Students' interpretations of learning tasks: Implications for educational design

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This paper is concerned with the issues that arise when one sees teaching as a process of design, and students as co-constructors of their learning environments. The dominant models of design, we argue, tend to either configure the learner as a compliant consumer of educational designs and a well-behaved user of educational technologies, or they tend to romanticise learners as media savvy experts on managing their own learning. In our view, 'teaching-as-design' needs to be supported with intellectual resources that avoid these extremes. To get a better sense of how design should be informed by a knowledge of student perspectives, we present the outcomes of some recent research into the ways in which students on 'blended learning' courses interpret the requirements of learning through discussion and learning through inquiry.

Keywords: educational design; online learning; learning through discussion

Teaching-as-design

The incursion of technology into the everyday practices of higher education is leaving many university teachers feeling under-equipped for their role. As if it were not enough of a trial to be drowning in a remorseless flood of administrative email, academics are having to make sense of the opportunities and limitations of technology for teaching and learning. The way in which their more sophisticated colleagues tend to talk about the matter is not always a source of comfort or guidance. It can easily deepen their anxieties about the incomprehensible demands that will come from the next cohort of 'digitally native' students. It suggests that the technological options currently available - VLEs, LMSs, etc. - are obsolescent and pedagogically crass. For some teachers, there is also another seismic shift undermining their confidence and certainties. There is a slow but steady change in dominant conceptions of effective teaching. The focus of attention is shifting from discipline expertise and the skills of exposition (the 'good lecture') to the quality of students' learning activity. This shift may be motivated by constructivist pedagogy, and/or concerns about graduate employability, marketable skills and the need for more student-centered and active forms of education. But, whatever the source, it can provide further grounds for anxiety among university teachers.

The dominant interpretations of these technological and educational shifts can leave some teachers nonplussed. On the technological side, there is an emerging discourse about the power of personal, mobile and social technologies - *ambient Web 2.0*, one might say – that lays down some fundamental challenges about the authority of academic texts and questions the very idea that universities should meddle in the technological choices of the young (Bayne, 2006; Prensky, 2001; Markauskaite et al., 2006). Meanwhile, the more radical edge of constructivism asks whether there is any longer a role for the teacher, other than as a generic facilitator of student-directed learning (e.g. Cunningham, 1992; but see also Jones, 1999). What then, should a teacher do? And how should we, as educational technologists, advise them?

We think there are three main lines of response. At one extreme is a laissez-faire position that suggests taking a back seat, waiting to see what unfolds as students deploy their new technologies and media habits, letting a thousand flowers bloom. While an element of free experimentation is necessary in any period of rapid change, a wholesale abdication of educational responsibility doesn't sit easily in the current climate of audit, scrutiny and accountability (Fallows & Bhanot, 2005; Strathern, 2000). At another extreme, one can unearth the classic tools and ideas of instructional design – proven aids to

solving some kinds of training problem, but looking tired and inflexible when faced with contemporary educational challenges (Goodyear, 2000).

The 'third way' sits between these two extremes. It starts with the focal question of 'what should a teacher do?' and aims to find defensible boundaries for that space of pedagogical responsibility. What should a teacher do? What should be left to the learners? Or, what is it reasonable to expect learners to do? What, then, should be the core work of the teacher? This approach also acknowledges that much of what teachers can do is best done at 'design time'. There is often a role for managing, monitoring and giving feedback once learning activities are underway. But – we would contend – the biggest difference a teacher can make is through careful planning: through 'teaching-as-design'.

Reconsidering the problem-space of educational design

Exploring this issue in earlier work Goodyear (e.g. 1997, 2000, 2005), arrived at a conception of the boundaries between what a teacher-as-designer should regard as their responsibility and what should be recognised as the learner's space for free action.

Figure 1 helps explain this. It introduces three key ideas. First, there is the centrality of students' learning activity: that what matters most is what students actually do. This foundational belief is informed by the work of many researchers in the learning sciences, well-summarised in Shuell (1992) and for the higher education community by Biggs (2003).

