

Paper 2: Student approaches to learning

Here in *Paper 2: Student approaches to learning* we explore one of the best known accounts of student learning in higher education.

Paper 5: Research informed teaching explores the implications of this and other research for teaching in higher education.

Transcripts from student interviews can be found at Appendix 1.

Introduction

In 1976 Ference Marton and Roger Säljö published an influential paper introducing the idea that when university students undertook an academic task they could adopt either a learning approach focused on understanding or a learning approach focused on reproducing. At the same time in Australia and in the UK other researchers found similar approaches. These researchers also identified an achieving or strategic approach in which students aim to maximise their study effort. These studies led to a great deal of further research and the idea that students adopt different approaches to learning is now very well-known.

The claim that students adopt deep, surface and achieving approaches to learning has had a significant impact upon the development of approaches to teaching in higher education. While it is a simple and appealing idea, it is also frequently misunderstood. Like any established research paradigm, it has also been the object of robust criticism.

In this paper, we supply a brief introduction to the idea of approaches to learning. We include interview data so that you can read or listen to students' own accounts of how and when they adopt the approaches that they do. We also address some of the common questions that arise, and countenance some common criticism.

The idea of deep and surface approaches to learning

Marton and Säljö's paper was seminal in that it described a fundamental distinction in the manner in which students approached reading an academic article.¹ For that time, in their field of psychology, the nature of the study was unusual. Marton and Säljö did not conduct an artificial laboratory experiment in order to isolate one or other element of student learning. Instead, they set out to discover something about how university students approached the type of task they really engaged in on a day to day basis.

The students were asked to read an academic article, and told that they would afterwards be required to answer questions on it.

In the course of the study it was found that some students experienced the text as a collection of discrete units of information that should be memorised *in order to* answer the anticipated questions. Marton and Säljö termed this the '**surface approach**'.

Other students treated the text as something that contained a structure of meaning. They searched for its underlying concerns, its implications, and its meaning to themselves. Marton and Säljö termed this the '**deep approach**'.

Students who approached the task using a deep approach understood more of the article, were better able to answer a range of questions about it, and were also able to remember its message more effectively.

Many studies have built upon Marton and Säljö's initial findings, and subsequent research has demonstrated that these different approaches to learning emerge across a wide range of academic tasks. ***Those studies have also found that students who are adopting deep approaches tend to have higher quality learning outcomes.***

Exploring deep and surface approaches to learning

The main features of the deep and surface approaches are summarised in the table below.ⁱⁱ

	Orientation	Characteristics
Deep approach	Knowledge transforming	<p>An intention to understand material for oneself Vigorous and critical interaction with knowledge content</p> <p>Relating ideas to one's previous knowledge and experience Discovering and using organizing principles to integrate ideas</p> <p>Relating evidence to conclusions Examining the logic of arguments</p>
Surface approach	Information reproducing	<p>An intention simply to reproduce parts of the content Ideas and information accepted passively</p> <p>Concentrating only on what is required for assessment Not reflecting on purpose or strategies</p> <p>Memorising facts and procedures routinely Failing to distinguish guiding principles or patterns</p>

Marton and Säljö's apparently simple and common sense account of student learning is often misinterpreted. The reason for this may be that as academics we are accustomed to thinking of students as lone individuals going about their studies according to the logic of their own cognition and motivation. A concomitant of this view is that we tend to perceive students as rather fixed personalities, either intelligent in their approach to things or not so, either highly motivated in their studies or lazy.

Marton and Säljö have a different perception. In their view, students' study activity is the outcome of interaction between the student and his or her environment. Their underlying conviction is that all human activity is an outcome of human perceptions of the world as it presents itself, and we behave according to how circumstances appear to us. This starting point should be kept in mind, as it underpins the claims that are made about the nature of student approaches to learning.

There are three key points to be grasped.

First, the deep and surface approaches are not personality traits or fixed learning styles. Students adopt an approach which is related to their perceptions of the task.

The same students can and do adopt either a deep approach or a surface approach to different tasks, and they may even swap between them in the same task. That the same students use different approaches to learning was demonstrated in Diana Laurillard's important work with mathematics and engineering studentsⁱⁱⁱ. She found that students changed their approach according to the different demands that they perceived to be imposed by their varied tasks.

