

Individual papers

Crossing the Numbers Barrier

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Abstract

Crossing the Numbers Barrier is a research study looking to inform the teaching of financial subjects to non-specialist students in the broad leisure-based sectors of sports, hospitality, tourism and events, where frequently the unit's context relative to the degree is not immediately appreciated by the students. While most earlier research has been focused on accounts and finance teaching to students majoring in accounting based degrees, the Crossing the Numbers Barrier research is specifically focusing on those students for whom the learning of accounting and finance is typically incidental to their original degree choice, i.e. non-specialist finance students in the sports and leisure sectors.

A pedagogic twist to the research methodology is that focus groups were undertaken within the students' Research Methods unit as a form of action learning with pre-briefing on learning styles and focus group operation and with subsequent findings reported back to the students at a later date. The research found three overlapping themes affecting both student approach to the unit and their perception of benefit from the unit. These themes were Perception of Unit Relevance, Tutor Teaching Style and Student Learning Approach. Those students citing contextual relevance and appreciation of tutor style were more likely to take a deep learning approach while more unengaged students were more likely to adopt surface learning. Findings from this research led to changes in teaching strategies being promoted across the School's finance units for academic year 2009/10.

Keywords: finance, accounts, barriers, teaching style, learning approach

1. Introduction

A high proportion of undergraduate accounting units in the UK are delivered to non-accounting students. While graduates, employers, placement advisors and returning placement students typically state how useful an understanding of finance and accounts is in the workplace, actual undergraduates, especially first years, often find this topic daunting and difficult and a very high failure rate is encountered. This project is intended as a pilot to a research study looking to inform the teaching of financial subjects to non-specialist students in the broad leisure-based sectors of sports, hospitality, tourism and events, where frequently the unit's context relative to the degree is not immediately appreciated by the students.

It is intended that this will be achieved by understanding the ways in which students approach engagement with academic subjects and especially accounts, identifying barriers to engagement with finance based subjects in non-accounting students and identifying examples of teaching practice which are able to encourage, in the students, a deep approach to the subject.

2. Approaches to Learning

In order to understand the context within which students engage with academic subjects it might be appropriate to consider Biggs's (2003) 3Ps model (Figure 1). The model draws the path between pre-existing 'presage factors', i.e. characteristics of the student and of the teaching context, and 'product factors', which he sees in terms of academic performance. He identifies that it is the 'study process', i.e. motives and strategies, which mediate between the two.

There has been a vast amount of investigation into students' learning styles. This has resulted in a number of models ranging from those based on the understanding that learning styles are traits and as such relatively fixed and those which understand them as flexible and open to change (Coffield, Moseley, Hall, & Ecclestone, 2004). Much recent understanding recognises both, in the form of learning styles (which might be identified among Biggs's presage factors) and learning approaches (part of Biggs's process). This distinction, between those

factors which are already in place prior to the learning experience and those which develop during the learning experience, is an important one when considering the ways in which students learn.

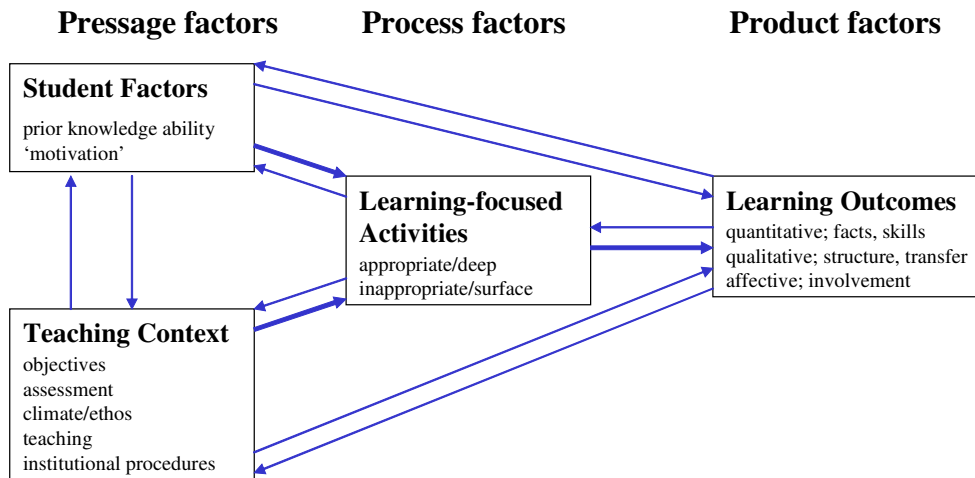


Figure 1 The 3Ps model of teaching and learning (Biggs 2003)

