Reflections on identity, learning and learning styles in Sport and Health Sciences
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Abstract
The United Kingdom Quality Assurance Agency provides an external assessment of teaching standards and aims to improve the quality of teaching in higher education. Alongside this, the postgraduate certificate in academic practice (PCAP) at the University of Exeter encourages lecturers to critically analyse what constitutes an effective learning environment for students in higher education. As a neophyte lecturer who teaches the importance of reflection to my students, I wanted to do just that myself by describing the theoretical considerations of good teaching practice alongside ideas of change for my own teaching practice. As Coffield, Moseley, Hall and Ecclestone (2004) ask, ‘how can we teach students if we do not know how they learn?’ To begin, I will talk about my perception of academic identity and how this can then lead to interpreting students’ and my own learning styles. I will then discuss where my changes of practice will focus: exploring ways to enhance deep learning in students.

Keywords: academic identity; learning styles; deep and surface learning.

Introduction: Academic Identity

Recently, I was sent an email from University management asking me to attach myself to the group within our academic College to which I felt most connected. Alongside all other associate lecturers and administrators, I chose Sport and Health Sciences as a discipline. Most other academics however, associated themselves with a particular sub-group within Sport and Health Sciences which related to their area of research. When asked to talk about the problems and needs of our discipline our general sub-group theme lay with student satisfaction and improving student/staff ratios. When I attended the Sport and Health Sciences discipline group meeting including all sub-groups, the focus changed to research, something I do not really feel part of here at Exeter. I am mainly concerned with teaching practices and improving the learning environment. Therefore, the logical place to find my ‘community of practice’ would be within the active teaching community in the University, regardless of academic department.

Although I engaged in dialogue with other associates, I always felt a greater connection with the staff in Sport and Health Sciences. Perhaps this is due to the importance I put on shared practice (Wenger 1998). As sport scientists we have many common practices and similar ways of approaching work and teaching which may differ from individuals teaching different topics. The common theme shared in our community is often sport, which many people perform also as a lifestyle or hobby. This is a niche that I believe gives us a common identity regardless of position or academic achievement, or whether research or teaching is our main focus.

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Although my colleagues welcomed me into the sports science community of practice and I feel I do have an identity within this department, my own lack of confidence as a new teacher led me to think about the idea of identity in relation to learning styles. In an environment where I often believe others’ opinions are superior to my own and where I feel the least experienced in an academic community, I often ask for others’ opinions. This is aligned with the learning style of an accommodator. Although the accommodator has strengths, perhaps one downside is the reliance on others for information which may put in doubt in their own ability (Kolb 1984). Although I will continue to ask for opinions and help, I am now developing a determination that can allow me to explore other ways of learning and teaching to try and move myself away from as much reliance on others’ opinions.

To encourage identity in sport and identity at university, perhaps we should make the students more aware of how their learning is shaped by their communities of practice (Wenger 1998) and the social interaction that forms the basis for learning from one another (Palinscar 1998). The idea of students working together and forming ideas from each other helps them to establish a common identity and even a common way of encouraging each other to learn in a meaningful way.

Learning styles

‘Human beings are unique among all living organisms in that their primary adaptive specialization lies [...] in the process of learning’ (Kolb 1984).

There are many theories underpinning cognitive processes: Kolb (1984), for example, puts forward a model based around how experience can influence learning. This theory describes how past experiences can inform future experiences. Kolb suggests that learning is a cycle incorporating two main concepts, described in figure 1. Firstly, we can take action and test implications of concepts in new situations, or we can reflect and observe (which refers to the ‘active experimentation – reflective observation’ continuum). Secondly, we can have real, concrete experiences which focus on specific events that can shape actions, or we can have a general view of experiences and try to encapsulate the whole idea from abstract concepts (which refers to the ‘concrete experience – abstract conceptualism’ continuum). These continuums are influenced by Jean Piaget (1970; cited in Kolb 1984) and his theory of cognitive development.