Second, memorisation can be a feature of both the surface and the deep approaches, but it plays a different role in each.

All learning assumes some process of remembering. A key distinction between deep and surface approaches to learning is the prominence that 'memory work' is accorded in each. To the learner adopting a deep approach, different forms of memorisation are a means to an important end - that of creating understanding. To the learner adopting a surface approach, memorisation is an end in itself.^{iv}

The student adopting a deep approach to their studies will be aware of the need to remember significant facts, principles, claims, arguments and so on, if they are to stake a claim to a terrain of knowledge called their own. The law student must remember the facts of cases and key judicial pronouncements. The historian must remember significant events. The chemist must remember key formulae. The process of making knowledge one's own rests IN PART on being able to remember important information. But it also implies being able to *make sense* and *make meaning* from that information. It implies discovering or creating structural relationships, understanding or transforming relations of significance, spotting gaps, recognising and formulating important questions. To achieve this requires an active engagement with remembered information. It cannot be done by memorisation alone.

The student adopting a surface approach to their studies treats academic texts, lectures, lecture notes and so on, as a mass of data that has to be memorised for recall and reproduction. There are philosophical dangers in using computer analogies for human cognition, but scanning software perhaps provides us with a helpful point of comparison. We can scan text from a book onto our computer hard disk, and then print it out. If we designed a more sophisticated programme, the computer could reorganise the text, reformat it, and produce appropriate gobbets when prompted. Few would be prepared to argue, however, that the computer has, in this case, 'understood' the text. What this computer could not do is use the information *creatively* in the way we would expect of a human who fully understood.

What is being suggested through this analogy is that the student adopting a surface approach may be working very hard to memorise things - but he or she is not working primarily for understanding.

Although computers are imperfect analogues for the process of human learning, it is still instructive to consider what a computer adopting a 'deep approach' would be able to do. For our purposes, a computer that 'understood' would be a computer that was able to 'make sense' of the data that had been captured. A computer 'making sense' of data would analyse it according to its own different purposes, create meaningful new patterns in it, connect it in appropriate ways with other programmes and other data, use it to identify problems and use it to generate new solutions to problems. This computer would be able to identify gaps in its 'knowledge' and it would be able to communicate its data in a way which made sense to an 'other'. It would be capable of using its knowledge playfully, making and appreciating jokes, puns and double entendres. If you are able to imagine a computer doing these things, you are able to imagine a computer adopting a 'deep approach' to learning.

[Third, the deep approach and surface approach are a manifestation of the intention that the student possesses.](#)

Engaging in the task, the student intends either to adopt a "knowledge-making" approach, or a "data-reproducing" approach. These intentions may change as the student works (for example, if the material is too difficult or if time runs short, the student may flip from knowledge-making into data-reproducing). But for any one task the student cannot hold both intentions simultaneously, and cannot therefore adopt both a surface and a deep approach at the same moment.

Achieving or strategic approaches to learning

It has long been known that students' success in learning depends in part on the effort they put into their work. In separate studies of deep and surface approaches, leading researchers John Biggs^v and Noel Entwistle independently identified an evidently strategic approach and noted that it is used in conjunction with a deep or surface approach to learning. Entwistle describes it, and related approaches as follows:

The strategic approach derives from an intention to obtain the highest possible grades and involves adopting well-organised and efficient study methods. Other students were found to have study pathologies, with negative attitudes and disorganised and dilatory study habits.^{vi}

Debate: issues related to approaches to learning

The prominence of the 'approaches to learning' research in higher education has prompted extensive and vigorous discussion among academics. This part of the paper reflects our experience of encouraging that debate in Oxford, and permits us to have the last word for once!

[Describing students as either deep or surface learners isn't helpful. People are far more complex than this.](#)

We agree with the view that it is unhelpful to refer to the students as deep and surface learners - but not for the reason suggested. The terms deep and surface are often thought to describe the student. This is wrong. As we note above, the terms deep and

surface refer not to the students but to the different *approaches* that they adopt. At different times the same students can and do adopt different approaches. This is evidenced in the interviews reproduced in the appendix, where students describe adopting different approaches in different subjects because they perceive that they make different demands upon them.

