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http://www.psy.gla.ac.uk/~steve/talks/dands.html

Title: Different meanings of "Deep and Shallow" learning

Abstract:

A. Steve: Introduce ourselves

B. Gregor: the concepts in the literature from a Social Psychology perspective

C. Dimensions: a framework for organising the work and the issues

D. Steve: Extending the issue with concepts from Snyder, Gunn, Byers

A framework for observations of learning

Process vs. Product

what learners do — e.g. exam score

Goal (Motivation)
- Extrinsic
- Intrinsic
- Both

Transfer tasks
(Procedural)

Plan
- Elaboration
- Peer teaching

Structure
(Declarative)

Actions (execution)
- Planned actions
- Incidental learning

Judgements
(Predicates)
(Feedback)

Goal, plan, action

The simple, general, cognitive and IP idea is that humans have free will. They do things only in order to satisfy their goals, motives, wishes.
So the first thing they do is to make a plan for their current goal. This will be limited to their knowledge about what will achieve their goals — their "planning knowledge" of strategies, methods, etc.
Then they will execute their plan: do actions. This may be limited by accidents, errors, other events caused by other people.

Much of the literature, and the key phrase "learning approach", combine and conflate goal and plan. If a learner doesn't do something, you can't tell if it is because they don't want to achieve that goal, or they don't know any plan (study skill) that would achieve it.

Research in this area also fails to discuss real actions. Thus they miss things that are important to learning if the learner doesn't realise this: thinking on the train home, chatting to friends about today's lecture, noticing stuff in the newspaper related to it.

The classic dangers in (educational, D&S) research

It is difficult and expensive and in the end impossible to measure everything. But if you only measure some, it is fatally easy to assume it generalises. That you measure an approach as deep or shallow and that that shows:

That person can only use that one approach.
This is a trait that persists across time
Doesn't depend on the situation, nor on motivation
Doesn't depend on the topic, nor on the discipline.

In fact we SHOULD measure:

Same people in different situations
Across disciplines
Vary the applied motivation
Cut off, or supply, feedback
Vary number of exposures to each test task.
Vary the number of kinds of test task.

My view of deep and surface

Learning depth is proportional to the number of different kinds of connection or link the learner establishes.

This usually depends on

1) The test tasks (e.g. exams) i.e. procedures that the learner anticipates
2) The ways of judging their learning (i.e. predicates, feedback channels)

Some of the main types of link are:

- Concept —> instance or example or case
- Public concept —> private experience
- Deductive consequences (maths).
- Perry / critical thinking: rival views, and evidential support

(This view is grounded on a product rather than process view, and in particular, on a structural/declarative measure of product; although of course it has immediate implications for other aspects.)

Good features of my view

What's good about it includes:

- In reality (not in our intuition), knowledge, understanding, and meaning are not binary, but open-ended, never complete; as this view reflects.
They have a fixed minimum (zero), but no upper bound or maximum.

- It is entirely consistent with constructivism: that the heart of learning is the establishment by each learner of internal, personal links to connect new knowledge to roots in other things they know.

- Consistent with Craik & Lockhart: more links = more meaningfulness and lead to better retention.

Possible objections to my view (1)

A very common observation is that "surface learning" is about reproduction: the learner tries to be able to reproduce the material. This involves no links at all.

Reply: zero links and an anticipated test task of reproduction is indeed the lowest position on my scale. On courses where reproduction won't do, the shallowest successful learners ("strategic"?) will learn a recipe for that test type e.g. history essays offering two views, routinely opposed; doing maths examples (but without thinking about their meaning).

Note that "reproduction" is not a single thing:

Reproduce the surface
e.g. the words and notes of a song
Reproduce a date, a chemical formula
Paraphrase a sentence
Restate an argument (but no new evidence or reasoning)

Note the similarity of reproduction to Perry type A: Knowledge is context free as well as black and white, so no links are needed.