Gracia and Jenkins (2001) reported on various investigations aimed at linking failure on accounting modules with prior knowledge, gender and background characteristics and found them to be inconclusive. They found it to be more related to personal responsibility. Those who recognised the importance of self-directed learning showing higher pass rates while those who fail seeming to demonstrate an ‘expectation gap’. They expect the provision of a ‘product’ from the tutor and simply get ‘knocked back’ further by incorrect answers as they internalise their failures. This would seem to support Prosser and Trigwell (1999) who suggest that the considerable variation in their prior experiences of learning and teaching with which students enter a new learning context, relate to the situations in which they occurred and that congruence between the previous and new situations has a strong effect on what and how they learn in the new situation. This is an important point. We are not trying to change students’ natures, but to recognise their differences and change their experiences, perceptions or conceptions of something (Ramsden 2002).

Marton and Säljö (1976, cited in Lucas, 2001) developed the idea that students’ approaches to learning are dependent on the learning situation and their conceptions of learning and perceptions of the teaching context. They identified two different perspectives. In a deep learning approach the student actively engages with the subject content, leading to elaboration of the learning material. In a surface learning approach, the student uses routine memorisation to reproduce those aspects of the subject matter expected to be assessed. These approaches to learning are not fixed. Rather, they “represent what a learning task or set of tasks is for the learner...a relationship between the student and the learning he or she is doing” (Ramsden, 2002). Students adapt their learning approach according to their perception of the learning environment and therefore can be using both approaches at any one time for different elements of their learning. This environment includes the assessment methods, curriculum, teaching methods, and the atmosphere of the institution (Ramsden, 2002) and represents Biggs’s ‘study process’. Despite Biggs’s (1987) proposed ‘achieving’ approach, student approaches to learning tend to be dichotomised into the original deep and surface approaches.

It is understood that students adapt their learning approach to suit the perceived context of a subject area, particularly assessment, and those who are motivated towards and enjoy a subject are likely to perform better (Entwistle & Ramsden, 1983). It is important to note then, that accounting students seem to adopt more surface learning approaches and less deep learning approaches compared to other university students (Booth, Luckett, & Mladenovic, 1999).

3. Barriers to Effective Learning in Finance Subjects

In accounting students, research has identified the learning approaches that they adopt as a key factor influencing the quality of their learning outcomes (Booth et al., 1999). A deep approach is positively associated with high academic performance and a surface approach identified with poor performance (Byrne, Flood, & Willis, 2001). In studying the relationship between approach and exam performance in accounting units, Davidson (2002) found a “significant relationship between the use of ‘deep’ study approach and grades received on complex

examination questions which require more than responding to memorised facts and procedures". However, it has been noted (Booth et al., 1999; Eley, 1992) that accounting students tend to adopt a lower deep approach and higher surface approach than those studying most other subjects.

In a phenomenographic study of introductory accounting students, Lucas (2001) identified that students' preconceptions of the subject of accounting and its relevance in today's society appears to predispose them to take a surface approach to the subject. The subject is often seen as an exact mathematical activity involving 'one right answer' scenarios (Spencer, 2003) and therefore either attracts students to the logic and clarity or repels due to preconceptions of numbers and boredom (Lucas, 2001).

Student perceptions may not necessarily reflect the factual situation but they still influence students' attitudes toward a course and, quite likely, influence outcomes (Dillon & Barclay, 1997). Non-accounting students, when faced with accounting and finance subjects, often start with preconceived negative perceptions (Friedlan, 1995, Saudagaran, 1996) tainting both approach and expectations (Mladenovic, 2000). These perceptions and prior exposure to the subject can influence performance (Byrne & Flood, 2008). They see them, for instance, as 'mechanical and repetitive number crunching', a view which is perpetuated by society in TV programmes, newspapers etc and by accounts courses which emphasise the mechanical bookkeeping aspects and confirm rather than challenge the negative stereotypes. Many students fail to see the relevance to them of studying finance. They don't see it as being located in the real world (Mladenovic, 2000). Students learn complex concepts best when structured in ways that have meaning and relevance to them yet their introduction to finance usually brings with it the need to learn a whole new vocabulary (Vihtelic, 1996).