[But surely describing student learning in terms of two or three categories of approach is still overly simplistic.](#)

We agree with this too. Learning is too complex to be described from one perspective. In this series of papers we use several perspectives to help build a framework for understanding learning. However, this one way of looking at learning has proved very useful because it focuses attention on the interaction between students and their study environment. The practical implications of this research are discussed in Paper 5, Research-informed Teaching.

[Isn't there a hidden value system here? Using the language of deep and surface is inherently judgmental.](#)

Many academics are uncomfortable with the terms 'deep' and 'surface' arguing that in using them an implicit value judgement is being made. In conversation, some people inadvertently change the labels to *deep* and *shallow* or to *deep* and *superficial* and these terms have even appeared in the literature critical of this field of research.

Our response is twofold. Yes, there is an implicit value system expressed in the language. And yes, we believe it is justifiable.

First, academics familiar with post-modern analysis of language will recognise this criticism as inescapable if a post-modern perspective is adopted. According to post-modern critique, all binary terminology expresses implicit values. This one is no different.

Second, these implicit values do express an underlying belief that worthwhile education demands a deep approach to learning. Deep approaches are therefore, on this view, better. In Paper 1 we discussed academics' widely held view that higher education is a creative and indeed transformative enterprise. From the perspective of the academic aiming to encourage this sort of higher learning, a surface approach is almost always undesirable. The pejorative label attached to surface approaches to learning is justifiable. With similar evidence in other contexts (such as relations between smoking and lung cancer) few people would hesitate to advise against such activities (such as smoking). Why then are we hesitant to advise against (and aim for a reduction in) surface approaches?

From the student's perspective a surface approach may appear to be appropriate, because it is a response to an environment that they perceive to require a surface approach. But this does not make a surface approach good - just a pragmatic reaction to circumstance.

Some academic critics are uncomfortable with the deep and surface labels because they are aware that their curricula require students to undertake a lot of memorisation activity. (This is especially true in some of the sciences.) They then construe the 'surface' label

as a criticism of students doing their best to master the subject. We have seen, however, that memorisation can be either deep in orientation, or surface in orientation. Moreover, as we shall discuss in Paper 5, well-constructed courses can help to orient students towards a deep approach, whilst poorly constructed ones more often push them towards a surface approach.

Further reading

Prosser, M. and Trigwell, K. (1999) *Understanding Learning and Teaching: The Experience in Higher Education*, Buckingham, SRHE and Open University Press.

This book documents the research on relations between approaches to learning, conceptions of learning and the quality of what students learn.

Marton, F., Hounsell, D. and Entwistle, N. (1997) *The Experience of Learning: Implications for Teaching and Studying in Higher Education*. Edinburgh, Scottish Academic Press.

The early chapters of this book are written by members of the groups that conducted the original research into approaches to learning and conceptions of learning.

ⁱ F. Marton and R. Säljö 'On qualitative differences in learning. I – Outcome and Process' *British Journal of Educational Psychology* 46, pp. 4-11 (1976)

ⁱⁱ N.J. Entwistle and A.C. Entwistle *Developing, Revising, and Examining Conceptual Understanding: The Student Experience and its Implications* (University of Edinburgh: Centre for Research on Learning and Instruction, 1991)

ⁱⁱⁱ D. Laurillard Ch. 11 in F. Marton, D. Hounsell, and N. Entwistle, *The Experience of Learning: Implications for Teaching and Studying in Higher Education* (Edinburgh, Scottish Academic Press 1997)

^{iv} J.H.F Meyer 'Variation in contrasting forms of 'memorising' and associated observables' *British Journal of Educational Psychology* 70, pp. 173-176 (2000)

^v J.B. Biggs, *Student Approaches to Learning and Studying*. (Hawthorn, Victoria, Australian Council for Educational Research, 1987)

^{vi} N.J. Entwistle *The Impact of Teaching on Learning Outcomes in Higher Education - A Literature Review* (Sheffield: CVCP, 1992) p. 12; citing N.J. Entwistle 'Student learning and study strategies' in B.R. Clark and G. Neave (eds) *The Encyclopedia of Higher Education* (Oxford: Pergamon Press, 1992)

**Paper 2: Student approaches to learning
Appendix 1**

Introduction

This document contains five extracts from transcripts of interviews with first year students, studying at two different universities.

