Curricula Debates in Higher Education

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Forward

Debates about the meaning of curricula are not new. There is a rich and complex theoretical background of curriculum theory that has, in some way or another, informed where we are now with our thinking with respect to curricula in higher education. A good deal of this discussion has taken place in the context of debates around the shape, function, and place of the primary and secondary level curricula, as opposed to third level education. Some of this theoretical background is recognised and acknowledged; some not.

For our purposes here it may be more fruitful to step into the debate with third level, higher education clearly in focus. The first reading suggested here is a recent paper in the journal Studies in Higher Education. Sharon Fraser and Agnes Bosanquet from Macquarie University in Australia present their research into ways in which academics conceive of the curriculum in higher education. The intention of this article is to explore the epistemologies and assumptions that underpin conceptions of the curriculum, in order to promote an inclusive and shared vocabulary as a basis for curriculum development.

If you can only take a brief look at the reading, then table 1 on page 277 'Variation between the categories of conceptions of curriculum' is worth noting. In particular, I'd like to draw your attention to the continuum suggested by the categories:

Product-focussed teacher centred Curriculum ⟷ **Process-focussed student centred curriculum**

The full article can be accessed at: **Fraser, S and Bosanquet, A (2006) The Curriculum? That's just a unit outline, isn't it? in Studies in Higher Education, Vol 31, No 3, p 269-284**

As will be seen in the overview of models or processes of curriculum design in higher education, this continuum will feature largely. In the next section, I've used the article to introduce some of the underpinning assumptions which frame how curricula in higher education are construed. This will then be followed by a consideration of the following approaches to curriculum design and development:

- Developing curriculum through constructive alignment; (Biggs et al)
- Developing curriculum as Process. (Peter Knight, 2001) Developing
- Engaging Curricula (Barnett & Coate,2005)
- Developing curriculum through the use of 'Threshold Concepts' (Land, Meyer, Davies and Cousins, 2005)
- Developing curriculum through Problem and Enquiry based learning (Savin-Baden, 2000)

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1. The Curriculum as Product or Process?

Fraser, S and Bosanquet, A (2006) The Curriculum? That's just a unit outline, isn't it?

From their research into ways in which academics conceive of the curriculum in higher education, Fraser and Bosanquet (2006) define four categories that capture the ways in which curricula are described by staff:

- Category A: The structure and content of a unit (subject);
- Category B: The structure and content of a programme of study;
- Category C: The students' experience of learning;
- Category D: A dynamic and interactive process of teaching and learning.

The first two categories (A&B) are understood as representing a 'curriculum as product' view, whilst the second two categories (C&D) are seen as representing a 'curriculum as process' view.

Briefly, for Fraser and Bosanquet, a 'curriculum as product' perspective concurs with those who view the outcomes of the experience of the curriculum as tangible products and conform to the teacher's original intentions for it.

'Curriculum is 'design(ed)-in-advance' (Barnett & Coate,2005), it is developed from a generic template of some sort, by subject experts in the light of their knowledge of the discipline and their assumptions about student needs. The teacher implements the curriculum and student learning is controlled, so that at the end of the teaching process students can be judged in terms of how well they achieved the unit or programme goals. Content is a highly significant aspect of the curriculum, is selected by the teacher, and acts to both constrain curriculum change and determine which aspects are modified' (2006:279).

On the other hand, a 'curriculum as process' perspective views curriculum as an ongoing social activity, where change in both the practice and context of curriculum is likely to be engendered through the 'day-to-day interactions of students, teachers, knowledge and milieu.' (Cornbleth,1990, p. 24), and in response to the broader influences of an increasingly global and rapidly changing society. (2006:278)

Within their study, Fraser and Bosanquet also identify practitioners whose 'curriculum as process' perspective is framed by an 'emancipatory interest' or emancipatory orientation, where teaching is construed as a 'shared struggle towards emancipation.' In common with other principles of 'critical pedagogy,' learners are construed as active creators of knowledge. The educational experience is negotiated, and the curriculum:

> 'emerges from the systematic reflection of those engaged in the pedagogical act'. Curriculum is 'design(ed)-in-action' (Barnett & Coate, 2005), it is dynamic and in flux, and has aspects that cannot be anticipated or held in a template (Schön, 1987) (2006:282).