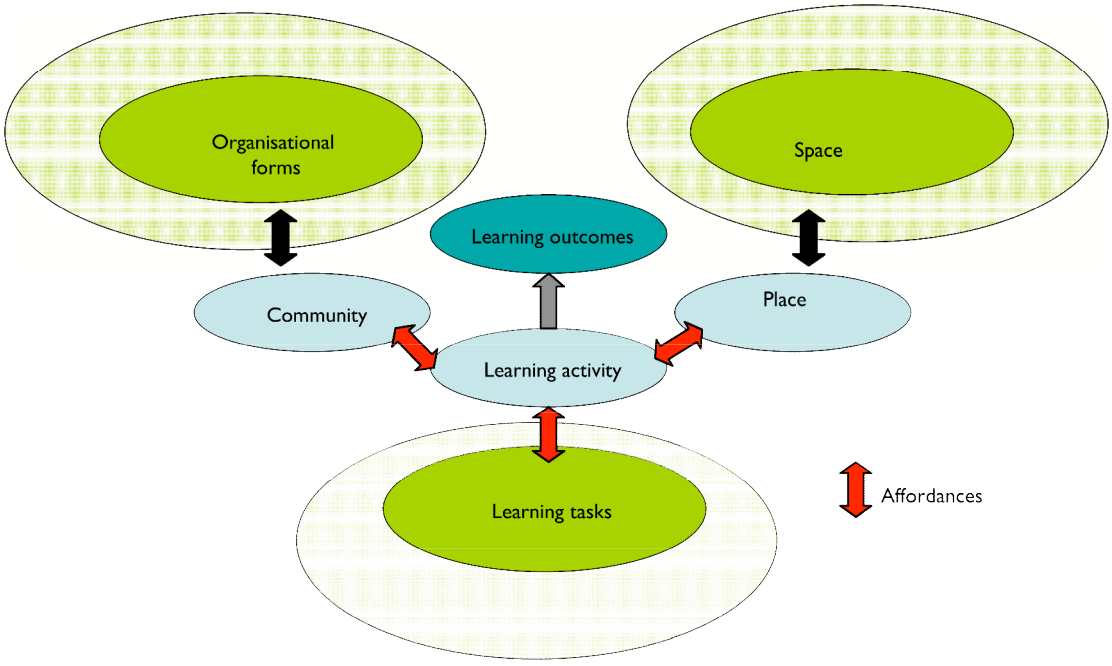

Figure 1: The problem space of educational design (after Goodyear, 2000)

Secondly, there is an emphasis on the *situatedness* of learning. This commitment implies a shift away from an idealist or mentalist conception of learning as something which takes place in a vacuum, or 'between the ears' of the learner. For sure, people are able to think, memorise and recall things without necessarily relying on their immediate surroundings. They are also able to 'carry' some personal capabilities between one context and another. But a great deal of learning and performance *is* influenced – sometimes subtly and sometimes in powerful ways – by the social and physical context. While there are stronger and weaker interpretations of 'situatedness' (Engestrom, 1999; Goodyear, in press), there is nevertheless a compelling body of evidence for the proposition that *context matters* in the performance of very many activities, including those we recognise as 'learning' (see e.g. Suchman, 1987; 2007; Bliss et al, 1999; Singleton, 1998). As Figure 1 says, learning is both physically and socially situated. The tools and resources that come to hand in the workplace, as well as the more general affordances and influences of the physical (and digital) environment in which work is taking place, become intimately bound up with the nature and consequences of student activity. Moreover, activity is socially situated – influenced by the community of people immediately around, by the imagined responses of significant others, by the habits and routine practices of one's culture and sub-cultures, and so on (Lave & Wenger, 1991; Wenger, 1998).