The first three extracts are from interviews with students at the University of Oxford. These interviews were conducted as part of the research into the Oxford learning context that is being undertaken by Institute for the Advancement of University Learning. In all three extracts, each student describes taking different approaches to learning in different parts of their course.

All of the students featured here are men, which is an accident of sampling. The student sample used in the Institute's research includes almost as many female as male students, but when we came to select appropriate extracts for inclusion here we found that those most suited to our purpose were from male interviewees.

Student A [first year PPE, University of Oxford]

In Microeconomics which I did last term the tutor was relatively generous and he would allow me to hand in an essay which is not entirely precise and which deals with the issue but is fairly short, say two pages, which is not very much for an essay. So I tended to just do my work as quickly as possible and then revise before the collections for three days in a panic sort of state. Also we had seminars in mathematics and the great advantage was that there were 10 students at a time, which meant that if I didn't do any work at all no one would notice. In macroeconomics now I have a tutor who is very precise and he will mark every word that he thinks is not actually hitting the point. Accordingly I do spend a lot of time on doing that, and I try very hard to actually learn the thing that much that I can stand up to the tutorials. On the other hand, in philosophy and politics my main concern will be to get an understanding of the topic, and of the different views on that. My secondary concern would be to write a decent essay although I don't have any psychological problems with handing in a bad essay as long as I feel I have understood, understood what I am dealing with. In microeconomics I didn't even have any problems with handing in a bad essay and not fully understanding what I am dealing with.

Student B [first year PPE, University of Oxford]

On a topic in economics that I do not like I would try to do the absolute minimum possible, whereas for something such as Keynesian economics which I found reasonably interesting I'd, within the time I set aside for the work, I'd do that [work]. Whereas for the other one I'd try to find ways around it. Rather than read

textbooks and try to understand them I would read textbooks and try to find the bit with the answer and I'd copy it out or paraphrase it or whatever. Whereas if it was something that I like, I'd take a little time to think about it and try to understand it a bit. I'm not very good at doing things I don't like.

Student C [first year history and modern language, University of Oxford]

Last term, I'd write an essay for a tutorial one day, take a couple of hours off after my tutorial to wind down a little bit, and then have under 24 hours to read, research, write, the next essay in time for the next tutorial, and include sleep in that time, so having that much pressure means that you've really got to get to it and quite often you'll end up panicking so you don't really get to the issues. The essays where I was really rushed, I would write a poor plan and just scribble something down.

When I didn't have much time the aim was just to get it done. You are no longer looking to learn, you are just doing it to meet requirements, thinking it has got to be in at this point, so I'm just going to do it, and it doesn't matter how well I do it, I'm just going to do it. In a sense it is preferable to do that than to do nothing, it is better to do it badly than not at all. Obviously if my course had been spread out over the year, I would have done these individual bits as well as the other bits, but when you've got a short amount of time all you want to do is just get it done and over with and I found I was living day by day and counting down the days until the end of term because of the pressure you are under with work, whereas this term I may not have done as much work, but what I have done has probably been of higher quality because its been done in a more relaxed fashion.

A good essay is one that is properly researched. You might have time to read one book, or you might have time to read five books or whatever. The content will increase with the amount of research I do. It's easier to get to grips with the ideas when you've got more time to think about them.

Generally we are given a reading list and that is the starting point. Depending on how well I already know it, I either start with the basics, the shortest thing that I can find, a summing up of what its all about, or whether I go straight into the more complicated or intricate sources. It depends on how well I already know it.

But in any case the aim of the essay is to try to answer the question as fully as possible, but possibly if I am being ambitious, also to think of something interesting to say, something new, rather than just answering the question. But that slightly depends on the tutor. One was not good, and again because of the way he

works, you are scared to try to think of something original because he'll bite your head off, and again you're scared to ask questions for the same reason. My other tutor is more open to new ideas, they may be wrong, they may be right, but at least you thought of them, so in a sense that kind of attitude in the first case leads to writing to get the essay done, whereas I would be more likely to go out of my way to do a bit of extra research and try to find a new angle in the latter case, because it is more likely to be well received.