Understanding curricula as either 'product' or 'process' orientated or as part of a 'continuum' from product to process, as Fraser and Bosanquet have done, is not a new phenomena. There is a long and well documented history of debates and discussions in this regard – particularly within first and second level education. Some notable theorists in the area include Stenhouse (1975) in the UK, Tyler (1949) from the USA. However, connections back to these debates are not always made or acknowledged in the contemporary discussions of curricula in higher education. Indeed one of the most often quoted theorists in the area of learning and teaching in higher education, John Biggs, admits in the second edition (2003) of his influential text 'Teaching for Quality Learning at University' that he 'came across' Ralph Tyler's advocacy of 'constructive alignment' and an outcomes led model of curriculum development since writing the first edition (2003:25).

Nevertheless, what most contemporary discussions of the nature of the curricula in higher education do encourage is consideration, reflection, and re- assessment of the 'purposes' of the object of study, as well as the learning and teaching encounter. Some research in the area demonstrates how the value base of the lecturer in relation to their understanding of education and conceptions of learning and teaching will be fundamental to conceptions of the curricula and the form and shape it takes - the paper by Fraser and Bosanquet (2006) would be a good example of this.

What follows in these materials is a selection of some of the most established approaches to curriculum development in higher education, coupled with some newer approaches. The intention is to provide a range of approaches to curriculum design and development which offer differing starting points – differing assumptions. They are not exhaustive; they are a selection. And, for most, a reflective activity designed for an individual &/or a subject team, aims to facilitate possible application to the contemporary College context.

2. An Outcomes-Based Approach to Curriculum Development

In their introduction to using learning outcomes and assessment criteria, Gosling and Moon (2001) confirm that the outcome-based approach has been increasingly adopted by those utilising credit rating frameworks (like the current ECTS) and by national quality and qualifications authorities such as the QAA in the UK, the Australian, New Zealand and South African Qualification Authorities' (2001:7).

At the heart of the learning outcomes approach, Gosling and Moon suggest that there are identifiable key principles. Although written primarily for a UK audience, they have been reproduced here given their relevance.

Principles behind an outcomes-based approach
1. All learning at whatever level can be expressed in terms of outcomes to be demonstrated.
2. Modules of learning are described in terms of their learning outcomes and assessment criteria.
3. These, rather than the mode of delivery, form the basis upon which they are assigned a specified number of credits at a given level.
4. Learning outcomes must be placed within the hierarchy of the five levels of the NQF in Higher Education in England (ten in Ireland)
5. Any given module can be assigned to only one level.
6. Learning outcomes should be as clear and unambiguous as possible.
7. Learning outcomes identify the essential learning to be achieved to merit the award of credit.
8. Assessment criteria should specify how satisfactory performance of the module's learning outcomes are to be demonstrated.
9. Assessment criteria should encourage learning at the appropriate level.
10. Learning outcomes should enable employers, schools, parents, prospective students, and others to understand the achievements and attributes of students who have successfully completed a given programme of study.
11. An outcomes-based approach should facilitate comparability of standards to facilitate international mobility of students.
12. An outcomes-based approach should facilitate student and graduate mobility and help identify potential progression routes, particularly in the context of lifelong learning.
13. Identifying learning outcomes should assist higher education institutions, their external examiners, and QAA reviewers to assure quality and standards, by providing an important point of reference for setting and assessing standards.

Gosling and Moon (2001:8)

Starting points for Learning Outcomes led curriculum development have been identified by Gosling and Moon, amongst other and the stages envisaged can be accessed at Gosling and Moon. Questions such as how learning outcomes might be written can be accessed at Writing Learning Outcomes.

This section will progress with a consideration, at a more theoretical level, of the discussions in the literature around main approaches taken to curriculum development in higher education. To start, however, with a word of caution: much has been written in this area, but writers do not always use the same terminology. The stance in these materials will be to try to keep terminology constant, but to refer to alternative descriptors if and where appropriate.

The next section will consider what is described as a 'learning-centred approach' to curriculum development through the reflections of Hubball and Burt (2004) at the Faculty of Pharmaceutical Sciences at the University of British Columbia, Canada.

3. Using a Learning-Centred Approach to Curriculum Reform

Learning-Centred Curricula

Hubball and Burt (2004) provide an interesting account of their experiences of curricula reform using a learning-centred approach in the Faculty of Pharmaceutical Sciences at the University of British Columbia. They suggest that in order to meet the diverse needs and circumstances of learning communities, 'no singular curriculum model, implementation strategy, nor approach to learning will suit all academic settings. (p52) As a result of their experiences of developing curricula in the faculty of Pharmaceutical Sciences, they propose a flexible framework, guiding principles and strategic approach to implementing a learning-centred curricula that may be of use to others in higher education facing similar challenges.

