

Critical Reflections on Learning

Contents

	<i>page</i>
Learning and Teaching	1
Exploring Learning	1
What is Learning?	2
The Deep/Surface Distinction	3
Surface approach	3
Deep approach	3
Threshold Concepts and Troublesome Knowledge	3
What are threshold concepts?	3
Threshold concepts and forms of learning	4
The teaching challenge	5
Ten sets of strategies for successful teaching	6
Strategy set 1: Start from where the students are	6
Strategy set 2: Do not expect 'first time' understanding	6
Strategy set 3: One size will not fit all	6
Strategy set 4: A picture says a thousand words	7
Strategy set 5: Because you are an expert, you can model the concept ..	7
Strategy set 6: But experts are not always the best teachers	7
Strategy set 7: Trust the learner	7
Strategy set 8: You are not alone	8
Strategy set 9: Change is never easy or pain-free	8
Strategy set 10: You can lead a horse to water (or teach transparently: establish and discuss goals and expectations and give support) but the rest is up to the learners	9
Beliefs about What Should be Taught: Lecture and Module Content	9
References	11

Learning and Teaching

We would suggest that learning and teaching are two sides of the same coin, and our understanding of what it means to be a good teacher (see Critical Reflection on Teaching at www.prodait.org/teaching/critical_teaching/index.php) is based in part on what we had to do to become successful learners, so this area of our belief system will provide fruitful material for evaluation and reflection.

Williams and Burden (1997) express this well:

The successful educator must be one who understands the complexities of the teaching–learning process and can draw upon this knowledge to act in ways which empower learners both within and beyond the classroom situation.

Williams and Burden 1997: 5

As a start to reflecting on your teaching, you are asked to reflect on (your own) learning. Take a few moments to:

- think about the strategies, techniques and approaches that you personally found helpful (or not) as a learner
- consider whether we should assume that others (especially your students) will respond in the same way
- analyse distinctive elements of learning in your own subject or discipline.

Exploring Learning

We probably all have personal beliefs about how learning happens. Take a few more moments to think about your own learning.

- a Do you consider yourself to be a successful learner of your subject? Why (not)?
- b Are there any particular strategies or techniques that work(ed) well for you as a learner?
- c Did you learn your subject in the best way? If you could turn back the clock, what would you change about the way you learned? Why?
- d Which of your teachers were helpful or unhelpful? What did they do to assist or hinder your learning?
- e How were you assessed? Did this affect the way you (or your teachers) approached the learning process?
- f Do you encourage your students to use any of the strategies or techniques that helped you, or consciously avoid anything that you found unhelpful?

To some extent, you are in a university because you have been a successful learner. But did you learn most from teachers, from your research, from your peers or ...?

Did you learn from books, from practical experiences, from talking to others or ...? Did you read first and then go and 'do' or did you experience something in a lab or the field and then read further about it?

We probably all learn from a mixture of sources and it will be important to remember this when thinking about students' learning.

What is Learning?

For real learning to occur, there must be change — change in what we know and understand, or in what we do. There can be problems if attempts to learn or teach do not result in change. Students' and our own ideas about learning can be unhelpful if they don't consider the need for change.

Gibbs (1992) identifies five different conceptions of learning that students may have and suggests that this is influenced by the context and the learning demands these contexts make.

- *Learning as an increase in knowledge.* Learning is something done to the student, rather than something they do for themselves. 'To gain some knowledge is learning ... We obviously want to learn more. I want to know as much as possible'.
- *Learning as memorising.* The student actively memorises but the information is not transformed in any way. 'Learning is about getting it into your head. You've just got to keep writing it out and eventually it will go in.'
- *Learning as acquiring facts or procedures to be used.* This includes skills, algorithms and formulae which you will need to do things at a later date. There is still no transformation of what is learnt by the learner. 'It's about learning the thing so you can do it again when you are asked to, like in an exam'.
- *Learning as making sense.* The student makes active attempts to abstract meaning in the process of learning. 'Learning is about trying to understand things so you can see what is going on. You've got to be able to explain things, not just remember them.'
- *Learning as understanding reality.* Learning enables you to perceive the world differently. It is 'personally meaningful'. 'When you have really learnt something, you kind of see things you couldn't see before. Everything changes'.

