

**Undergraduate learning at programme level: an analysis of students' perspectives**

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### **Abstract**

Research reported here aimed to understand undergraduate learning at programme level. Seventy graduates and undergraduates contributed perceptions of their learning opportunities while studying Molecular and Cellular Biology at the University of Bath between 1994 and 2005.

The methodology was qualitative, involving open dialogue (face to face and by email) whereby students' concerns dictated the agenda, rather than those of the researcher. Undergraduates were both willing and able to describe their perceptions of a range of learning experiences. Resulting data were rich and varied and included perceptions of lectures, practical classes, placements and student seminars.

Initial research suggested that learning from professional work placements can be especially significant and placements were the initial focus of the project. Research questions crystallised in the following areas: '*What is the nature of placement learning?*', '*How does it come about?*' and '*How does it compare with learning from university-based learning opportunities?*'

Preliminary data suggested that undergraduate learning could best be understood through analysis using Socio-cultural and Activity theories of learning (SCAT) but this did not explain the disparity which can occur between intended learning outcomes, envisaged by the University, and the learning reported by students. Data from a four year longitudinal study was, therefore, analysed using a fusion between SCAT and Theories of Action (comparison between theories espoused by the University and theories in use, experienced by students).

This marriage between SCAT and Theories of Action seems to have provided an informative approach to analysing undergraduate learning in a variety of situations, at university and on placement. In particular, it seems to reveal some of the reasons why students sometimes reported learning little from potential learning opportunities and hence provides some clues to areas which could be enhanced.

**Key words:** placement learning, students' experiences, students' perspectives, undergraduate learning.

## **Introduction**

I was an academic failure at school but achieved a first class degree in Molecular and Cellular Biology (MCB) in my forties and began to reflect on my student experiences. This research stemmed from my desire to gain better understanding of undergraduate learning at programme level. I remembered being told that there were no such things as poor lectures, only differing lecturing styles and thinking this arrant nonsense, since some lectures seemed to aid understanding while others caused confusion. My year spent on placement seemed to have been most significant to my understanding and, when I later became Placements Tutor for my old Department, I discovered that other students felt that their learning too was greatly enhanced by placements; e.g. 'I have learnt more in two weeks on placement than in the previous two years!'

Research questions crystallised in the following areas: '*What is the nature of placement learning?*', '*How does it come about?*' and '*How does it compare with learning from university-based learning opportunities?*'

## **Methodology**

The research was based on the belief that students 'Understand and can articulate clearly what is and what is not useful for helping them to learn' (Ramsden 1992, p 89) and that, having been an MCB student, I would be able to interpret what they told me. Seventy graduates and undergraduates volunteered to take part in the project and contributed their views of different learning experiences, some over a four year period from university entrance to graduation. Initially they answered questions in focus groups or email questionnaires but this formal questioning was later abandoned in favour of informal, open questioning which allowed students' own concerns to dictate the agenda. The type of question posed in later stages of the research were 'How's it going this semester?' and 'What do you think of practicals this year?' Data generated were what students chose to tell me about their learning experiences (what they thought significant, what mattered to them).

## **Sample data**

The data generated were rich and varied. A very small sample is given below:

### *On placements*

Some students were very positive about the beneficial effects their placements had on their learning:

- 'I grew ten years in experience and maturity.'
- 'Practical skills, approaches to experiments, calculation ability and problem solving all improved 100%. Learnt how to communicate scientifically. The

placement was undoubtedly the best aspect of the whole degree. Without it – I’m not sure how good a scientist I’d be. STUPENDOUS in every way!’

- ‘Working on your own project ... makes you think through what you are doing and why you are doing it. I gained a true insight into the professional world of science ... however I gained most personally ... I grew a lot in my placement.’
- Another student found his project ‘Particularly interesting’ and wrote ‘I understand it inside out ... It wasn’t until I came on placement that I realised its massive importance’.
- ‘Learnt a lot from listening to colleagues ... like doing GCSE Spanish and moving to Spain. You just pick it up subconsciously.’
- ‘Work is really interesting ... can’t believe how much I’ve learnt.’
- ‘Welcoming atmosphere ... everyone is very interested in what everyone else is doing. Really enjoying working here ... great progress with projects - big achievement.’ This placement resulted in the student becoming primary author of two scientific papers.