Their principles and flexible framework share much in common with what is often described as a rational curriculum planning approach to curriculum design. However, coming as it does from their experiences, it offers insight into lessons learned and, in particular, the importance of context and community in the development process.

The full article can be found at the International Journal for Academic Development, Vol 9, No1, May 2004, pp. 51-65.

The account starts off by offering an explanation of what can be understood by the term a 'learning-centred' curricula. A learning-centred curriculum places emphasis on 'learning communities, curriculum integration, diverse pedagogies and clearly defined learning outcomes'. Hubball and Burt suggest that the underlying assumptions about a learning-centred approach to curricular reform are that;

- representative students, faculty, and stakeholders in the broader context should be active participants in the curricular reform process;
- academic units are at different stages in curricular reform and progress at different rates;
- curricular reform should honour inclusion of a wide range of teaching and learning strategies and;
- curricular reform within an academic unit is both an individual and social contextual process. (2004:52)

They suggest that the following benefits present a 'compelling rationale' for curricula developed from a learning-centred approach, and it is in this regard, perhaps, that the connections with designing curricula around constructive alignment are most apparent.

They argue that a curricula developed from a learning-centred perspective is constructed around key processes. That is, a learning-centred curricula:

- informs learners of what they can expect to achieve from a program, so they can organize their time and efforts;
- communicates curriculum/program goals in a meaningful way to a broader community;
- [provides an] outcomes-based curriculum [that] helps to determine the extent to which learning has been accomplished;
- guides curriculum committees (within resource constraints) to determine program(s) of study and course offerings;
- guides instructors when they are designing course objectives, content, delivery, and assessment strategies.
(Hubball and Burt, 2004: 53)

ACTIVITY

Hubball and Burt present a series of 'practical strategies' in relation to addressing aspects of

the learning-centred model they advocate. The strategies are organised around four tables:

1. Learning Context

2. Developing clearly defined curriculum-wide learning outcomes

3. Assessment strategies

4. Program streams, teaching methods/learning experiences driven by curriculum-wide

   learning outcomes.

The table concerning 2) developing clearly defined curriculum wide learning outcomes is reproduced on page 20 in the document Writing learning Outcomes.

Review this table and specifically the 'global' or generic learning outcomes suggested. Would any of these find a place in generic outcomes for programmes with which you are involved?

This section will progress with a consideration of notions of 'constructive alignment' and a brief look at the work of John Biggs. Examples of developments utilising constructive alignment will be used as illustration.

4. Developing Curriculum through Constructive Alignment

Constructive Alignment

It would be fair to say that Biggs' notion of constructive alignment (1999; 2003) has been one of the most influential in reforming the curriculum in higher education. Not only has it captured the hearts of the 'learning-centred' designers (see Hubball and Burt) but it has also been seized upon by QAA systems throughout the world. To some extent, the fact that it has been 'embraced' by both lecturer/practitioners and by QA system managers has led to a rather more troublesome legacy than might have been expected perhaps. For instance, accusations of 'managerialism' have come its way (Hussey and Smith, 2003) and whilst it is seen as emblematic of a 'new' learner-focused higher education by some, it is seen by others as reductionist: more suited to training than education. Quite a legacy!