Gibbs 1992: 5–6

The Deep/Surface Distinction

It has been observed that students go about learning in different ways. Some seem determined to give back, in essays and reports, exactly what they were given in lectures. Others strive to develop their own perspectives and syntheses of the subject. These two extremes have been termed a surface approach and a deep approach. Through extensive interview studies (Marton and Saljo, 1976; Marton and Saljo, 1984) the following definitions have been generated, illustrated here with quotes from students.

Surface approach

The student reduces what is to be learnt to the status of unconnected facts to be memorised. The learning task is to reproduce the subject matter at a later date (perhaps in an exam):

It would have been more interesting if I'd known that I wasn't going to be tested on it afterwards, 'cos in that case I'd've more, you know, thought about what it said instead of all the time trying to think: 'Now I must remember this and now I must remember that'.

Deep approach

The student attempts to make sense of what is to be learnt, using ideas and concepts. This involves thinking, seeking integration between components and between tasks, and 'playing' with ideas:

I tried to look for ... you know, the principal ideas ... I tried to think what it was all about ... I thought about how he had built up the whole thing.

An approach is not the same as a skill. It is primarily about the learner's intention. It can be helpful to make the learning process explicit by discussing students' intentions with them. Ask the students what they were trying to do and what they were thinking about, for example when they were making notes or writing their essay.

Gibbs (1992) explores the notions of deep and surface learning.

Threshold Concepts and Troublesome Knowledge

What are threshold concepts?

A threshold concept is like 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 can not progress. As a consequence of comprehending a threshold concept, there may 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. The transition to understanding may prove troublesome.

Such a transformed perspective may represent how people 'think' in a particular discipline, or how they perceive or experience particular phenomena within that discipline (or more generally). It might, of course, be argued, in a critical sense, that such transformed understanding leads to a privileged or dominant view and therefore a contestable way of understanding something. This would give rise to discussion of how threshold concepts come to be identified and prioritised in the first instance.

Meyer and Land (2003) say that a threshold concept may be 'troublesome' because it is 'alien', or counter-intuitive, or even intellectually absurd at face value. It increasingly appears that a threshold concept may, on its own, constitute, or in its application lead to, such troublesome knowledge. Meyer and Land characterize a threshold concept as:

- *Transformative* — once acquired it shifts perception of the subject
- *Irreversible* — once learners have come to see the world in terms of the threshold concept, they can not return to their former, more primitive, view
- *Integrative* — acquisition of the threshold concept illuminates the underlying inter-relatedness of aspects of the subject
- *Bounded* — the threshold concept helps to demarcate subject boundaries
- *Troublesome* — a threshold concept may be far from 'common sense' understandings of the world and thus initially very difficult for learners to accept. In grasping a threshold concept, the learner moves to a new perception of the world that may be in conflict with perceptions that previously seemed self-evidently true.

Erik Meyer and Ray Land develop these ideas in *Threshold Concepts and Troublesome Knowledge* (2003).

Threshold concepts and forms of learning

The notion of threshold concepts and troublesome knowledge can be linked with the deep and surface learning distinction if we consider the problems learners have (and you may have had) when first trying to learn at higher education level in a chosen discipline. It may be helpful to consider the following questions:

- a When you were learning your subject, can you recall any aspects that seemed especially hard to grasp?
- b Are there any aspects of the subject you teach that (some) learners just don't seem to learn, however many times you teach this? What are they?
- c Why do you think some aspects of the subject are resistant to learning?

- d Are there any key concepts in your subject that seem to be resistant to learning, but without a grasp of which your students cannot move on to higher levels of understanding? Do you have any teaching strategies to help students grasp these key, or 'threshold' concepts?

If you are intrigued by these questions — and they are highly relevant for teaching at higher education level in any discipline — you will be interested in the current large-scale UK investigation into this topic. This is an ESRC-funded project called Teaching–Learning Environments: ways of thinking and practising in the disciplines. You can obtain more information from www.ed.ac.uk/etl.

The teaching challenge

'Threshold concepts' are likely to be difficult for learners to grasp, since an alteration in world view is needed. Such changes are challenging and unsettling. There is a clear link between the notion of a 'changed world view' and the higher levels (categories 4 and 5) of 'approaches to learning' that Gibbs talks about with reference to deep and surface learning. In fact, it is useful to see 'grasping and internalising a threshold concept' as a paradigm case of 'deep learning'. When this is done, a number of issues clearly emerge to challenge us as teachers:

- a If learners are involved in an element of 'reconstitution of self', what are the implications of this for us, as their teachers?
- b If we are teaching a threshold concept, how should we pace and sequence the new content? What activities should we use, and how quickly can we expect the learners to make the transition into the new world view?
- c Encountering a threshold concept is like making a journey through new and strange territory. As teacher, what linguistic 'maps' and directions can we give our learners? Can the unfamiliar concept be approached through familiar words, images and/or analogies? (like the analogy of 'a journey through strange territory' to characterise what 'learning a threshold concept' is like!).
- d As we introduce the new terminology, are there linguistic or other 'bridges' that can take learners from pre-threshold language and understanding to the language of the changed world view? Can we provide intellectual 'scaffolding' for our learners?
- e Are there other forms of support that we can give learners while they attempt to grasp the new material and changed perception of the world?
- f How can we (and they) know that a threshold concept has been successfully internalised?
- g How often should we revisit the threshold concept to ensure that it is being retained over time, and that, when new threshold concepts are introduced, the earlier material is integrated into the next stage?

Ten sets of strategies for successful teaching

Strategy set 1: Start from where the students are

Because threshold concepts are difficult to teach, it is crucial that you start from the right place with your learners. Therefore:

- establish what your learners already know and can do
- make sure that any pre-requisite knowledge is in place (Gibbs's 'well-structured knowledge base')
- give learners some activities/tasks/tests to check this
- don't take their prior knowledge for granted (even if learners think they know something, it frequently turns out that their grasp is very uncertain).

Strategy set 2: Do not expect 'first time' understanding

Because the concept will be difficult for learners to grasp, it is unlikely that it will be learned first time, or after only one iteration. Therefore:

- break the concept down into small parts
- build up gradually to the whole picture
- keep checking for learner understanding
- use a recursive strategy, not a linear one
- keep revisiting the concept over time
- give many opportunities for it to be rehearsed and re-rehearsed by the learners.

Strategy set 3: One size will not fit all

Because every learner has their own unique configuration of language and understanding (their 'idiolect'), it is unlikely that one set of linguistic bridges or analogies will make contact with the language and understanding of your learners. Therefore:

- make as many links as possible between 'everyday' language and the new, specialised (use of) language
- use analogies, metaphors, everyday examples — as many as you can
- do not be afraid of repetition — what works for one learner will not work for another
- do not be afraid of simple — even simplistic — connections. If a learner can make an initial connection with the concept, a link has been created that can be refined and corrected through further learning activities.

Strategy set 4: A picture says a thousand words

Because a threshold concept connects aspects of the subject (and perhaps the world) in a new way, it involves a re-drawing of the learner's mental map. It will be helpful for learners to see this new picture building up, as it will emphasise the inter-relatedness of the concept and its guiding principles.

Therefore:

- depict the concept with a visual map as it is being built up in a lesson
- ask students to copy this map
- use the map as a reference point in your teaching
- if a later threshold concept supersedes an earlier one, return to the earlier map and, with the learners, trace how the new threshold concept subsumes the previous one.

Strategy set 5: Because you are an expert, you can model the concept

Because teaching a threshold concept is showing the workings of (some part of) the discipline, it involves sequences of thought and action. Therefore:

- describe these sequences to learners as you do them
- carefully show why each step is taken, and others not taken ('I do this, then I do this, then I could do this, but I don't, because ... then my next step is', etc).

These sequences of 'intellectual behaviour' show learners the connectedness of the concept, and given them something to imitate — this can be a useful bridge for them as they try to gain their own understanding (practise the behaviour, and understanding may follow).

Strategy set 6: But experts are not always the best teachers

Because, as a teacher and expert, you are in a different linguistic and conceptual world from your learners, the 'irreversibility' element of threshold concepts means that it may be impossible for you to wheel back your language to the 'primitive' language and world view of the novice. Therefore:

- set students to work in small groups with tasks that involve them in making their own links between the familiar and the unfamiliar.

Often learners can be more help to each other because they are all living in the same conceptual and linguistic world as far as the subject is concerned; they are experiencing the same difficulties and should be encouraged to work together to solve them mutually.

Strategy set 7: Trust the learner

You need to trust the learner because threshold concepts need to be 'deep learned' and internalised by them. Therefore:

- use all the above strategies to gradually hand over responsibility to the learners
- if you made conceptual maps, start to ask learners to construct them

- if you have modelled the discipline, ask students to start to practise the sequences of thought and action for themselves
- do all this gradually, first guiding them, then gradually letting go so that they do it themselves (often most usefully with the support and encouragement of their peers).