Other participants reported negative experiences:

- ‘My boss was a nightmare ... sweetness and light one minute, really nasty and snappy the next. My main task each day was to do everything in my power to avoid him.’
- ‘Work [was] tedious ... depressed me immensely. It didn’t allow me to develop concepts and link biological information. Interesting lab work is an oxymoron’.
- ‘Very mundane, just one method I now know ... same thing all day, every day. I haven’t really learnt anything ... have no motivation to learn anything more about it. You just think “What’s the point”.’
- One student initially found his placement ‘Enriching and educational’. He was excited by the science and felt creative. Later his supervisor’s attitude changed and he reported ‘Bullying and harassment ... I lost my confidence. It affected my personality. I was confused, fell apart’.

#### *On lectures*

First year students wrote of taking a long time to get the hang of lectures. E.g. ‘Took me a good 6-7 months to come to terms with’. Others drew comparisons between school and university:

- ‘I don’t have any input as I would in class; there is no discussion.’
- ‘It’s one of the hard things of coming to university ... now you’ve just got one lecturer between hundreds so there’s no interaction, no motivation.’
- ‘Some of them do say “Ask questions” but, when you’re in a lecture with 150 people, you don’t stick your hand up and ask.’

Undergraduates preferred traditional 'chalk and talk' lectures to PowerPoint:

- 'He doesn't keep my attention, just reading through pages of PowerPoint slides ... It just keeps your attention so much longer if somebody's actually speaking to you rather than reading ... it's their own words. You can concentrate more.'
- 'Reading off PowerPoint or overheads, it's basically like adding the lecturer's notes to the student's notes without passing through the brain of either. The best ones just have key points and then you really have to listen.'

#### *On practical classes*

Some students found practicals 'A lot more fun than lectures ... highlight of the week' and 'Quite a good laugh', while the vast majority were disparaging:

- 'Terrible, always copied results.'
- 'Almost without exception, a complete waste of time ... absolutely no useful training for lab work.'
- 'Normally we failed miserably to get things to work! But between 5-6 of us we could get the right answers we were supposed to have!'
- 'We often fumbled our way through ... with little guidance.'
- 'Occasionally formulated results entirely from my imagination.'
- 'Practical classes in the first year were a nightmare because there were so many people.'
- 'I used to dread them. My main aim would be to leave as quickly as possible ... calculations were a complete mystery to me and I always got someone else to do them.'
- 'The general gist of practicals is that everyone hates them and does them as quickly as possible ... no-one cares what they do.'
- 'We don't learn any more by having to rush through lots of exercises, we just get stressed and resent having to do them!'

Describing a practical course which worked well, students said it built on previously learnt theory. They worked in pairs and afterwards each completed a work book before being interviewed about their understanding of the course. Interviewers asked "'What does this mean? What happens here? Why? Why did you use these controls?" ... and talked it through to make sure you understood it ... really drummed it in, because you'd done it in practice, then you'd had to think really hard about it for the write-up, then you'd had to do the interview'. A second student confirmed 'When you leave, you really do understand it'. The lab book and interview formed the only assessment.

### *On student seminars*

Some third year units are not taught by academics but consist of student seminar presentations. Students wrote as follows:

- ‘I’ve never done a presentation, not even in tutorial ... find it a bit cheeky that the lecturers come down on us so hard, student presentations, when some of *them* are rubbish.’
- ‘We’ve got to do it in front of a class of sixty and also, during the presentation, [lecturers] don’t let you continue to talk, they like to fire questions at you while you’re talking which means you lose your place and then you’re lost.’
- ‘They were quite tough on the presentations we did .... they had no positive comments, only criticisms, which made us all feel like crap.’
- Students felt ‘Torn apart’.