To be an effective learner, there is arguably a need to encapsulate all the different aspects of the learning model shown in figure 1 and to use it as a reflective cycle. To accomplish this, an individual must involve themselves in new experiences (concrete experience), reflect on this experience (observations and reflections), make sense of these experiences using theoretical concepts (formation of abstract concepts and generalisations) and use these theories and these past experiences to then discover new problems or experiences (testing implications of concepts in new situations) (Kolb 1984).
Individuals may learn with an orientation towards certain ends of the learning continuums. Kolb (1984) describes four basic learning styles by which individuals may be characterised. These have been categorised as diverging, assimilating, converging and accommodating, and fall between the ends of the two learning cycle continuums.

Within the diverging learning style, individuals are often imaginative, listen with an open mind and like to work in groups (Kolb 1984; Kolb, Boyatzis and Mainemelis 2001). This diverging style is very important in sport and health sciences due to the interaction with human participants and the interpretation of scientific data alongside debates on different scientific perspectives. Individuals with an assimilating learning style tend to make concise a large amount of information and knowledge. They think logically about theories (Kolb et al. 2001) and this is very suited to science careers that, for example, apply scientific theory to practically improving an athlete’s performance. This therefore seems to be an important learning style to be aware of and nurture in regards to teaching practices and assessment.

The converging learning style allows individuals to be practical and technical. Kolb et al. (2001) suggests this learning style is suited to experimentation around new ideas which, from the sports science perspective, is extremely important for students to undertake. This is because at Exeter all our teaching takes place within a research-led environment. Research within the department is primarily focused on experimentation within the laboratory setting and practical skills are an important feature in becoming specialised in an area of sports science. From year one, we teach our students to become competent researchers and provide an opportunity in the third year for them to take part in their own research project.

The accommodator learning style is related to individuals relying on others for information. Hands-on experience is important in this learning style, and includes learning by trial and error. There are
parts of this learning style that are applicable, and also important, to a course that can involve group interaction and learning to work as a team. This is important in careers focused around sport and health, as often these jobs are heavily reliant on teams of specialists gaining advice from each other to support athletes and/or patients.

The idea of learning styles and the importance of these styles in relation to teaching is interesting as Felder (1996) suggested that student success could be affected by their own and their lecturers’ learning styles. Therefore, should we as educators be:

1) Teaching to our own learning style strengths as this may be the best way to present material if the lecturer is confident in this application?

2) Teaching to the learning style most suited to the university subject providing learning tools that favour the careers that are often followed after the specific university degree?

3) Including all learning styles into taught sessions to allow a well-rounded learning experience?

Although certain subjects at university can be linked closely with one particular style of learning, sports science may benefit from all sides of the learning style spectrum. Anderson and Adams (1992) made an important suggestion that exposing students to all learning styles can be part of the learning process in itself and allows the student to become more exposed to the different ways of understanding meaning. This is also in agreement with Coffield et al. (2004) who suggest that students who continually engage in only their preferred way of learning may self-limit their behaviour and not allow growth to undertake and experience new learning styles. When considering the sport and health sciences, it is also important to reflect on the diversity of careers that can be followed and consider that perhaps all learning styles are important for a well-rounded learning experience. I think it is the educator’s responsibility to provide a range of material and learning environments to not only allow all students to learn productively but to perhaps challenge the students to widen their learning styles and improve in the way they understand meaning and knowledge.

Including all learning styles in teaching practice seems to be important, as Peters, Jones and Peters (2008) suggest that learning styles can change throughout the undergraduate experience. It is perhaps also difficult to categorise an individual into a learning style domain so distinctly. As Kolb (1984) pointed out, learning styles are complex; the rules that fit for certain domains are sometimes broken depending on the situation and the individual’s experiences and background. Thus, certain individuals may prefer to learn in a particular way depending on the situation they are in. Peters et al. (2008) used the Perceptual Learning-Style Preference Questionnaire (PLSPQ), which assesses learning styles based on visual, auditory, kinaesthetic, tactile and group work, and individual ways of preferring to learn (Reid 1987; cited in Peters et al. 2008), to assess the learning styles of students who study sport related subjects at university. The results showed a preference towards learning through listening to lecturer’s instructions (auditory), when they are doing things in the session (kinaesthetic) and group work. Whilst sports modules do in fact often focus around these aspects of learning (Peters et al. 2008), Garner (2000) suggests assignment of an individual student to a particular learning style should not be taken literally, suggesting that an ability to provide a teaching
environment which caters for all learning styles is preferred. Table 1 highlights how I have attempted to accommodate different learning styles in my teaching practice.