Strategy set 8: You are not alone

Because your goal is that the learners become able to use the threshold concept confidently, (for example explain it in their own words, not just repeat yours, use and apply it in their work, perhaps even try to think beyond it to the next idea), you will be helped in your teaching task by student-centred learning methodologies. Therefore:

- consult colleagues, websites, and your subject centre networks for appropriate materials. The broad range of resource-based learning materials will be appropriate: problem-based learning, case-based learning and flexible learning
- to get students to work creatively and constructively together, consider using the techniques of Action Learning (see www.prodait.org/approaches/learning/index.php)
- look at other techniques for collaborative working with colleagues, for example Cooperative Development (see www.prodait.org/approaches/development/).

Strategy set 9: Change is never easy or pain-free

Because learning a threshold concept is 'transformative' for the learner, it is not only difficult but also unsettling, perhaps even destabilising. Therefore:

- warn learners that they will feel unsettled, and reassure them that this temporary discomfort is a sign of learning taking place
- be patient with learners. Do not expect immediate understanding or acceptance of the challenge of a threshold concept
- be prepared for learners even to regress briefly, if the emotional strain of giving up previously cherished notions proves too much
- be prepared also for the temporary loss of previous knowledge that you thought learners had acquired — integrating new perceptions into existing ones is a further intellectual and emotional leap
- be prepared for a variety of responses from learners according to their psychological dispositions — robust learners may be excited; fragile learners may be defensive and threatened and appear unmotivated for that reason.

Strategy set 10: You can lead a horse to water (or teach transparently: establish and discuss goals and expectations and give support) but the rest is up to the learners

Although learning a threshold concept is difficult, learners are there to learn, and have been deemed capable of the learning. 'Supporting your learners' is NOT saying 'It is OK not to learn'. Therefore:

- be realistic about what the learners can do, and how long the new learning should take
- have appropriate materials for the learners and establish a supportive learning environment
- make clear your expectations, and discuss these with the learners so they understand what is required of them

Once all this is in place, you have every right to expect learners to take individual responsibility for doing the learning. Learners have responsibilities — to themselves, their fellow learners, and to you, to assist in making the learning environment purposeful, useful, perhaps even enjoyable. Remind them of the roles they have to play to be successful learners and to be part of a team of cooperative learners.

Beliefs about What Should be Taught: Lecture and Module Content

Extended reflection on the demands your discipline puts on learning has implications for how and what we teach students at the day-to-day level on existing courses. Importantly, it should lead us to reconsider how programmes and modules are put together:

- a What are the main differences between what was on your syllabus when you were learning the subject(s) you teach and what is there now?
- b How do you account for these differences? (eg differences in knowledge base? differences in the student body? differences in what is required by a university degree programme?)
- c What do you believe should be the main content items in each of the courses or modules that you currently teach? Are they the ones that are in fact there?
- d Look at a copy of the syllabus or module description that you teach from. Go through the learning outcomes. Are there any that you believe should not be there? Why? Are there any learning outcomes that you think should be added? Why?
- e Are your suggested additions or deletions specifically related to the needs and interests of your particular students, or are they more general in nature, ie items(s) that you think should (or should not) be on any course at the level you teach?

- f For any specific items, say why you believe them to be (un)desirable and say what evidence you have that they will (not) be useful for students.
- g Have these pages on Critical Reflections on Learning changed your thinking in any way about the content or teaching of your modules?
- h This set of questions would be useful for a course team to consider, either in reviewing a module or set of modules, or as a starting point in constructing new module material.

References

- Gibbs, G. (1992). *Improving the Quality of Student Learning*. Plymouth UK: Technical and Educational Services Ltd.
- Marton, F. and Saljo, R. (1984). Approaches to learning. In F. Marton, D. Hounsell and N. Entwistle (eds) *The Experience of Learning*, 36–55, Edinburgh: Scottish Academy Press.
- Marton, F. and Saljo, R. (1976). On qualitative differences in learning: Outcome and process, *British Journal of Educational Psychology* 46, 4–11.
- Meyer, J. and Land, R. (2003). *Threshold Concepts and Troublesome Knowledge: Linkages to Ways of Thinking and Practising within the Disciplines*. Occasional Report 4. Edinburgh: Universities of Edinburgh, Coventry and Durham. Available at www.ed.ac.uk/etl/docs/ETLreport4.pdf.
- Williams, M. and Burden, R. L. (1997). *Psychology for Language Teachers: A Social Constructivist Approach*. New York: Cambridge University Press.