Other seminars were ‘OK because it was quite informal and interactive’ and one element, seen as ‘Particularly useful’, was the provision of constructive feedback from fellow students; this was for the benefit of the presenting student, not for assessment.

### *On workload*

First year students did not mention workload. Second and third year students mentioned it frequently:

- ‘It’s stress [when] the priority is either finish your coursework before the deadline or do some background reading. You’ll always do the coursework.’
- ‘They conspire to stop you reading up on lectures; there’s so much else to do.’
- At the start of her final year, one student said ‘In the first three days ... I was set nine tasks and that was just scary’. She went on to say ‘I haven’t got time to breathe. I haven’t got time to go to the dentist. I feel like I’ve got too much to do’.
- ‘Snowed under, overwhelming.’
- ‘I’m feeling very stressed out ... I’ve been working as hard as I can but seem to have so much work to do ... I’m feeling huge pressure to do well, so I’m not enjoying it.’
- Some final year students abandoned extra reading ‘Simply because I don’t have time to do it. If I tried to do it, I would stress myself out’.
- Students reported feeling tired from a busy timetable before Easter which resulted in them ‘Literally running from one practical to the next and to the next lecture’ and wrote that ‘When I came to revise some of the stuff that was taught before Easter, I couldn’t actually remember very much at all’.

### *On feedback*

Poor exam results sometimes acted as an 'Assault on personal confidence ... helping to create a rather negative mindset, which I retained for the following 2 years!' Other students reported being reduced to tears and to 'Feeling low ... I have a huge mountain to climb'. Many students were dissatisfied with marks alone and longed for feedback and advice on how to improve.

Often it was the absence or lateness of feedback which students mentioned. One student summarised the majority view: 'If you get it at all, it's usually late'. However, no feedback may have been better than negative feedback (as provided following some seminar presentations, mentioned above) which made students feel 'Like crap' and 'Torn apart'.

### *On policy-related matters*

Two students felt that being at a research-based university explained what they saw as 'The very low lecturing ability of many of the lecturers ... they are primarily research people ... being made to lecture us on top of what they do but they weren't hired as lecturers, they were hired as research staff. I think it's very much to our detriment'; they felt the University was 'Entirely financially motivated' and that students were 'Lowly undergraduates - we're a burden that they have to lecture to ... not important'. Two others raised the matter of top up fees: 'If I was paying £3,000 to come to university I'd expect the person lecturing me to know how to teach. I don't think that's too much to ask' and 'You expect quality when you pay for something'.

### **Data analysis**

The data given above are a small sample of the whole. Together the data paint a picture of students' experiences throughout three or, with optional placement, four year degree programmes. However, these data are merely descriptive and do not reveal underlying reasons for students' perceptions; this requires analysis.

Student data suggested four major analytical categories. 1) What students were actually doing, and engaged with, while on placement or at university - the Object of their activity. 2) The meanings or messages they received in any learning situation. 3) Individual student's responses to their learning situations and 4) Learning outcomes.

The iterative process of moving between data and literature resulted in an analytical framework based on Socio-cultural and Activity theories of learning (see Vygotsky 1978; Engeström, Miettinen and Punamäki 1999; Daniels 2001) coupled with Theories of Action (Argyris and Schön 1978). See over:

- Object of activity (related to goal, purpose, motivation):

What is the Object of activity espoused in a learning situation and what is the real Object of student activity, in practice?

- Mediation:

What support is espoused for a learning situation and which messages do students actually experience?

- Learner Individuality:

What are the perceptions and reactions of individual students to their learning opportunities?

- Learning outcomes:

What effects do the factors listed above have on the nature of the learning reported by students?

‘Activity’ can be variously defined but major activities, from the point of view of undergraduate learning, are ‘Doing a degree’ and ‘Doing a placement’. What the student is actually engaged in doing, is the Object of their activity.