In Biggs (1999, 2003) the notion of Constructive Alignment is outlined. Briefly, constructive alignment occurs when three key curriculum elements: the intended learning outcomes; the teaching and learning activities, and the assessment tasks are balanced. A constructivist understanding of learning – starting with the notion that the learner constructs their learning through relevant activities - underpins the approach. Effective alignment ensures consistency throughout. Intentions are made transparent and communicated to the learner; the lecturer selects and uses teaching and learning methods likely to achieve the intentions and assessment tasks reflect those intentions. The entire system is designed to 'enable' the student to learn, rather than to leave them guessing as to what is involved in the course of study or on what they will be assessed.
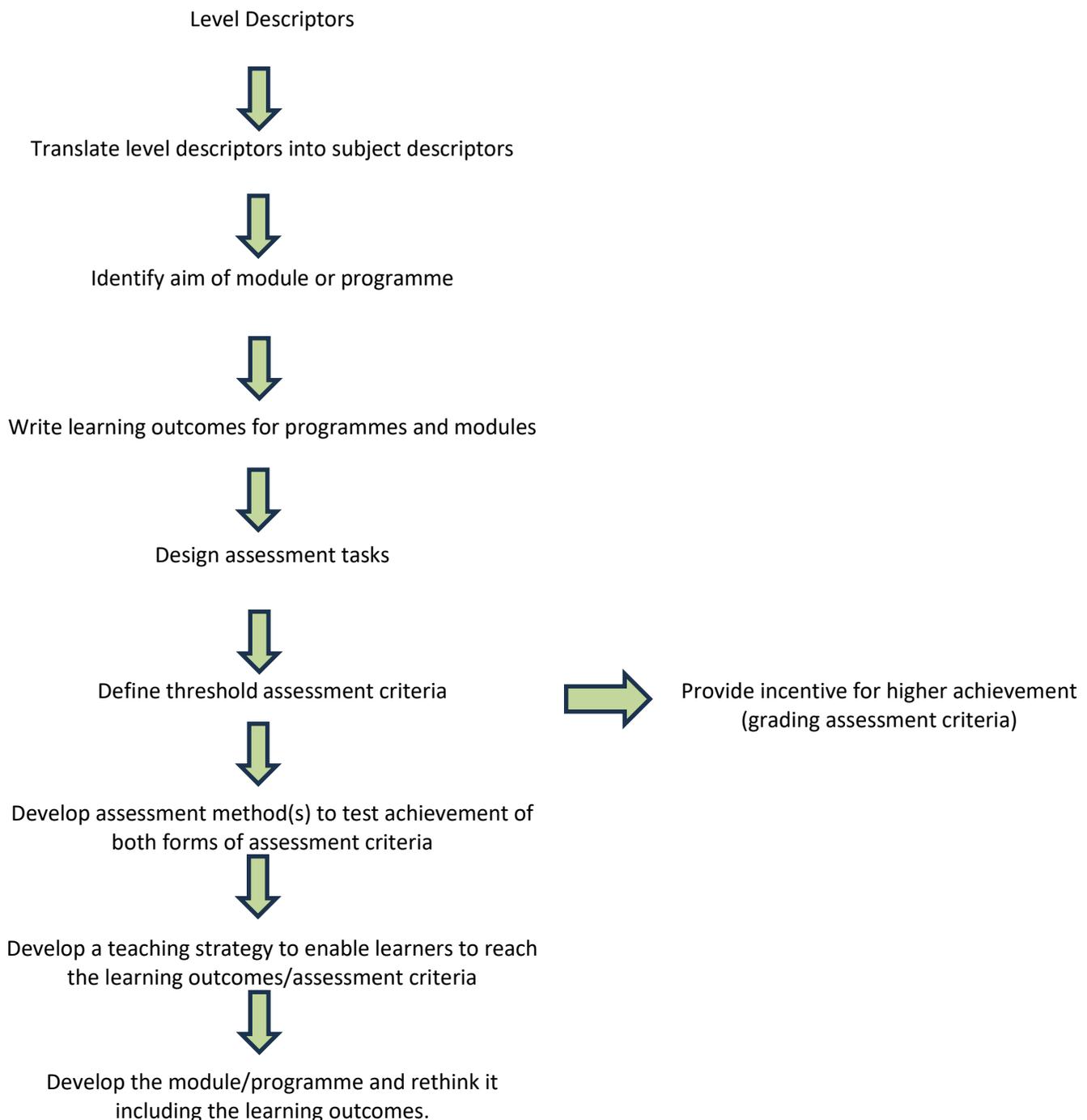
To focus on the conception of constructive alignment further, Biggs' own short account provided for UK Learning Teaching and Support Network (LTSN) is provided. This is followed by an example of constructive alignment in action – in this example, in Engineering. In Biggs' book Teaching for Quality Learning at University, second edition (2003) a thorough account of the principles behind alignment and illustrations of aligned curricula is provided.

[The Learning and Teaching Support Network Series (2003) Guide for Busy Academics: Constructive Alignment, LTSN Generic Centre, UK (Now Higher Education Academy Subject Centre)](#)

How to go about designing an aligned curricula? Stages of Curriculum reform: A learning outcomes approach.

Gosling and Moon (2001:15) present an 'ideal sequence' for programme or module development within an outcomes-based curriculum. They accept that the process outlined in the model is 'rarely followed.' They recognise that, in reality, those involved in the development process tend to start with curriculum aims or existing areas of teaching. Nevertheless, Gosling and Moon offer the model as they suggest that the sequence provides: 'a means of ensuring the existence of a logical relationship between level, learning outcomes, assessment criteria, assessment, and teaching methodologies for quality assurance processes. (2001:14). The model starts with existing level descriptors.

