to be designed in relation to the outcomes expected to be demonstrated by students.

There is little clarity, however, in general academic discourse about the meaning of the term 'outcomes' and its distinction from, or similarity to, the term 'objectives'. At times, both seem to be used interchangeably. Semantically, objectives are what a student is *supposed* to be able to do at the end of a study experience, and outcomes are what a student *can* do. Allan (1996) distinguishes three types of learning outcomes:

- *“subject-based outcomes, which subsume learning objectives and which are complex, discipline-based outcomes which are capable of being assessed;*

- *personal transferable outcomes, including acting independently, working with others, using information technology, gathering information, communicating effectively, organisational skills; and*
- *generic academic outcomes, [such as] making use of information, thinking critically, analysing, synthesising ideas and information.” (1996: 107)*

According to Allan (1996) and Eisner (1979), there is little distinction between subject-based outcomes and learning objectives, although they distinguish between learning objectives and behavioural objectives. The essential criteria are that they are broad enough to enable deep learning and specific enough to be assessable.

Course (qualification) design in higher education involves specifying appropriate subject-based, personal transferable, and generic academic outcomes. Subjects within courses are expected to demonstrate an aligned curriculum (Biggs 1999).

Outcomes-centred subject design (Fig. 1), starts with a definition of the learning outcomes. The second stage is to design assessment tasks whereby students can demonstrate that they can meet the desired objectives at the required depth of understanding. However, for students to successfully complete such summative assessment, they need opportunities for practice. Therefore, the third stage of the educational design process is to design learning activities (possibly formative assessment) which will enable students to develop the skills necessary to carry out the summative assessment tasks. The final stage of the process is to determine the content which will underpin the learning activities and enable them to be carried out. Learning activities become the key component of the process of achieving learning outcomes.

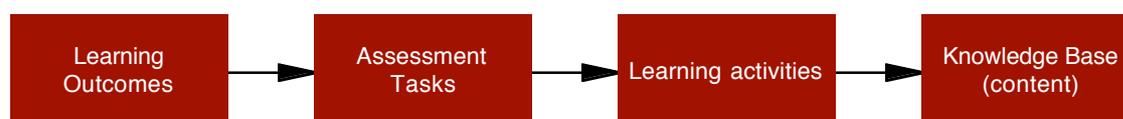


Figure 1: Parts of an Outcomes-Centred Educational Design Process

Earlier arguments about learning to become an expert, transfer of learning and deep learning foreshadowed the importance of learning activities that support and scaffold the learning processes used by students. The most able students may come across these skills through their own development, but less able students may have difficulty in doing this by themselves. Students are able to be taught to be metacognitive and self-regulatory (Bransford, Brown et al. 2000), so it is an important role of the teacher, in a massified tertiary education sector, to assist students to develop these and other generic, lifelong learning skills.

On the other hand, in the Theory-in-Use view of tertiary education, relatively little attention is paid to the learning processes used by students, and learning activities through which students can improve their learning skills. Learning activities typically used at university tend to be used uncritically, without questioning whether they are the most appropriate activities to support the student's progress towards the assessment tasks and the desired learning outcomes.

Lectures and delivery of content have a position of primacy in university practice, and this paper has argued that this is due to an adherence to modern and pre-modern views of knowledge. While lectures are relatively cost-effective, and are useful in providing a knowledge base (Bligh 1972), other parts of the learning environment are more important.

Conclusion

The contrast illustrated in Table 1 lead us to question why the Theory-in-Use is so different from Espoused Theory in tertiary education. While aspects of the deep learning, student-centred approach can be witnessed in the rhetoric of university plans and policies, and in the rhetoric of individual staff as they invoke the theories of “deep learning”, there is little evidence of their implementation. This issue cuts to the core of the effectiveness of universities and exposes questions about the fundamental role of the institution. In particular:

- Why is university teaching and learning practice not informed by research?
- Why do many university lecturers not practice the Espoused Theory?
- What are the personal, cultural and institutional barriers to practising the Espoused Theory?
- In what ways is it possible to achieve a deep learning, student-centred approach to learning within the traditional lecture, tutorial, practical approach used in universities?
- How can the Espoused Theory be put into practice in a cost-effective way?

The answers to these questions are fundamental to effective university teaching in an era of mass participation in tertiary education, and there is scant evidence of their consideration in practice or in the research literature about tertiary education.

This paper does not argue that lectures are unnecessary. They form a valuable part of the university teaching and learning experience, but, compared to other approaches, they are relatively less important in leading to student learning. However, this paper does question the primacy of lectures in the institutional and academic planning process.

Changes to curriculum and teaching approaches are unlikely to be resolved by teachers working individually. They may be met with resistance from other stakeholders. For example, if colleagues teaching other subjects do not present similar messages to students, innovative approaches are unlikely to be sustainable, despite their grounding in research. Furthermore, the efforts of a committed team of teachers can be undermined by an unsupportive head of department. To be successful, curriculum renewal is needed at the course or departmental level (Frielick 2002). Change management and leadership, therefore, become important issues.

“If educational development is about creating environments that encourage deep approaches to learning, then change in the mental models of lecturers is a key aspect of the process.” (Frielick 2002: 16)

A further barrier to sustainable curriculum renewal may arise from changes to assessment required as part of the educational design. Student-centred assessment most appropriate to expected outcomes may not align well with university-wide assessment policies, requiring, for example, invigilated individual assessment. Similarly, workload allocations based on lecture contact hours may need to be reassessed.

Students may also constitute a barrier to the adoption of the deep learning, student-centred approach, because of commonly-accepted paradigms about the nature of study. Students are reluctant to move from a comfortable, spoon-feeding type of education to a more active role. The view that ‘I’m paying to be taught, so teach me!’ is increasingly apparent in modern universities, despite evidence (Marginson 1993; A C Nielsen Research Services 1999) that employers want generic, lifelong skills from graduates.

This paper encourages university decision-makers and individual teachers to reflect on the application of pre-modern and modern concepts of control of knowledge and independent existence of knowledge to contemporary tertiary education, and how these impact on their understanding of contemporary views on learning. For universities to adapt to the changing circumstances they find themselves in, radical, rather than incremental change is needed, and this requires all stakeholders to re-evaluate their paradigm of university education.

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