‘Mediation’ is socio-cultural semiotic mediation, i.e. anything from which a student can derive meaning, make sense or gain understanding. No distinctions are made between, for instance, verbal and non-verbal signals or between written and spoken language. Mediating artefacts, both material and conceptual (Cole 1996), are given equal weight; tools, ways of thinking and acting, social interactions etc are all important in meaning-making. There may (or may not) be merit in distinguishing between artefacts involved in the local situation, whose effects may be quite obvious (such as the influence of a placement supervisor), and those which come from the wider cultural milieu, whose effects are more subtle but pervasive.

‘Culture’ is seen as analogous to interstitial fluid or growth media in which cells are immersed and in which they grow, develop and differentiate. Each individual takes from and contributes to the culture in which they live and of which they form a part (as cells do within a tissue). Cultures vary across historical time and place and the nature of an individual’s knowledge and understanding is moulded by their times and situations.

Both the Object of activity and Mediation can vary considerably between that expected by the University and that actually experienced by students. Students reported engaging with research projects and understanding them ‘inside out’ (the outcome I anticipated as Placements Tutor) and, to my surprise, that their ‘main

task' was boss-avoidance. Argyris and Schön explained similar disparities by consideration of Theories of Action; individuals and organisations have 'Espoused theories which they announce to the world and theories-in-use which may be inferred' (1978, p 11). Furthermore, they may be *unaware* of the disparity between their espoused theories and those actually in use.

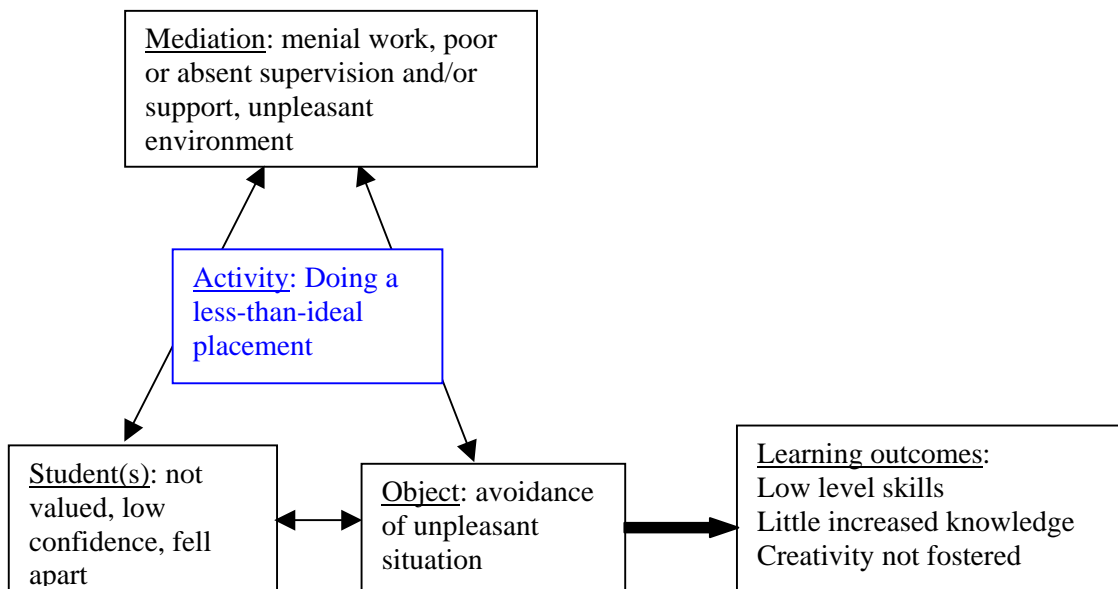
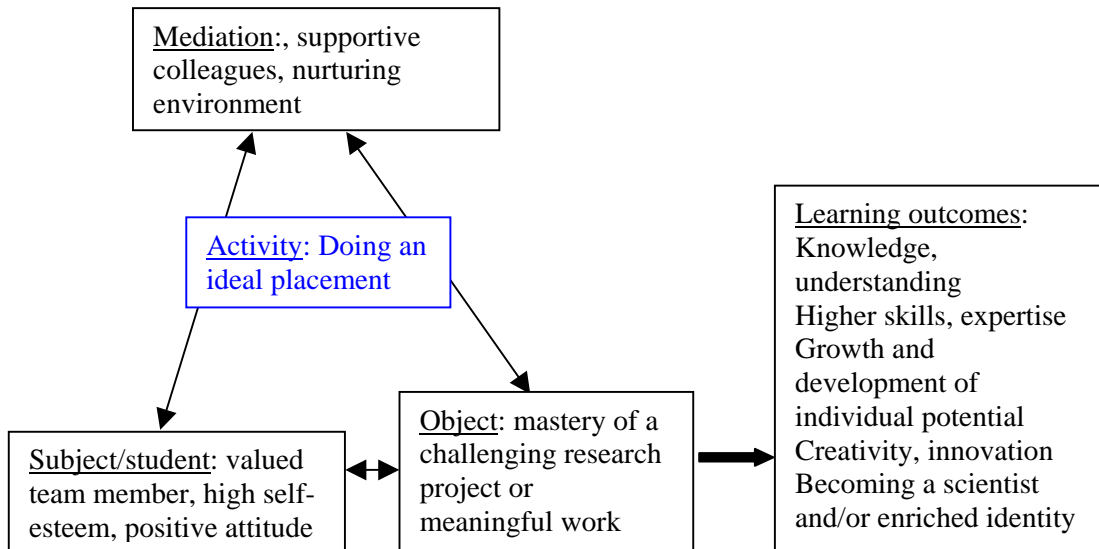
'Learner Individuality' was difficult to define and in many ways beyond the scope of this research. However, individual ability, previous learning experiences, approaches to learning (Marton and Säljö 1984), personal perceptions, stances (Savin-Baden 2000), social background and psychology all affect student's learning outcomes and, however problematical, cannot be ignored. The data contain only glimpses into undergraduates' self perceptions.