Students are often daunted by the perceived mathematical nature of the subject (Lane & Porch, 2002) and may display the feelings of tension and anxiety that interfere with the manipulation of numbers and the solving of mathematical problems which are known as maths anxiety and that teaching styles then have to specifically overcome (Richardson and Suinn 1972, Wilson, Hassall, Joyce, Pickarz, & Montano, 2006). Indeed, Wisdom (1995) believes that Maths features in so many subjects and on so many courses, it is possible that failure at maths is the biggest single reason for first year failure in higher education.

Interestingly, when taken outside of the formal 'school maths' context, people frequently handle numbers (betting, quizzes, personal finance) quite naturally. This is because in these situations it is not maths per se which they see as authoritarian and not intrinsic to real life (Benn, 1997, cited in Bishop & Eley, 2001).

Maths anxiety may be associated with traits such as shyness, learning styles and dyslexia in specific individuals but it has also been shown that contextual factors can add to the problem with teaching style among those implicated (Wilson et al., 2006). This is an important consideration.

4. The Lecturer's Influence

Sharma (1997, cited in Hall, Ramsay, & Raven, 2004) identified that choice of approach is affected by structure of the course and lectures, enthusiasm of lecturers, generation of a personal learning context, provision of student feedback and provision of direction to students while Gow et al. (1994, cited in Hall et al., 2004) identify a didactic teaching style as among those factors which could result in surface approaches in accounting

Research by Voss, Gruber, and Szmigin (2007) identifies that, for students, the most important attributes of lecturers are: teaching skills, teaching methods, subject knowledge, communication skills, approachability, enthusiasm, expertise, humour and friendliness.

Partington and Stainton (2003) describe the 'twin professionalisms' of academics as: (1) subject professionalism (Engineering, law or architecture practitioner) and (2) functional professionalism (teacher, researcher or manager). They note that most academics are thoroughly prepared as subject specialists, through their undergraduate and postgraduate study and qualifications but are inadequately prepared as functional practitioners. In other words they tend to be equipped with the attribute that appears third on the students' list of priorities but not necessarily the rest and significantly, the most important, good teaching skills. This then is important - but what teaching skills, teaching methods, communication skills work for the students?

5. Crossing the Numbers Barrier Survey

The original intention was simply to survey lecturers teaching finance based subjects, firstly within the School of Services Management, then throughout the university and beyond, in an attempt to identify innovative ways in which they tackled the problems of student engagement with the subject. It was soon recognised though that, in order to develop strategies to encouraging appropriate approaches in our students, it is first essential to understand exactly what the barriers to these approaches are. In order to do this it must be necessary to see them from the students' point of view. Instead of other members of staff, it was the students that we should be talking to first. Students on the second year of the Applied Sports Management programme were surveyed with regard to their perceptions and experiences of the first year finance unit.

6. Methodology

Focus groups were chosen in order to gain as full an understanding of the students' own perceptions of their finance unit and its delivery as possible. Byrne (2004, cited in Silverman, 2006) notes that such qualitative interviewing is particularly useful as a research method for accessing individuals' attitudes and values – things that cannot necessarily be observed or accommodated in a formal questionnaire. As Voss et al. (2007) suggest, in studying the teaching qualities of effective lecturers that are desired by students, “if lecturers know what their students expect, they may be able to adapt their behaviour to their students' underlying expectations”. Krueger (1994, cited in Dillon & Barclay, 1997) describes a focus group as a carefully planned discussion designed to obtain perceptions on a defined area in a permissive, non-threatening environment. They were developed because of concerns that closed questions unduly influenced respondents and allow the respondents to be probed beyond the initial question to a depth and with a flexibility that is not possible with more traditional survey methods.

A pedagogic twist to the research methodology is that the focus groups were undertaken within the students' Research Methods unit as a form of action learning with pre-briefing on learning styles and focus group operation and with subsequent findings reported back to the students at a later date. This should ensure that the students felt uninhibited and able to express themselves freely. The students were introduced to the research subject, its purpose and intended outcomes. They were informed that the sessions would be recorded and were assured with regard to its confidentiality.