<table>
<thead>
<tr>
<th>Learning style</th>
<th>Situations from taught Sport and Exercise Science module to aid this learning style</th>
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<tbody>
<tr>
<td>Diverger</td>
<td><strong>Nutrition:</strong> Laboratory situation focused on a group of students working together to complete a nutritional task. All members of the group must contribute to designing a presentation based on a particular diet. The group must listen to other group's presentations and ask questions relating to their talk.</td>
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<td></td>
<td><strong>Statistics:</strong> Revision and completion of statistics exam. The questions encourage individuals to draw on statistical theory in arriving at conclusions on how to apply certain statistical tests to certain situations. There is need for an understanding of the content which will then allow a clear objective answer.</td>
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<tr>
<td>Assimilator</td>
<td><strong>Nutrition:</strong> Laboratory situation where a group of students had to complete an experiment involving exercising, collecting physiological data and food preparation. Communication, planning, health and safety, and attention to detail are paramount.</td>
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<tr>
<td>Converger</td>
<td><strong>Statistics:</strong> Seminars. The lecturer moves round the seminar room and answers individual questions after allowing the students to attempt a question at a time from a worksheet. The teacher provides a lot of feedback and help and it is often aimed at one-to-one teaching.</td>
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<td>Accommodator</td>
<td><strong>Statistics:</strong> Seminars. The lecturer moves round the seminar room and answers individual questions after allowing the students to attempt a question at a time from a worksheet. The teacher provides a lot of feedback and help and it is often aimed at one-to-one teaching.</td>
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Table 1. Adapted from Kolb (1984) and Anderson and Adams (1992).

Another area that I wanted to develop was the idea of students reflecting on how they learn. I decided to shift the emphasis onto the two credit bearing modules I run: statistics and employability. After a feedback workshop at the higher education conference held at the University of Exeter, I was shown a sheet that students in different subjects had to fill in. I then thought this could be introduced into my modules as a form of reflective practice to enhance student’s awareness of approaches to learning. Based on ideas from Zubizarreta (2009) and the reflective cycle of Gibbs (1988) I put together a series of questions to help students reflect on their particular modules:

1. What did you learn in the seminar? *(Description)*

2. How would you describe the learning that you did? Did you listen to the lecturer? Did you learn by doing a task? Did you do group work? *(Feelings)*

3. Did you enjoy/benefit from this type of learning? *(Evaluation)*

4. Why did you learn this information? How does it link in with the module and the learning outcomes? *(Analysis)*
5. If you had a choice, how would you like to learn more information from this seminar? Could your learning be improved in some way? (Conclusion)

6. What are you going to do to improve your knowledge of this subject? Have you completed the learning for this session or are you going to do more? (Action plan)

After discussion with a colleague who teaches reflective practices as part of psychology, we decided I could introduce this questionnaire at the start of the module and ask students to use it as and when they felt necessary after seminars as an independent learning task. This could be monitored by me and reminders could be given at certain times during the module. The idea of a reflective learning portfolio is not new as Zubizarreta (2009) from Columbia College, USA developed a journal that allowed students to reflect on their learning.

It is important to realise that Kolb (1984) suggests reflection is a learning style in itself and so some students may find this task easier than others (Higher Education Academy (HEA 2007). However, as reflection is now a key part of higher education and is aimed at encouraging the student to take responsibility for their own learning (HEA 2007), it is something to be encouraged. It is important also to mention that for individuals to become accredited to the British Association and Sport and Exercise Sciences (BASES), the recognised institution that allows the practice of sport and exercise sciences, students must undertake supervised experience that includes reflective articles and assignments to help facilitate learning from previous experiences (BASES 2012).