'Learning Outcomes' were also problematical as no assessment exists or, in constructivist terms, can ever exist which is capable of defining an individual's level of learning. Here, students' own perceptions of their learning are significant. When a student wrote of learning 'More in two weeks on placement than in the previous two years', it is unlikely to be literally true but is relevant. Students reported gaining skills and competences, of gaining knowledge and understanding and of growing, maturing and changing identity.

#### *Analysis of placement learning*

Data on placement learning suggest a hierarchy of placement situations which can be described in terms of Object of activity, Mediation, Learner Individuality and Learning Outcomes and illustrated with contrasting SCAT diagrams given over the page. The differences between the two extremes illustrated can be explained in terms of disparity between theories of action espoused by the University and theories in use as experienced by students.

Contrasting Socio-Cultural and Activity Theory diagrams: Top - A placement with high learning potential and, below, one low in learning potential.



In reality, of course, most placements fall somewhere between these two extremes and are neither perfect nor terrible. There are several items worth noting about these diagrams:

Firstly, note that placement work is seen as the Object of the activity when the student sees it as worthwhile; in this case the student engages with it, seeks to understand the background to their work and to perform well. S/he adopts a deep approach to their placement work and their learning outcomes are likely to be higher (Marton and Säljö 1976). Conversely, when the work is menial and repetitive it is seen as Mediation, conveying to the student that they are not worthy of challenging work; in this case there is 'No motivation to learn anything more about it. You just think "What's the point"' and, when combined with other negative messages, the Object of the student's activity may become avoidance of their unpleasant situation.

Secondly, note that individual students (as the Subject of their placement activity) had different self-perceptions, depending on whether their placement situations were good or poor, on the nature of their work and the quality of the mediation they received. The research data provided examples of very varied student identities; some were made to feel welcome and valued while others lost confidence and 'Fell apart'. It seems that Barnett was correct when he referred to 'The fragility of being a student' (2005).