Dillon and Barclay (1997) recommend that course content should not be addressed since it is believed that students do not have the level of experience to appropriately judge course content whereas concentrating on the students' experiences and their attitudes to its delivery can enable ways of improving course delivery to be addressed. Therefore students were invited to discuss their perceptions of the learning environment in general and their attitudes and approaches to learning in relation to the following discussion areas:

- Relevance/benefit of the unit.
- The teaching of the subject
- The students' learning approaches to the subject
- The 'language of accounting'
- The need for maths in the unit

It might be appropriate at this point to remember the warning of Dillon and Barclay (1997) that “student perceptions may not necessarily reflect the factual situation but those perceptions influence students' attitudes toward a course and, quite likely, influence outcomes”. This highlights that the group will simply be a collection of individuals who will each report a view of the learning context as they see it according to their individual worlds. Each comment made will be valuable in building up a picture of, not necessarily the true situation, but the situation as they see it. This is fine, however. The consensus might be fiction but it is this situation, as they see it, with which the lecturer has to interact and therefore with which this research should attempt to engage. “In trying to change approaches, we are not trying to change students, but to change the students' experiences, perceptions or conceptions of something” (Ramsden, 2002).

The research involved eight seminar groups across four sports programmes, a total cohort of 121, who took part in focus groups with question themes drawn from pedagogic and finance teaching literature, focusing on student learning approach and teaching strategies. Following transcription, data was organised as suggested by Biddle, Markland, Gilbourne, Chatzisarantis, and Sparkes (2001), whereby the data units are clustered into common

themes so that similar units are grouped together into first order themes. This first order coding made use the five themes suggested by the literature review, this is: 'Benefit/Relevance, Teaching Approach, Learning Approach, Language and Numbers/Maths'. No further first order themes were emergent from the data. An inductive approach was taken in identifying second and third order themes since it was recognised that the data should take primacy to reduce the risk of bias.

Miles and Huberman (1994) allow that, in qualitative data analysis, "counting is a familiar way to see what's there". Therefore a simple appraisal of frequencies was undertaken to gain some idea of the volume of comments for each of the main discussion areas. However Cortazzi (2007) asserts that "context is a key element of narrative" and so the following discussion will be mainly qualitative and focusing on meaning rather than numbers.

7. Findings

The findings are reported in the five key themes suggested by the literature review namely; Benefit/Relevance, Teaching Approach, Learning Approach, Language and Numbers/Maths.

7.1 Relevance

Student observations on unit relevance centred around three themes: programme relevance, vocational relevance, and personal relevance.

Programme Relevance

Overall, the most frequent observations made by students were negative citing their perceptions that the Sports Administration unit was not relevant to their degree programmes. But the observations did highlight levels of understanding within the student cohort. Four main observations occurred within this theme, three reinforcing the negative perception of the unit to student context and a fourth countering this.

- Not related to sport

'It's just that people doing sports degrees don't tend to be number crunchers do they'

- I am a coach

'the degree is sports coaching development it's not supposed to be sports management'

- More appropriate to Sports Management programmes

'I would think it is only really relevant if you are doing Sport Management sort of thing. I want to do more coaching – not finance'

+ Strengthens external [academic] perception of the degree

'Even when you say to people this is what you do they still think Oh just sport...if they understand what we do [in this unit]....'

While many students believed that the unit was not relevant to their specific degree programme there was an awareness that Sports degrees in general can be seen as lacking academic gravitas, more to do with playing sport than studying scientific or management aspects. The inclusion of the Sports Administration unit covering finance and marketing was thus seen by some as adding to the academic content of the degree, enhancing the external perception and acceptance of the students.

Vocational Relevance

Countering, to some extent, the feeling that sports coaches have no especial interest in finance - the 'I am a coach!' syndrome - other students perceived a business and personal work context that supported the 'vocational' relevance of the unit to them.

This positive relevance was shown through two contexts. Sports businesses and organisations such as Sports Clubs exist, so having an understanding of finance was a useful vocational skill. Secondly, many of these graduates would end up as being self employed coaches or instructors and as such would need financial skills to manage their 'business' affairs.

'and like running a club. A sports club all the accounts that have to do, you don't realise until you get to do it. It is quite useful.'