Level Descriptors

⬇

Translate level descriptors into subject descriptors

⬇

Identify aim of module or programme

⬇

Write learning outcomes for programmes and modules

⬇

Design assessment tasks

⬇

Define threshold assessment criteria ➡ Provide incentive for higher achievement (grading assessment criteria)

⬇

Develop assessment method(s) to test achievement of both forms of assessment criteria

⬇

Develop a teaching strategy to enable learners to reach the learning outcomes/assessment criteria

⬇

Develop the module/programme and rethink it including the learning outcomes.

Stages of Curriculum reform: A learning-centred curriculum approach

From their experiences of curricula reform using a learning-centred approach in the Faculty of Pharmaceutical Sciences at the University of British Columbia, Hubball and Burt (2004:57) identify different stages they went through in the process of curriculum development and they, like others, reinforce the 'messy business' of curriculum reform. Rather than a neat linear development, the process is experienced as cyclical in nature. I've reproduced their diagrammatic representation below with the stages they identify as: Awareness; Initiative; Mobilisation; Action Plan and Practice.
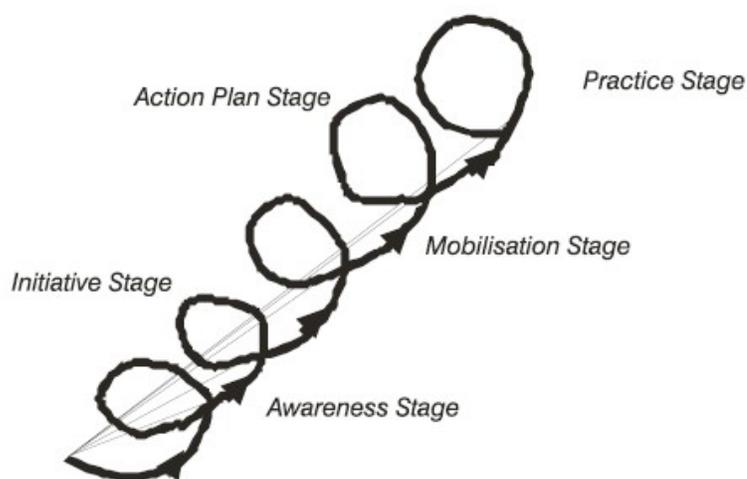
2. Diagram showing the progressive, though cyclical and unpredictable realities of curriculum reform

The identification of stages and the iterative process represented by the 'spiral' may prove to be useful in the planning process as it emerged following reflection on experiences. It can perhaps be described as a 'descriptive model of what happened, rather than a 'normative' model of what the 'messy business' of curriculum reform should be.

Whilst working within a learning outcomes approach to curriculum development, the particularly interesting aspect here is the importance placed on the context: the academic community involved as well as the broader organizational context.

Some of the main criticisms of a learning outcomes led approach:

Notwithstanding the global adoption of learning outcomes-led curricula and, in particular, the impact this approach has had on major European initiatives concerning higher education such as Bologna, it is important that some of the main criticisms of the approach are considered. As may be apparent already, there is no single 'blue-print' for development of a learning outcomes-led curricula. It is hoped that by directing attention to a consideration of some criticisms of the approach, individuals, subject teams, departments and/or schools can approach the revision and design of curricula as appropriate- including composing learning outcomes as required.

The following section is organised in part around 'Frequently Asked Questions' and these are framed by common criticism of a learning outcomes approach to curricula design.

Is it advisable to always be able to 'predict' student learning? What about unintentional, unplanned learning – is this not valid too?

Hussey, T. and Smith, P (2003) The Uses of Learning Outcomes, in Teaching in Higher Education, Vol. 8, No. 3, 2003, pp. 357–368.

In this interesting and critical account Hussey and Smith present a cogent argument for 'reclaiming' learning outcomes from what they describe as a 'monitoring and audit' culture to their use in good learning and teaching.

A central point of their argument is that where the pre-specification of learning outcomes is the main focus of concern (perhaps where outcomes are seen as an end in themselves rather than a means to an end?) it may be because learning and cognitive development is construed in a linear fashion. However, where, following Bruner (1960), the learning and development process is construed as an 'ever expanding spiral of understanding' (2003:359) then the focus on pre-specification of learning outcomes shifts.