Thirdly, there is an insistence, in Figure 1, on *indirection* in design. 'Indirection' is used here to make the claim that teachers-as-designers should not generally try to control directly the activities of their students, or to specify in detail the social and physical contexts in which their study activity is set. In short, they should not aim to micromanage their students. The commitment to working indirectly acknowledges a boundary between the fields of responsibility of (a) the teacher-as-designer and (b) the learner. Teachers must design tasks, but students interpret and prioritise task requirements: such that a task specification is better seen as a resource for action rather than a prescription of action. A good task specification suggests or *affords* certain kinds of learning activity. Similarly, teachers - and others with responsibility for creating a well-found learning environment – *partly* shape the physical-digital setting in which students' activity is situated: they part-stock what can be thought of as an abstract physical-digital 'space' of usable tools and resources (c.f. Jamieson et al., 2000). But students also bring their own tools, and customise and reconfigure their 'learnplaces': taking up some tools and resources while ignoring others; gravitating towards congenial or valued places and avoiding bland, arid and inhospitable 'nonplaces', whether in the material world or online (Oldenburg, 1999; Augé, 1995). Finally, students choose their own friends, and their closest workmates. It is not the business of teachers to determine such things, or to pretend that they can manufacture 'community'. Rather, teachers, and others managing activities within a university, have a professional duty to use various forms of social organisation to help create the social fabric out of which students' working relationships can grow, and to mix and match students in teams and groups where necessary. In more diffuse ways, university teachers also help create and reproduce academic cultures, whose values and practices also have some influence on what students do, and how they see themselves (Becher & Trowler, 2001).

This commitment to indirection in educational design is an empirical, practical and moral proposition. It reflects the empirical observation that (for example), what learners do is different from what teachers ask them to do; also, that learners will make choices about which of our tools and resources they will use, and what they will provide themselves. It is a practical proposition, insofar as it says that it is pragmatic to approach design work with the idea in mind that there are limits to what can be designed. It is moral, insofar as it says 'this is a good thing'. Students in higher education *should* be exercising some autonomy, discovering what they need to have in place to learn effectively, making some choices about who they want to work with, share discoveries with, and trust. But – we have to acknowledge – the exercise of such prerogatives can bring short term harm as well as long term benefits.

To summarise: there are three key principles underlying Figure 1: (i) students' activity is central; actually, it is all that matters, (ii) activity is physically/digitally and socially situated; (iii) the social and physical/digital contexts for learning, as well as the activity itself, are co-produced by students, teachers and others. That is the general model, which does little more than map out a space of concerns – a field for professional action and research – though it also foregrounds some important processes and relationships. In the rest of this paper we focus in on one key aspect of the model: the translation of tasks into activities.

Students' activity in context

Students interpret task requirements, and their interpretation influences what they actually do. Students also play a strong role in configuring the physical-digital setting within which their activity takes place. They also have a say in choosing who they work with, though their social, as well as their environmental, choices are constrained by other factors (such as who is on the course or where a quiet space for groupwork can be found). What do we know about these moments and processes of interpretation, choice and reconfiguration? Surprisingly little.

There is more literature on the processes involved in translating task specifications into activity than there is on students' reconfigurations of their physical and social environments (though see Brooks, 2002, Crook & Barrowcliff, 2001, Crook & Light, 2002). The task:activity literature is mainly the work of two research traditions. In the cognitive sciences, there is a body of research associated with the 'cognitive mediational' model, which highlights the importance of students' beliefs, values, motivation and prior conceptions in translating teachers' requests into actual activity (see for example, Winne & Marx, 1982). Closer to the mainstream of research on learning and teaching in higher education there is a vein of phenomenographic research into students' conceptions of, and approaches to, learning. From the groundbreaking work of Saljo, Marton and Svensson, to our own studies of learning with technology, this body of phenomenographic research is centrally concerned with variations in the ways in which students conceive of learning and approach their studies (Marton & Saljo, 1976; Ellis et al., 2006; Ellis et al., in press a & b). Out of this body of work come ideas about 'deep' and 'surface' approaches to study and

'cohesive' and 'fragmented' conceptions of learning, for example. In the rest of this paper, we synthesise outcomes of research that we have conducted in the last two years, paying particular attention to the patterns that emerge in what students say about their conceptions of, and approaches to, their learning.