'I think it is useful if you ever wanted to start up your own business, you've got the material to refer back to.'

Personal Relevance

Some students went beyond the usefulness of finance specifically focused on the workplace and highlighted that personal financial planning and budgeting, 'incomings and outgoings' was a general skill that applied to their own personal financial affairs.

'I thought....anywhere in life you are going to have to budget.'

'Everything relates back to money doesn't it'

It should be noted that where there were positive statements of the unit's usefulness to the programme, workplace and the individual this was often linked to only a 'basic' level of financial understanding being required.

'I think there was just enough to make it suitable if it had gone any further it would have been too difficult, if it was going to be carried on to a higher level then it is not really for us I think'

7.2 Teaching Approach

Under Teaching Approach two broad themes emerged centring on the tutor (their personality, traits and style) and the delivery of the unit.

Tutor

The tutor's personality and character influenced how students perceived the unit and their learning experience. In particular students looked for; tutor ability to vary sessions and interactions with them, to deliver sessions in an interesting way and to be approachable.

Delivery

The approach to unit delivery showed how lecturer teaching was able overcome barriers to the topic.

* Step by step methods of teaching

'The way [the tutor] taught it ...he made it so easy – step by step'

'Definitely...because if he tried to ...too much at one time ...I mean you'd get bogged down'

'He broke it down and he had us do like smaller versions of it so by the end of the year we all knew what that bit at the beginning he taught us was for the end bit that was much bigger and more complicated and if we had seen that at the beginning of the year'

* Examples (especially real life)

'Definitely simplicity...[the tutor] gave simple examples – sometimes he will tell you what he is trying to say...but then if you don't understand the same wording he'll give you an example and that's when you realise what he is talking about'

'Used his example of his club used that as an example so you did have to think about it'

* Explanations in context (e.g. student or sports contexts)

'so he'd say OK so you've lent somebody a tenner so somebody else owes you it so that was kind of simple. We were talking about drawings and credit and debit and all that kind of stuff'

* Flexibility – being able to change the method of delivery

'He had variation in the way he taught'

'If it is someone reading slides off the board then I think...oh'

'The lectures weren't too full...he didn't tell us too much in the lecture...there's usually one concept and that was it ...no matter how long it took'

'If it only took half an hour then he would let us out early'

* Participation (inclusion and interaction)

'He tried to make lectures interesting as well he wasn't just talking at you it was also asking questions'

'Always has a way of talking to you rather than just lecturing ...it's more like a group discussion with him rather than sitting and taking down notes'

'If you have got to contribute in a lecture as well it keeps you more interested'

* Teaching to their [student] needs

'So you'd spend a lot more time in small groups with him...so if we didn't understand it correctly we could go through it a lot easier'

'I think asking him a question... if you don't understand something then you'd ask and he would go through it again'

'if you don't understand things in the seminars he went right back to the beginning again – started explaining everything again more simply so...'

* Leaving none behind

'he came round and talk to each group and make sure everyone was understanding and if you feel you were struggling then he would go back over the issues and stuff'

'He made it very much easier to the point that he could make it so everybody had a rough idea of what it is about ...had it been someone else...'

It was apparent that the tutor needed to be engaging in personality and to engage the students.

Being willing to adapt the methods, approaches and interaction to ensure that students understood.

Two broader themes also emerged. Firstly focusing on the tutor, students were looking for tutors who liked teaching, liked the subject and enjoyed the topics of discussion – these directly fed through to the students' enjoyment of the sessions and improvement of reception was implied.

'He was always bubbly always'

'they were the ones I liked going to cos they were quite enthusiastic when they were doing the lecture'

'If he's enjoying it you kind of enjoy it more'

'If you are not interested in it and you know how boring it is ...if you don't have someone who livens it up and gets you interested then.....'

Secondly, many of these 'tutor' themes were directly supported by humour. Students liked a jovial interaction, examples laced with funny names and comic slides. This all appeared to help break down the perceptual barrier that the topic was dry, boring and full of numbers.

'Quite easy going...quite funny guy...especially like you say happy, stimulating...it helps to use a laugh.'

'He made it like simple and tried to make it a bit fun as well'

'You turn up for a laugh'

'He used funny names..... Teresa Green'

'Using pictures'

'Yeah lots of pictures and stuff'

7.3 Learning Approach

Learning approach was broken down into two main themes, namely Surface Learning and Deep Learning.