ANNOTATION

The three Oxford students all describe elements of surface approaches to learning when they feel the topic is not interesting, or that the tutor is unfriendly, or that they feel the pressure of time. All three also describe a deep approach when they experience a more favourable environment. The approach students adopt is evoked by a combination of their prior experience and their perceptions of their current learning environment. Approach to learning is not (just) a characteristic of the student. Environmental factors known to relate to approaches to learning include the perceived quality of teaching (approachability and making the subject interesting) perceived workload (time available) as well as the assessment demands and the clarity of course goals and standards.

In the next two extracts (Prosser and Trigwell, 1999) Australian physics students D and E describe their approaches to learning and their perceptions of their learning environment (including teaching and assessment). We suggest that you look at them as a contrasting pair and try to characterise the differences between the approaches that each student describes. In both extracts, I is the interviewer, S is the student.

Student D [first year physics, University of Sydney]

- I: I just want to ask you a few questions about the way you went about studying Physics in first term, right? What sort of things did you do in the lectures?*
- S: Well, we did a lot of theory, he was writing - the lecturer was.*
- I: What did you do?*
- S: What did I do? I copied down the notes that were written up on the board including examples and then went over the notes that night and two or three days later did some problems on the notes we did using the problems in the exercise book and the assignments and I think that was all.*
- I: Yes, well hold on. We were back at what you did in lectures so you copied everything down -*
- S: And tried to understand it from what he wrote on the board, yes.*
- I: And why did you do that?*
- S: Well, I - if I hadn't written down what he wrote on the board I don't think I would have retained it at all.*
- I: Writing it down then meant what?*

- S: *It meant that I had a permanent record that I could go and look up if I had troubles.*
- I: *What sort of things did you do at other times in the University with regards to Physics?*
- S: *What around and about?*
- I: *Yes.*
- S: *Other than the problems with the tutorials and the assignments and -*
- I: *You went to tutorials?*
- S: *I went to tutorials and I did all the assignments and-*
- I: *Why do you think you did all those?*
- S: *Because I thought - they were basically the harder ones that were chosen out of the book and I felt they were good preparation for the exam because if I do that I could probably handle anything that was thrown at me.*
- I: *So what do you think they achieved, doing these problems?*
- S: *I think they'd let you know where your weaknesses were in Physics.*
- I: *Right, OK. So they helped you understand, you think or -*
- S: *Yes, they helped me understand a lot more about mechanics that I would have got from ... the [Higher School Certificate] but at the moment I'm still rusty on mechanics because I've forgotten what ... last term. Not all of it but if I revise ...*
- I: *Right, OK. do you think there's more to understanding Physics than just doing problems?*
- S: *It was trying to understand the concepts behind it which is a big help. It's not just problems or just theory. It's sort of a mixture of all of them I reckon.*
- I: *What sort of things did you do at home during the term with regard to Physics?*
- S: *Problems that I read out of the textbook, followed in the textbook where we were from day to day and prepared the stuff for the lectures just by reading out of the textbook so I knew what we were going to do that day and then I read over it again that night making notes on anything I didn't understand.*
- I: *And if you didn't understand something, did you go and ask?*
- S: *Yes, I asked. I didn't go and see him personally but if I had any problems, say for anything in the lecture, I asked him at the end of the lecture. Or if I had any problems with anything I'd done at home, I'd ask him as well.*
- I: *Right, OK. What sorts of things did you do when you were preparing for exams?*
- S: *I read over all the notes which were taken during the term and including various bits out of the textbook that he'd drawn our attention to. Worked through problems. Revised the assignments to see what sort of things they'd given us in the assignments and if I had any problems I asked him sort of in the last few lectures before the lectures ended I asked him*

- how well I went - not how well - how to do such and such if I had any difficulty.*
- I: OK. so you summarised and tried to learn everything as best you could. Did you go back and try to do this sort of things from scratch?*
- S: No, not at all.*
- I: And yet he did it in the lectures didn't he?*
- S: He started off from scratch, yes, but he never actually went back to the basics - once say ... towards the end of term ... a really complicated problem or something that was difficult to get to he never really went back to basics. He sort of went back to say ... not right back to ...*
- I: OK. Is there anything you did at the beginning of term that affected the way you went about studying Physics at all?*
- S: Well, it made me try and understand what I did in the interview, I tried to understand what I did but I couldn't really say it had an effect because I can't remember what I did.*
- I: Right, OK. Well that's all, thanks very much.*

Student E [first year physics, University of Sydney]