Research on the translation of tasks into activities

The three courses involved in our research took a pedagogical approach that blended face-to-face and online work and involved either (a) learning through discussion or (b) problem-based learning (PBL: which entails, but is not limited to, learning through inquiry and discussion). The courses were in psychology for social workers, e-commerce for web-engineering and the conduct of medication reviews in pharmacy. All had a professional orientation and were at the undergraduate level. Fuller details of the courses and our data-gathering and analysis methodology can be found in Ellis et al. (2006, 2007, in-press a & b).

Table 1 synthesises data on students' conceptions of learning through discussion and learning via PBL in these 'blended learning' situations. For each of the three groups of students, we categorised conceptions into a hierarchy of increasingly elaborate conceptions. In each case, the most elaborate and inclusive conception is labelled A. As one works downwards, the conceptions become simpler. Two points should be made here. First, there is considerable variation in what students say when they are asked to talk about the learning that can occur with the help of discussions, or through the processes of inquiry and discussion entailed in PBL. For example, there is a great deal of difference between a conception that is intimately concerned with using discussion to achieve a more complete understanding of a set of phenomena (Social Work, Conception A) and a conception of participating in discussion only because it is a requirement of the course (Web Engineering, Conception D).

In both of these courses, specific discussion tasks were set, but it would not be surprising if these contrasting conceptions turned out to be associated with very different interpretations of the task requirements, and very different learning activities. The second point that needs to be made is that significant numbers of students are adopting the less elaborate conceptions. It is gratifying to find 30-40% of students talking in terms of the more elaborate conceptions (A or B), but the majority of students spoke in ways that led to classification in the simpler or more fragmented categories (C and lower). Categories C and below turn out to be associated with lower assessment scores on all three courses (Ellis et al., 2006; Ellis et al., in press a & b).

We now turn from conceptions of learning to approaches to learning. The data come from the same studies and result from asking students about what they actually do in various learning activities (e.g. online discussion) and why they do what they do. That is, our questioning explored both strategies and intentions.

Table 2 summarises data about strategies and intentions with respect to the online activities in these three blended learning courses. In the Social Work and Web Engineering data, Categories A and B were classified as deep approaches and Categories C and D as surface approaches. In the Pharmacy data, Category A was classified as a deep approach; Category B as an achieving or strategic approach and Categories C through to E as surface approaches.

As with the analysis of conception of learning, the patterns here also suggest that (a) there is substantial variation in student's strategies and intentions (b) some of these strategies and intentions are unlikely to lead to satisfactory learning outcomes. In particular, we note that students' accounts of their activities quite often reflect a very pragmatic stance in relation to course requirements: that engaging in discussion as a way of achieving a new understanding of phenomena is rather less likely to occur than engaging in discussion because that is what is seen as being required by the teacher.

This reveals a paradox about strategic or instrumental approaches to learning: that the student foregrounds what they think the teacher wants rather than what the teacher thinks will benefit the student. This will be exacerbated by the assessment regime (i.e. by where the marks are to be lost and won), because it is through interpreting the assessment regime that a student can see the differences between the teacher's espoused and enacted values. (The teacher may espouse the intrinsic virtues of discussion, but if the assessment regime rewards signs rather than substance of engagement in discussion, the students will learn that token participation is more cost-efficient than deep engagement.)

Table 1: Conceptions of learning found in three 'blended learning' courses

Social Work (Psychology)		*N (total = 51)*	*%*
A	Discussions as a way of challenging ideas and beliefs in order to arrive at a more complete understandin g	5	9 %
B	Discussions as a way of challenging and improving your ideas	1 9	3 6 %
C	Discussions as a way of collecting ideas	2 3	4 5 %
D	Discussions as a way of checking your ideas are right	4	8 %
Web-engineering (E-commerce)		*N (total = 70)*	%
A	Discussions as filtering different perspectives to promote deeper thought to meet intrinsic requirements	3	4 %
B	Discussions as the development of ideas to create new awareness to meet intrinsic requirements	1 9	2 7 %
C	Discussions as a way of sharing ideas to meet extrinsic requirements	2 5	3 6 %
D	Discussions as a way of meeting extrinsic requirement s	2 3	3 3 %
Pharmacy		*N (total = 166)*	%
A	PBL as a way of developing independent clinical reasoning and problem solving	5	3 %
B	PBL as a way of understanding and resolving pharmaceutical cases	5 6	3 4 %
C	PBL as a way to rehearse for real situations, practice in order to be able to solve problems in general	4 5	2 7 %
D	PBL as a way of covering topics to answer problem s	1 4	9 %
E	PBL as a way of following a predefined process	2 7	1 6 %
F	PBL as mainly a way of building general transferable skills	1 9	1 1 %