Surface Learning

Many students focused on two surface learning attitudes:-

Assignment driven engagement

One Right Answer

Student approach to the unit showed an assignment driven approach to learning – implying that the assignment was a hurdle that had to be jumped... but only just! Their focus was thus on engaging within the unit only in so much as this achieved this minimal output – to pass.

'Yeah it was just remembering it and basically getting down for the exams'

'I only tried to pass by...like learning the significant bits and pieces so I don't think at all I have taken much away from it'

'Just learn the basics to help me get enough marks on each question'

'Once you have got the exam you have got everything'

'You had to like learn the ratios so I just like learned what like how they worked sort of thing – not why or anything like that – just the calculations'

Additionally where students perceived finance as being a black and white, 'one right answer' subject their learning was again focused on understanding only to a sufficiency that allowed them to 'get' the right answer, eschewing deeper understanding or contextual meaning.

'Black and white – you get a definite answer'

'It's a right or wrong not like an essay'

'Yeah I like that...I find that you can't give a vague answer you are either right or wrong'

'In other subjects you need a bit deeper knowledge ...to talk around each subject'

Deep Learning

While some students showed more contextual awareness of the unit and its relevancy that might lean towards a deeper learning and understanding, to countering the above mentioned surface focus students raised the concept of retrospective recognition, that deeper learning was needed (or enacted) especially in order to revise for their exam.

Students evidenced a strategic learning approach, engaging sufficiently to achieve their outcomes, typically to pass the unit. The strategic approach suggested activity to gain easy wins for minimal effort.

'Linking certain bits to other bits that's where you need to understand how you can link one to the other'

'Until you revise then you have to do it deeper a little bit deeper'

'I think it was when we were learning it and going to the lectures and seminars I kind of was definitely at a surface level and was trying to understand a bit ...it sounds completely stupid but then when I went to do my revision I had to learn it at a deeper level because I knew I wouldn't be able to go into the exam and just remember quotes I had to actually understand part of it'

7.4 Language

Students admitted that language was a barrier towards the unit, especially in the early stages. This 'initial barrier' was also tied into the observation that there could be an understanding of concepts even if the specific technical terminology wasn't remembered. For example, understanding the concept of debt with its dual aspects of, owing money to others and being owed money by others, without necessarily remembering that the first one is termed 'a creditor' and in the latter, 'a debtor'.

'I hadn't done a business course before I started so parts of it I found more difficult – the terminology the wording all that kind of stuff'

'Try to relate it to your own everyday language but you can'tsometimes you forget the actual term but you know what it was'

Students frequently cited that tutor use of layman's terms and simplified examples helped to overcome this language barrier.

'I think there was but we...but [the tutor] tended to substitute them for other things in the beginning so you didn't think – what the hell does that mean'

'I thought that he...especially at the start of it ...he tried to relate it back to something more simple...like it was um...he took it back to "a man walked into a bar...."'

Perhaps due to the scientific nature of many other units studied by the students, which also utilised technical terms, for example Physiology's use of terms for parts of the body, this language barrier was not seen as an especial issue, solely of a finance related unit. As sports coaching used other forms of technical or jargon terms the unit was not unique in this aspect.

7.5 Numbers/Maths

There was evidence of an almost paradigmatic mantra across the focus groups, "Sports don't do numbers" and an associated general axiomatic assumption; that finance based units involved mathematics. Thus suggesting an attitudinal approach of 'we don't do numbers; the unit has numbers so we shouldn't do the unit!'

'They leave maths at GCSE and then A levels are either sport related or as practical related as possible, no one went to do accountancy in sport'

'for a couple of weeks definitely. Yes started to think you have chosen the wrong course'

'Probably would have been easier but I think you needed the maths in order to understand the template and know what to do with the template'

'There was quite a lot of numbers on them... load of numbers'

'I know for a fact that my housemate definitely just memorised what he needed to put where ...that's the only way he could get through it because he wasn't strong at Maths or anything'

This maths connection was even reinforced where students cited either prior knowledge of mathematics or of finance based maths from for example studying Business at college. This prior knowledge for some became a reason why the unit wasn't difficult.