- I: Now I want you to just think for a moment about how you went about studying Physics this term. What did you do in the lectures?*
- S: Well in the lectures we had our lecturer sort of he wanted us to understand things and we spent a lot of time, him getting us just to think about things and discussing actually why things happen and if we say something he gives sort of - on a few topics like force - he'd give us a check list to sort of actually go through and find out why things are like they are, and if they don't sort of go by the definition of that ... that you can't really call it a force or whatever you're talking about.*
- I: And do you participate in that?*
- S: Yes. We all had our say and he gave us what he calls buzz sessions and you just sort of - he gives a problem and you talk to a few people around you, decide on what you think and then he takes sort of - takes several options and then goes through each option saying and then get people to say what it is or why isn't it and we come up with the answer like that.*
- I: And why do you think you did that?*
- S: Well, it's because I think you get a lot more out of it if you discover things with yourself and not just be told a whole lot of facts just to learn. If you actually think about it, come up with the answer yourself. When all physics and that was sort of being developed they did it all by themselves and we are sort of being stimulated to think about it ... the problem, and it sort of makes you think about -*

- I: That's what you think these sessions achieve, they make you think?*
- S: Yes, well our lecturer made us think for ourselves and not just tell us the answer.*
- I: Right. And what did that do for you? Did that make you understand it better or -*
- S: Yes, because it actually - if you come up with the right answer you know why you've come up with the right answer because you thought about it and then if you come up with the wrong answer you know, you can sort of have the answer, and then you can sort of think why the argument that you're putting forward, why that's incorrect.*
- I: And are you talking about problems like this or are you talking about actual mathematical -*
- S: Actual algebra we didn't really argue that much about ... just like problems of putting an object in a certain position and arguing where the forces are and things like that and you'd have to argue for and against why the forces are there or why this should happen.*
- I: And do you think that that's important in understanding Physics?*
- S: I think it's important to understand in yourself not just be told that if a ball's hanging there it's only got two forces acting on it. I think you should understand why. And -*
- I: OK. What sort of things did you do at home then during the term for Physics?*
- S: Mostly a lot of problems like out of the textbook. Re-reading my notes and sort of thinking about where that, where that sort of knowledge or whatever is useful in the real world and how especially because I'm interested in sort of when we talk about concepts and then something's mentioned on where that's used in industry or something like that, that sort of makes me think that what I'm doing is worthwhile and I try and think of other areas that it can be used for.*
- I: OK. What about for the exam? What did you do?*
- S: Basically, reading my notes and summarising my notes, things like that. Write down formulas like read and then put them away for half an hour and do something else and see if I could come back and write them all down again. And problems and things like that.*
- I: So basically, you were learning it off by heart.*
- S: Yes, just to actually understand it and like just to know how to do problems you just do sort of different types of force problems over and over again until you sort of can see a problem and you just know how to do it.*
- I: And you feel that's necessary?*
- S: It's not just sort of understanding why it's like that, sort of right from the beginning. You shouldn't actually have to learn*

formulae. You should know how to get them and where they come from.

ANNOTATION

From these short extracts it is not possible to say anything definitive about these approaches, but Student D describes how he needs lecture notes for revision because he would not have retained the information otherwise, and that he geared his study to examination preparation. While he describes an intention to understand, he means being able to do things without necessarily understanding the meaning behind those things. This extract contains several elements of a surface approach to learning.

Student E describes having to think things through and to understand by discovering it himself. He also links what he is learning to examples from other contexts. Student E could be described as having adopted more of a deep approach to the learning of the subject during lectures, but he does appear to switch to a surface approach when preparing for examinations.

There is considerable variation between the approaches to learning described by these two students. What is interesting is that these two students were enrolled in the same topic in the same semester and that they have the same lecturer and tutor and attended the same sessions. The variation in these students' perceptions of the same learning context is remarkable. Perceived (rather than actual) learning environment is one of the factors strongly related to the variation in students' approach to the learning of a topic. Students differ in their perceptions.

Taking into account both the extent to which the learning environment may cue students to work in certain ways, but also that students perceive the learning environment differently, what are the implications for teaching? One response would be to ascertain the nature of students' varied perceptions of their learning context and use that information to construct approaches to teaching that are meaningful for the different individuals in this varied group.