Note also the links between the Object of an activity and its Learning Outcomes. The Outcomes follow logically from the Object of the activity, in the sense that a student who engages actively with their placement work is likely to achieve higher order learning than one who concentrates on boss-avoidance. This shift in the Object appears to stem from the type of messages which the student perceives; Mediation can, it seems, be positive or negative, constructive or destructive of confidence, self-esteem or happiness and that, unsurprisingly, students seek to escape situations they find unpleasant. As a consequence, negative mediation and situations where students feel distressed tend to result in lower learning outcomes.

The Biology & Biochemistry Department's webpage stated (2005) that placements 'Provide our students with the confidence and research expertise that they need to go out as Bath's standard bearers into the world of biological work. The superb employment record of our graduates is a testament to the success of the Bath "sandwich" system'. It seems that they espouse provision of ideal placements and may be unaware that some placements provide little potential for learning.

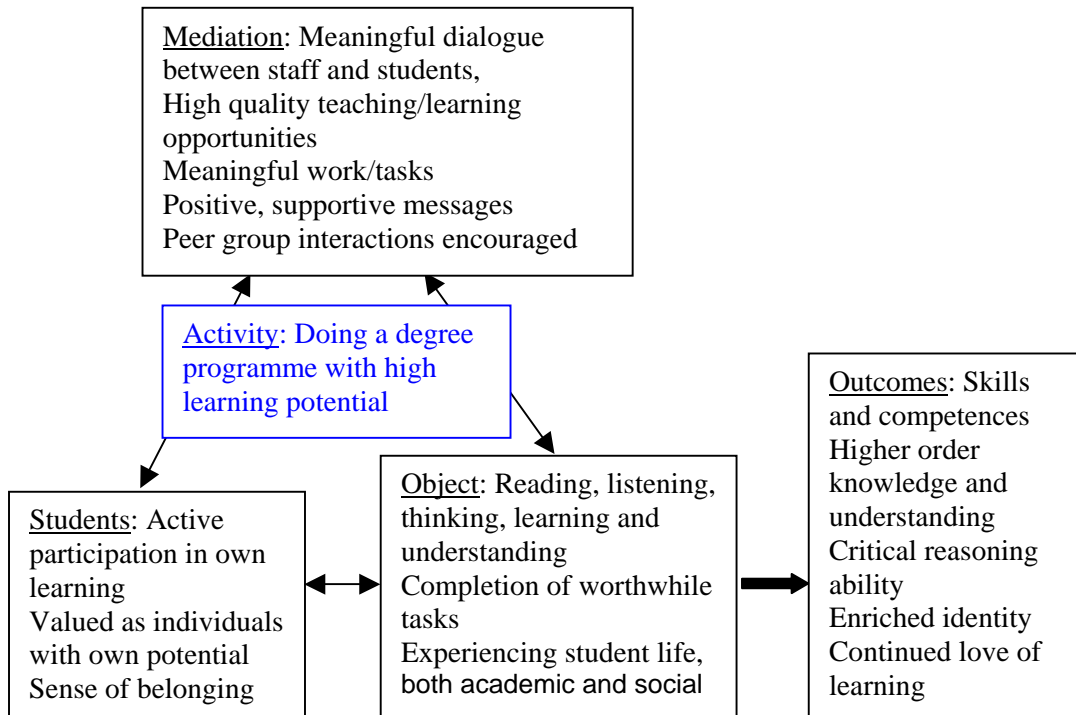
My first research question was *What is the nature of placement learning?* It seems that it varies. Placements may result in little learning or may help students towards deeper understanding, maturity and enriched identity. The second question was *How does it come about?* The nature of placement work undertaken, the level of support provided and the student's own attributes all