'if you haven't done any financial stuff before it must have been quite daunting - if you have done something like A level business then it would have been easier to understand'

'The actual accounts I found to be quite easy...I've done a lot of maths stuff'

Some students with prior experience of mathematics, acknowledged that the level of mathematical calculations involved were not 'real maths' and thus posed no barrier to their understanding and engagement with the unit.

'it wasn't like we were having to work out equations and things like that it was...I don't think the maths was difficult it was like understanding where you had to do it'

'It's not that much to do with maths really...he goes round the formulas and then you've got calculators for the lecture ...you don't do anything by hand'

In reality, the level of mathematical calculations required for the unit were of a primary school level in nature. The numbers barrier therefore seemed as much perceptual rather than actually related to mathematical application.

The observations on prior mathematical knowledge also suggests that, notwithstanding the basic level of maths required, having a confidence in mathematical applications and the use of numbers, lowered the perception of a numbers barrier.

8. Discussion

Taking the themes in reverse order then, what does this research suggest for the teaching of finance based units to non-specialist students?

The importance of mathematical content to both student perception of the unit and the outcome of unit success as evidenced by Wisdom (1995) is a little ironic in the case of the cohorts researched, in that the level of mathematics required was only at primary school level and was perceived by some students as not being 'real

maths'. The barrier was one of perception rather than one of fact. So a tutor task is to counter the perception that finance at a basic level is about mathematics.

Language, because of the specific terminology of accounting, did seem to present an initial barrier to understanding. However, this did not seem to inhibit understanding of concepts and was not perceived as a peculiar problem for students faced, in other units, with technical language or jargon. The tutor, in order to overcome the 'initial' barrier, should be prepared to use everyday terms and use real life examples with simplified expressions to give students early understanding.

Students frequently followed an output driven approach, which as identified by Eley (1995) and Booth et al. (1999) fitted into minimalist strategic learning utilising a surface learning approach focused on doing the least effort required to 'pass' but this runs the risk of student failure as suggested by Byrne et al. (2001) due to a lack of deep understanding. To support such a strategic approach suggests that tutors should use templates and worked examples to allow sufficient understanding to achieve the required outcomes. Our research also suggests that an exam is a key part of promoting deeper learning, as it is within the associated revision that students may understand the subject in a more holistic context.

The research emphasised that tutor engagement is a key mechanism for promoting learning and facilitating understanding. Perhaps academics should accept that tutors need to move beyond the student focus in Entwistle and Ramsden (1983), such that it is not just the students, who should be motivated and interested in the subject, for them to perform – the tutors should too! Tutor use of humour seems a key tool in overcoming negative student perceptions of the topic.

Finally, the non-specialist student's 'I am a coach' syndrome, though the researchers from their own experience could equally have inserted 'I study tourism' or 'I study leisure'; we don't do numbers. It was clear from the research that whilst some students 'got' the context of why they were doing the unit, many others simply did not. So it is a constant underlying issue for tutors of non-specialist students studying finance units to repeatedly stress the context and relevance of the unit to students – to their programme and their advancement within it, to their future employment and to their personal situations in for example their tax affairs.

Here, it seems, lies a final irony. Many of these students will go on to judge and be judged by 'sporting numbers'; e.g. time records and personal bests, individual and team scores, analytical statistics of possession, shots on goal or assists, batting averages. All expressed in a greater range of mathematics than the unit where often ~ *Numbers is a barrier!*

Findings from this research led to changes in teaching strategies being promoted across the School's finance units, for academic year 2009/10. It also highlighted a wide difference in approach between full time faculty tutors and the School's part-time tutors, who were typically drawn from the accounting and financial professions.