Connections can be made with the 'process and product models' of curricula identified by Fraser, S and Bosanquet, A (2006). However, in this article, Hussey and Smith are very clear that they are not arguing for abandonment of the use of learning outcomes. What they propose is a model that includes the framing of learning outcomes in general terms and their flexible use so that they 'can include those that emerge in the practical realities of teaching'(p359).

A new model is therefore produced that starts from the idea of an articulated curriculum and embraces both intended and emergent learning outcomes.

The Articulated Curriculum

Hussey and Smith describe an articulated curriculum as:

'one in which all the elements both influence and interact with each other in order to stimulate and support active learning, and more readily reflects what happens in classrooms: a mess of intentions, ambiguities and interactions.'

It is a view of curriculum that perceives the respective elements to exist in a state of mutual interaction and influence. Like Biggs' model of constructive alignment, the intention is to combine the elements in a state of equilibrium, whilst acknowledging that events and activities both within and without the classroom act to shift the balance. Perhaps it could be described a step towards a 'process' model, rather than firmly identified as a 'product model'.

Are there things we want to encourage in students that cannot be captured in learning outcomes?

[Dai Hounsell and Noel Entwistle at the University of Edinburgh co-direct the Enhancing Teaching–learning Environments in Undergraduate Courses (ETL) TLRP Project, UK.](#)

One of the reports to emerge from their investigations is of particular interest to this discussion. Written by Entwistle in October 2004, it appears in [The Curriculum Journal Vol. 16, No. 1, March 2005, pp. 67 – 82 entitled 'Learning outcomes and ways of thinking across contrasting disciplines and settings in higher education'.](#)

Of particular relevance to this discussion is the suggestion that formal statements of intended learning outcomes may fail to 'communicate the essence of the individual disciplines and professional areas, which depends on a holistic view of the knowledge and values involved.' For Entwistle, this is particularly troublesome due to the importance given to the 'essence of the disciplines' by UK university teachers. The ETL project team had asked university teachers from five contrasting subject areas to describe what they were trying to achieve with their students. Amongst other things, e.g. criticisms of the restrictive nature of learning outcomes – see Hussey & Smith (2003) most saw themselves as passing on to their students a: 'distinctive way of thinking' (2005:72). The project team therefore coined the term: 'Ways of thinking and Practicing' in a subject area (WTP) to describe:

'the richness, depth and breadth of what students might learn through engagement with a given subject area in a specific context. This might include, for example, coming to terms with particular understandings, forms of discourse, values, or ways of acting which are regarded as central to graduate-level mastery of a discipline or subject area' (2005:72).

Ways of Thinking and Practicing

Based on evidence form the ELT research, Entwistle argues that conceiving Ways of Thinking and Practising (WTP) as learning outcomes is highly significant. He cites David Perkins' research carried out by the Project Zero team at Harvard, which also suggests the importance of keeping broad 'understanding' aims at the front of students' minds. The term used by the Harvard team was 'through lines'.

Entwistle suggests that within the current context in British higher education:

'an emphasis on WTPs and 'through lines' (from Perkins) would help to counteract the fragmentation of subject area knowledge that can be created by the requirement to use 'intended learning outcomes. While WTPs, by their very nature, are more difficult to assess, limiting the assessed outcomes to more precisely defined outcomes is potentially damaging to students' understanding of the subject itself. '(2005:77).

In the document on learning outcomes it can be seen that one way would be to stress the ways of thinking and practicing in generic programme or course outcomes and ensure that they connect with parts (units, modules) of the programme offer.

Developing curriculum as Process

Perhaps one of the most critical accounts of a learning outcomes approach and, more generally, the view of curricula that it is a product and not a process, is one provided by Peter Knight. In the article suggested, below, a true flavour of the challenge to an outcomes-based model is presented. He suggests that a 'Rational Curriculum Planning' model and its 'common-sense quality' that underpins much curricula debate in higher education, is more suited to a training culture, than an educational one.

Knight, P. (2001) Complexity and Curriculum: a process approach to curriculum-making in Teaching in Higher Education, Vol. 6, No. 3, 2001

However, he does want to endorse coherence in curriculum design. What is needed, he suggests, is an approach to coherence that:

However, he does want to endorse coherence in curriculum design. What is needed, he suggests, is an approach to coherence that:

> 'breaks with the discourses of learning outcomes, rational curriculum planning, linear, simple systems and starts from the complexities of learning.'
>
> **Knight, 2001:310**

He concludes by arguing for a curricula that would endorse the notion of a 'spiral of repeated engagements' to improve and deepen skills, attributes, and values.