Possible objections to my view (2)

If what matters is being able to do test tasks, then it should be possible to find examples of learning that is "too deep" in the sense of having the wrong kinds of connection.

Examples

1. My failure to remember people's names and faces, though I remember the ideas we talked about.
2. The postgrad who couldn't learn First Aid because he insisted on the scientific justification for the practical procedures being taught.
3. Learning how a car or digital camera works, vs. how to use it.

Reply

This shows that rigidly aiming at a fixed type of link can be bad, and lead to being unable to do some kinds of important task. Sometimes learning to reproduce can be good, essential.

More links may generally be better than fewer links; but "reproduction" can still be functionally important, not a bad alternative to be discarded.
So it's not all about connections.
Episodic memory can be useful, as well as semantic.

Is deep and surface (shallow) judgemental?

Is shallow bad, and deep good?

More kinds of link are better than fewer; I believe that ideally we should always seek out and create all the kinds of link in all subjects we learn. I think this is better absolutely, and also leads to better retention. Similarly for test tasks: being able to do more is better than fewer. So for quantity of links and test tasks, I am judgemental: more is better.

For type of link, I'm a relativist: I can't say one type of link (e.g. critical thinking) is always better than another. The most important type, if that makes any sense, varies from discipline to discipline. Similarly for type of task: I can't say one kind of task is absolutely better than another. In particular situations, one will be important and the others not. In some situations, and not just in (bad) institutions, reproduction will be the most important task to be able to do.
So for types of link and of test task, I'm a relativist, and think it depends on the context.

Snyder and "The hidden curriculum"

Most learning in HE depends on student actions and effort. They (have to) decide on how much to do. How do they judge this?

Usually teachers provide multiple feedback channels:

- Spot questions in class
- A (huge) reading list
- Weekly quiz
- Coursework
- End of module exam
- Longer term career success e.g. as postgrad

Snyder points out these give contradictory messages. They do NOT all measure the same thing.

He suggests that this is in fact inevitable.
And so that the student must make a personal, ethical, choice about which to give priority to
(i.e. choose their test task or predicate).

Realising this, and taking responsibility for it, is itself a developmental, maturational issue.

Deceit: a fourth approach to learning?

There are some hints that there are experiences of learning that have been missed by work up to now.

Case 1: students complain that they got a low mark, yet they put their heart and soul into a piece of work.

Case 2: Able students laughingly say they did hardly any work for this essay, but got a great mark anyway. They feel their work is worthless, but the external judgement is high. They experience this as deceit or fraud.

In both cases the students are making internal, independent judgements, and these conflict with external ones (by teachers and others): the "hidden curriculum" again.

Often these internal judgements are about a) effort; b) the amount of internal change ("real learning", schema change?) experienced — both process measures conflicting with product (outcome) measures.

Bill Byers' implied spectrum (1)

A fortnight ago, Byers suggested to us that feedback from learners to teachers (course feedback) is typically driven by things such as missing bits in notes, not understanding lectures. Fixing these greatly increased ratings, but not learning outcomes.

He suggested that students self-regulate their activities in "learning" situations in ways not yet described in the D&S literature:
a) Yes I do/don't follow that
b) Yes I do/don't have all the handouts, all the material (ready for revision in the future, when actual learning for reproduction will take place).

In effect these are two "pre-surface" approaches to learning. (I.e. above the surface — negative depth!)

Bill Byers' implied spectrum (2)

I tried to imagine what more advanced stages on his spectrum might be like, as defined by the self-regulatory questions (predicates) students might be running in their minds.

- Have I got all the material?
- Can I follow this? (recognition test)
- Can I reproduce (recall) this? Focus on text
- Trying to understand the author's intention / main point / conclusion. Focus beyond the text.
- Trying to categorise what the author is up to critically i.e. identify their agenda, and correct for it if possible.
- Learners' own agenda: they extract from material what they want, not what the author wants.