9. References

- Biddle, S.J., Markland, D., Gilbourne, D., Chatzisarantis, N.L., & Sparkes, A. C. (2001). Research methods in sport and exercise psychology: Quantitative and qualitative issues. *Journal of Sports Sciences*, 19, 777- 809.
- Biggs, J. (1987). *Student approaches to learning and studying*. Victoria: Australian Council for Educational Research.
- Biggs, J. (2003). *Teaching for quality learning at university: What the student does*. Maidenhead: Society for Research into Higher Education & Open University Press.
- Bishop, R., & Eley, A. (2001). Microbiologists and Maths. *Microbiology Today*, 28 May 2001.
- Booth, P., Lockett, P., & Mladenovic, R. (1999). The quality of learning in accounting education: The impact of approaches to learning on academic performance. *Accounting Education: An International Journal*, 8, 277-300.
- Byrne, M., & Flood, B. (2008). Examining the relationships among background variables and academic performance of first year accounting students at an Irish University. *Journal of Accounting Education*, 26, 202-212
- Byrne, M., Flood, B., & Willis, P. (2001). The relationship between learning approaches and learning outcomes: a study of Irish accounting students. *Accounting Education*, 11, 27-42.
- Coffield, F., Moseley, D., Hall, E., & Ecclestone, K. (2004). *Learning styles and pedagogy in post-16 learning. A systematic and critical review*. London: Learning and Skills Research Centre
- Cortazzi, M. (2007) Narrative analysis in ethnography. In P. Atkinson, A. Coffey, S. Delamont, J. Lofland & L. Lofland (Eds.), *Handbook of Ethnography*. London: Sage
- Davidson, R.A. (2002). Relationship of study approach and exam performance. *Journal of Accounting Education*, 20, 29-44
- Dillon, G., & Barclay, L. (1997). Student focus groups as an assessment technique: A case study *Journal of Accounting Education*, 15, 457-468

- Eley, M. (1992). Differential adoption of study approaches within individual students. *Higher Education*, 23 231-254.
- Entwhistle, N. J., & Ramsden, P. (1983). *Understanding student learning*. London: Croom Helm.
- Friedlan, J. (1995). The effects of different teaching approaches on students' perceptions of the skills needed for success in accounting courses and by practicing accountants. *Issues in Accounting Education*, 10, 47-63.
- Gracia, L., & Jenkins, J. (2002). An exploration of student failure on an undergraduate accounting programme of study. *Accounting Education*, 11, 93-107.
- Hall, M., Ramsay, A., & Raven, J. (2004). Changing the learning environment to promote deep learning in first-year accounting students. *Accounting Education*, 13, 489-505.
- Lane, A., & Porch, M. (2002). Computer Aided Learning (CAL) and its impact on the performance of non-specialist accounting undergraduates. *Accounting Education*, 11, 217-233.
- Lucas, U. (2001). Deep and surface approaches to learning within introductory accounting: A phenomenographic study. *Accounting Education*, 10, 161-184.
- Miles, M.B., & Huberman, A.M. (1994). *Qualitative Data Analysis: An expanded sourcebook* 2nd Ed, Thousand Oaks: Sage.
- Mladenovic, R. (2000). An investigation into ways of challenging introductory accounting students' negative perceptions of Accounting. *Journal of Accounting Education*, 9, 135-155.
- Partington, P., & Stainton, C. (2003). *Managing staff development*. Buckingham: Open University Press
- Prosser, M., & Trigwell, K. (1999). *Understanding learning and teaching: The experience in higher education*. Buckingham: Society for Research into Higher Education & Open University Press
- Ramsden, P. (2002). *Learning to teach in higher education*. London: Routledge.
- Richardson, F.C., & Suinn, R.M. (1972). The mathematics anxiety rating scale: Psychometric data. *Journal of Counselling Psychology*, 19, 551-554.
- Saudagaran, S.M. (1996). The first course in accounting: An innovative approach. *Issues in Accounting Education*, 11, 83-94.
- Silverman, D. (2006). *Interpreting qualitative data: Methods for analyzing talk, text and interaction*. London: Sage.
- Spencer, K. (2003). *Approaches to learning and contemporary accounting education*. Abstract from Education in a Changing Environment September 2003 Conference Proceedings.
- Voss, R., Gruber, T., & Szmigin, I. (2007). Service quality in higher education: The role of student expectations. *Journal of Business Research*, 60, 949-959.
- Vihtelic, J. (1996). Personal finance: An alternative approach to teaching undergraduate finance. *Financial Services Review*, 5, 119-131.
- Wilson, R., Hassall, T., Joyce, J., Pickarz, M., & Montano, J. (2006). Numeracy and literacy in sports studies students: Barriers to skills development. *Journal of Hospitality, Leisure, Sport and Tourism Education*, 5, 59-70.
- Wisdom, J. (1995). *Support for mathematics in further and higher education, lessons from feedback: What do students say about maths*. London: London Guildhall University