What students do is not a pure reflection of their needs and desires. Their activity is a compromise between what they value for themselves and what they believe to be the demands of the higher education system in which they are working. Given the pressures of maximising marks and allocating time and attention to their education (as just one of a number of competing imperatives, along with earning some kind of a living), it is not surprising if many students, much of the time, translate task demands into activity in a way which could best be characterised as alienated labour (Marcuse, 1941/1986; Mann, 2001).

There are several implications for thinking about educational design. Not least, any naïve allegiance to student-centered design or user-centered design, which takes as paramount and unproblematic the expressed preferences of students as users of educational technology is likely to lead to catastrophe – or at the minimum, to the implementation of technological solutions that merely make alienated labour more efficient or bearable.

Concluding comments

The abstract characterisation of the educational design problem-space presented in Figure 1 was used as a way of talking about the need to establish legitimate boundaries around the space that should to be looked after by the 'teacher-as-designer' – among other things, this acknowledges that students need some

Table 2: Approaches to online learning found in three blended learning courses

Social Work (Psychology)			
Category	*Description*	*N (total = 51)*	*%*
A	Engaging in online discussions to evaluate postings to reflect on key ideas	2	4%
B	Engaging in online discussions to evaluate postings to challenge ideas	13	25%
C	Engaging in online discussions to use postings to add to ideas	24	47%
D	Engaging in online discussions to read postings to avoid repetition	12	24%
Web-engineering (E-commerce)		*N (total = 70)*	
A	Engaging in online discussions to receive and provide feedback on the topic to improve collective understanding	3	4%
B	Engaging in online discussions to integrate feedback on the topic to improve understanding	13	19%
C	Engaging in online discussions to find interesting ideas	45	64%
D	Engaging in online discussions to identify problems with the content of postings	9	13%
Pharmacy		*N (total = 166)*	
A	Researching PBL scenarios on-line to develop an understanding of professional resources necessary for diagnostic reasoning	19	11%
B	Researching PBL scenarios on-line to understand problem scenarios in order to perform well	11	7%
C	Using on-line databases to find information related to PBL scenarios	67	40%
D	Using on-line databases to find answers to PBL scenarios	58	35%
E	Using on-line databases for PBL scenarios only when they are easy to use	11	7%

freedom in translating tasks into activities and in co-constructing the material-digital and social situations in which they work. However, our empirical research into students' conceptions of learning and approaches to study has shown that students are not equally well-placed to translate tasks into activities and that some of their choices lead to poorer academic outcomes. It is not enough for educators to subscribe to 'student-centered active learning' (rather than to transmissive, teacher-centered modes) if significant numbers of students habitually approach active learning tasks with a shallow or strategic intention. Simply put, some students will go through the motions of completing an active learning task – performing as 'a good student' – but with such a superficial engagement that the learning activity is unlikely to be beneficial. In some cases, this may be the only coping strategy available. But we need to know more about the circumstances in which students adopt such strategies, and whether some students are systematically disadvantaged (e.g. by shortage of study time), before we can abdicate all educational responsibility for what happens in that task to activity conversion process.

In a similar way, the teacher-as-designer, and those other professionals involved in shaping a supportive learning environment, cannot yet relax about what we have called the co-construction of the social and

physical contexts of learning. There must be scope for learner autonomy; there must be limits of what can be designed; but we cannot yet assume that all the choices that students make (e.g. in reconfiguring the array of digital technologies that they bring to learning) will be good ones. Further research on these processes of translation and co-construction is needed before we can be confident that we have drawn the boundaries correctly and fairly.

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