5. Developing Curriculum through Threshold Concepts

(Land, Meyer, Davies and Cousins, 2005)

Thinking about programme or module planning in a much more conceptual manner is an approach to curriculum planning which focuses on the notion of identifying 'Threshold Concepts' in courses/programmes of study. Emerging out of debates concerning 'critical blocks' to student learning, 'essential' areas of learning would tie in with identified threshold concepts. Once identified, these threshold concepts might frame curriculum design and planning.

In order to consider this approach (and the connections to the work of Entwistle at al – page 12, above) it is important to understand how 'threshold concepts' might be identified – their features and their uniqueness. To this end, the following papers/extracts will be most useful. This is followed by application to different discipline areas.

Land, R. Cousin, G. Mayer, J.H.F and Davies, P (2005) Threshold concepts and troublesome knowledge (3): implications for course design and evaluation in Rust, C (ed) Improving Student Learning: Diversity and Inclusivity, OCSLD, Oxford

Discussion of Thresholds and EXAMPLES from a range of disciplines: Jan Meyer and Ray Land (2003) Threshold Concepts and Troublesome Knowledge: Linkages to Ways of Thinking and Practicing within the Disciplines

The idea of threshold concepts opens up important challenges for curriculum design in learning and teaching.

Meyer and Land describe a Threshold Concept as the following:

"A threshold concept can be considered as akin to a portal, opening up a new and previously inaccessible way of thinking about something. It represents a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress. As a consequence of comprehending a threshold concept there may thus be a transformed internal view of subject matter, subject landscape, or even world view. This transformation may be sudden or it may be protracted over a considerable period of time, with the transition to understanding proving troublesome. Such a transformed view or landscape may represent how people 'think' in a particular discipline, or how they perceive, apprehend, or experience particular phenomena within that discipline (or more generally)." (Meyer and Land, 2003,p1)

Meyer and Land have also published (2006) a book examining how to overcome barriers to student learning. In it they ask why certain students 'get stuck' at particular points in the curriculum whereas others can grasp the same concepts with comparative ease? And how can teachers and lecturers change their teaching and the curriculum to help students overcome these barriers? (Meyer and Land, 2006.)
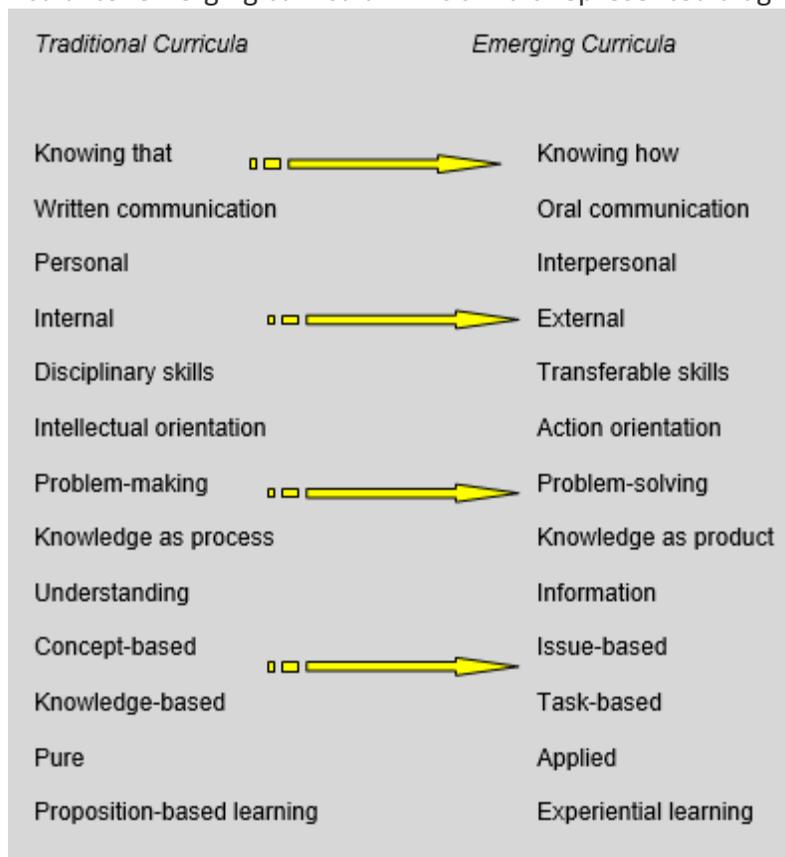
Meyer and Land (2006). Overcoming Barriers to Student Understanding: Threshold concepts and troublesome knowledge, Routledge, New York.