Bill Byers' implied spectrum (3)

There are several things going on here:

a) Students' separate goals or tests for regulating their activities.

b) There may be a sequence of learning activities with different goals:
   1. Get the material,
   2. Check it for missing information,
   3. Try to learn it ("revision").

c) Sequence of whose intention is considered, which is also one of which and how much interpretation is done.

- Teacher's meaning: reason for giving us this
  Reproduction or shallow learning for a test task is associated with this.

- Author's meaning: intention
  (Part of critical thinking, one type of deep link)

- Learner's meaning: reason for reading it.
  (Personal goals and selection cf. Snyder)

Marton & Säljö + Biggs, Entwistle

Surface: Reproduction.
No major links to other knowledge. Actually, there are various grades of reproduction, from surface form to reproducing "the meaning".

Strategic / achievement-oriented:
Able to do the test required, regardless of meaningfulness.
E.g. Shallow "critical thinking"; guessing strategies for MCQs; memorising the program in computing class exam.

Deep: Aims at understanding.

Steve's view of D&S

Surface: reproduction test task.
No major links to other knowledge. Actually, there are various grades of reproduction, from surface form to reproducing "the meaning".

Strategic / achievement-oriented: All "shallow".
Able to do the single kind of task required in this subject, regardless of meaningfulness.
E.g. Shallow "critical thinking"; guessing strategies for MCQs; memorising the program in computing class exam.

Deep: able to do more than one task, each requiring a different link type.

Deeper still: able to do multiple tasks each requiring a different link type.
I.e. to display "understanding" in several ways, and often does well on test types they didn't expect.

Snyder's implied view of D&S

Surface: Focusses on weekly quiz because that comes first. Doesn't realise this is a different test than the final exam. Gets a 2.2.

Strategic / achievement-oriented:
Looks ahead to exam; ignores the reading list and what seems interesting. Gets a 2.1. Does poorly as a postgrad because has never thought about what topics matter in this discipline, and why.

Deep: Realises they can't do everything asked of them. Makes their own decision on this, rather than worrying about pleasing teacher. Selects the topics that really matter overall in this subject, and gives them priority. Becomes a postgrad, and does well.

Adding the deceit approach to D&S

Surface: reproduction test task

Strategic / achievement-oriented:
Able to do the single kind of task required in this subject.
No personal values in play: attends only to teacher's apparent requirements.

Complaining about test grade:
Product (for test task) judged as poor by others, but student feels their work is valuable on internal measures. Thus they have their own values and ways of judging, but don't understand the conflict.

Deceit: able to that single task type, and do it with little effort, while experiencing this as a fraud. (I.e. knows that teacher's approach is shallow; own values are deeper.)

Deep: able to do multiple tasks each requiring a different link type. Realises there can be conflicts, and able to address these.

Byers' view of D&S

"**Possession**" approach: have I collected the material?

"**Following**" approach: could I follow that lecture?
Pre-surface approach. Following as the test predicate.

Surface: reproduction test task. Regulates revision.
Hasn't realised that "What am I learning this for?" is a question.

Strategic / achievement-oriented:
Able to do the single kind of task required in this subject.
Addresses Teacher's intention (as expressed operationally)

Deep: able to do more than one task, each requiring a different link type. Handles different intentions as perceptible in the materials.

Final view of D&S

"**Possession**" approach: have I collected the material?

"**Following**" approach: could I follow that lecture?

Pre-surface approach. Following as the test predicate.

Surface: reproduction test task

Strategic / achievement-oriented:

Able to do the single kind of task required in this subject.

Complaining about test grade:

Product, for test task, judged as poor by others, but student feels their work is valuable on internal measures.

Deceit: able to that single task type, and do it with little effort, while experiencing this as a fraud. (I.e. knows that teacher's approach is shallow; own values are deeper.)

Deep: able to do more than one test task.

Deeper: able to do multiple tasks each requiring a different link type. I.e. to display "understanding" in several ways, and often does well on test types they didn't expect.