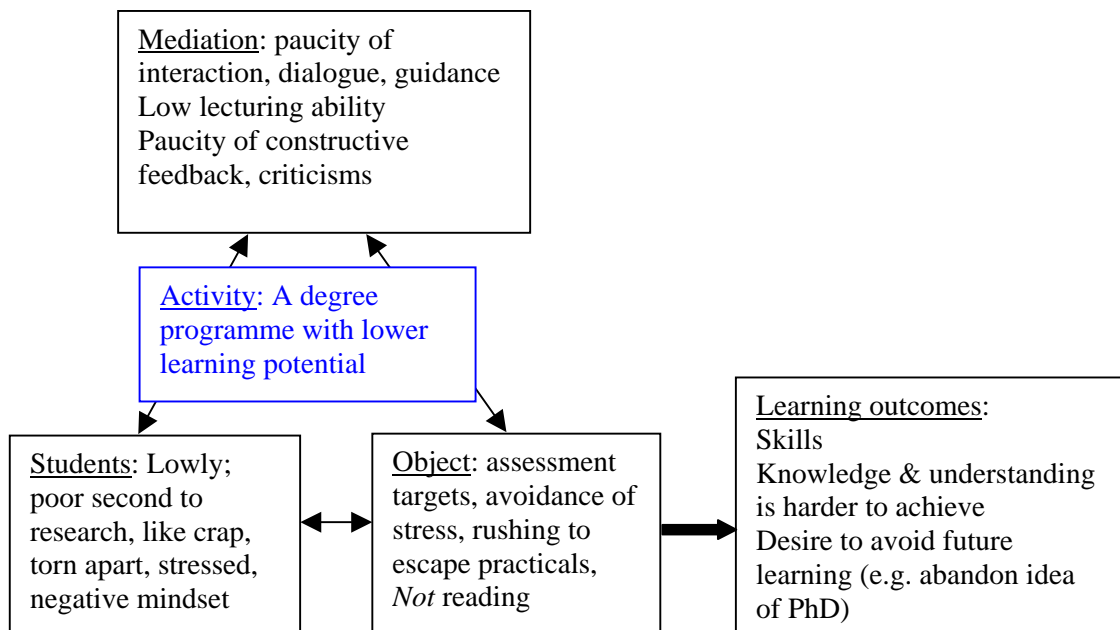
contribute; interesting project work, with ample support, is likely to lead to higher levels of learning and development. An able student may be helped towards expertise. The final research question is considered in the next section.

*Analysis of university-based learning opportunities*

It is possible to construct SCAT diagrams for ideal and less-good practical modules, lecture courses etc or, for brevity, for good and weak degree programmes as a whole. See over:

Contrasting SCAT diagrams of an idealised degree programme with high learning potential (top) and (below) with empirical data suggesting some shortfall in learning potential:





The Department of Biology & Biochemistry achieved top marks in its 1999 Teaching Quality Assessment. Its webpage (2005) espoused continued provision of 'First rate teaching'. Empirical data (illustrated in the lower diagram) suggest that, in reality, the learning opportunities it provided between 1994 and 2005 were sometimes less than ideal.

*How does placement learning compare with learning from university-based learning opportunities?* Longitudinal study data suggested that, when a placement situation is good, placement learning may far outweigh that resulting from university-based learning. The reasons for this are numerous but include the provision of meaningful work with which students can engage over a long period and which motivates them to seek deeper understanding of their placement subject. Additionally, good placements provide more dialogue and interaction with colleagues than is possible in today's universities. When students feel themselves to be valued members of a team their self esteem may be higher than at university where some students feel 'Lowly' and 'Not important'.

### **In conclusion**

Material published by higher education institutions is, of course, likely to espouse high ideals for their teaching provision but this research has suggested that empirical research based on students' perspectives can unearth the real worth (or otherwise) of their learning opportunities and provide clues to possible areas for programme enhancement. Good teaching may become increasingly important with the introduction of top up fee when students become customers who 'Expect quality' for their money; now might be a good time for more research into students' perspectives.

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