Caring as an example (health professionals, UK): Clouder, Lynn (2005) Caring as a 'threshold concept': transforming students in higher education into health(care) professionals, in Teaching in Higher Education Vol. 10, No. 4, October 2005, pp. 505-517

6. Developing Engaging Curricula

(Barnett & Coate, 2005)

The work of Ron Barnett and Kelly Coate at the Institute of Education, University of London offers another interesting approach to the notion of curricula design in higher education. In their book 'Engaging curriculum in higher education' (2005) they are critical of an outcomes-based model of curricula and argue that there has been a broad shift in curricula from what they describe as 'traditional curricula' to 'emerging curricula'. This shift is represented diagrammatically, below.

Traditional Curricula	Emerging Curricula
Knowing that	Knowing how
Written communication	Oral communication
Personal	Interpersonal
Internal	External
Disciplinary skills	Transferable skills
Intellectual orientation	Action orientation
Problem-making	Problem-solving
Knowledge as process	Knowledge as product
Understanding	Information
Concept-based	Issue-based
Knowledge-based	Task-based
Pure	Applied
Proposition-based learning	Experiential learning

However, they suggest that the challenge in developing curricula in higher education is to ensure that three 'domains' – those of knowledge, action, and self – are represented in curricula. The knowledge domain refers to those components of the curriculum that are based on discipline-specific competences; the action domain includes those competencies acquired through 'doing' (e.g an oral presentation in art history or the clinical practices of a nurse) and the self domain develops an 'educational identity in relation to the subject areas.

They argue that both the weight and representation of these domains are different across the disciplines and that the domains may be held separate or integrated.

A fuller account of their work can be accessed Barnett, R. Perry, G & Coate, K (2001) Conceptualising Curriculum Change, in Teaching in Higher Education, Vol.6, No.4, 2001.

It may be useful to reflect on whether identifying these domains within subject areas, the process of curriculum design is advanced.

7. Developing Curriculum Through Problem and Enquiry Based Learning

In her book on problem-based learning in higher education, Maggie Savin- Baden (2000) outlines the principles behind the approach taken to developing curricula defined as such. In a shorter piece for the LTSN (May 2002) she outlines some of the key points influencing design.

A key issue to note is the principle that in problem-based models of learning, the curriculum is 'constructed with and through [our] students.' An edited extract is reproduced in the text box below.

> How do we create a curriculum that engages in the construction and development of
>
> knowing?
>
> Curricula where PBL is central to student learning are largely constructivist in nature because students
>
> do, to a large extent, make decisions about what counts as knowledge and knowing. [..]

Problem-based learning is different from problem solving learning.

In problem-**solving** learning, the problems are set within and bounded by a discrete subject or disciplinary area. In some curricula students are given specific training in problem-solving techniques, but in many cases they are not. The focus in this kind of learning is largely upon acquiring the answers expected by the lecturer: answers that are rooted in the information supplied in some way to the students. Thus the solutions are always linked to specific curricular content that is seen as vital for students to cover in order for them to be competent and effective practitioners (such as engineers, accountants, doctors).

In problem-**based** learning the focus is on organising curricular content around problem scenarios rather than subjects or disciplines. Students work in groups or teams to resolve or manage these situations but they are not expected to acquire a predetermined series of right answers. Instead they are expected to engage with the complex situation presented to them and decide what information they need to learn and what skills they need to gain in order to manage the situation effectively.

Situating problem-based learning.

The design of the curriculum is central to effecting PBL because of the way in which the design impinges upon staff and students' roles and responsibilities, and the ways in which learning and knowledge are perceived. Problem-based curricula should be designed with the problem scenarios as central to student learning in each component of the curriculum (modules/units). The lectures, seminars or skills workshops/laboratories support the enquiry process rather than transmitting great chunks of subject-based knowledge. Designing a curriculum based on content and disciplinary knowledge and then trying to make it problem-based can end in disaster. Whether it is a module or a whole programme that is being designed, the starting point should be a set of problem scenarios that enable students to become independent enquirers and help them to see learning and knowledge as flexible entities.

The All Ireland Society for Higher Education has published a collection of articles concerning PBL and Enquiry based learning. It provides a useful resource for those considering developing curricula along these lines.

2005-1: Handbook of Enquiry and Problem-based Learning Irish Case Studies and International Perspectives. Terry Barrett, Iain Mac Labhrainn and Helen Fallon (Editors).

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