Sternberg and Zhang (2001) state that educators who have an awareness of learning styles may be more sensitive to the diversity in a cohort and could benefit from more objectivity when assessing a module. All four learning styles as described by Kolb (1984) have a role to play in educating sports and exercise students, so (i) developing ways of exposing all students to all learning styles, and (ii) encouraging the use of reflection on learning style by students as a learning method itself, both seem important and are things I want to develop and try in my teaching.

Deep and surface learning

Lizzio et al. (2002) reported that good lecturing can influence student achievement, suggesting emphasis should not always be on what grades students gained prior to university. This is coupled with the notion outlined in Harlen and James (1997), who explain that students will engage most effectively in deep learning and create an enhanced understanding of knowledge when the lecturer has a thorough and deep understanding of the topic themselves.

All too often students are shown past papers that consist of multiple choice questions and short answers to which bullet pointing will gain marks. Biggs (1996) argues that this assessment of teaching can potentially allow the student to not need a deep engagement in the topic. It is about remembering facts and engaging in surface learning. Deep and surface learning has been evaluated by Hay (2007) describing deep learning as gaining new knowledge from previous experience and being able to apply this knowledge and certain principles in different contexts. Surface learning on the other hand is knowledge which is only gained short term and lacks transferability.
Biggs (1996) reports a student teacher who confessed that they did not allow their students to learn independently because they (the teacher) planned all activities and created too many specific tests. The result of trying hard to make the students learn was that the students became passive, creating a perfect environment for fact learning and regurgitation.

Constructive alignment (Biggs and Tang 2003) is vital in module development. Specifically, the intended learning outcomes, teaching activities and assessment are aligned with each other. Taking the first year module on statistics in sport science, the main learning outcomes state that the students must:

1) Understand statistical terminology
2) Be able to use SPSS to run basic statistical tests
3) Understand the role of statistics in research in exercise and sport science

The first outcome, ‘to understand terminology’, is assessed by a multiple choice exam. Although this is an efficient way of measuring students’ learning, it really only demonstrates surface learning or in Bloom’s taxonomy (1956), the lowest level of cognitive activity, ‘knowledge’. Choosing the most appropriate answer for a question does not demonstrate an application of knowledge to different scenarios or demonstrate an explanation regarding the statistical theories or terms to an appropriate level. Biggs and Tang (2003) suggests the use of the word ‘understand’ in this context is inadequate due to the scope for potential misinterpretation and also the fear that surface learning may be adequate enough to fulfil that outcome.

The second outcome (be able to use SPSS to run basic statistical tests) is addressed in the seminar sessions during the statistics module. Students use statistical software to analyse data over the course of around 8 weeks and get a great amount of practice completing these tests. This however, is not a summative assessment and the lecturer has no official grading on who can successfully run certain tests.

The third point (understand the role of statistics in research in exercise and sport science) is one of the most important learning outcomes for the module and yet I can do more to assess this adequately. There needs to be more opportunity for the students to explain and evaluate the importance of certain statistical tests in their discipline.

With these issues coming to the forefront as I research into deep and surface learning, I have suggested a change in the learning outcomes for this statistics module. According to Bloom’s (1956) taxonomy, a hierarchy of levels are displayed when considering what learning outcomes the students are going to achieve. For a deeper understanding of the content and meaning of statistics I will change the learning outcomes to:

1. Explain statistical terminology
2. Evaluate the role of statistics in research in exercise and sport science

For these learning outcomes to be constructively aligned to the assessment, the assessment would then need to be changed which is discussed later.

The lectures and practical seminars are vital for development of deep learning in this module. Jonassen and Ronrer-Murphy (1999) explain that students can memorise theories from the lecturer
but it is when they do something (perhaps in the lab situation) that they understand it. This is also backed up by Philips (2005) who suggested learning activities based on student engagement encourage a deeper learning and greater formation of knowledge. This is also attributed to the kinaesthetic learning style which is popular in students studying sport (Peters et al. 2008) and often demonstrated in active laboratories learning new techniques, running nutritional, physiological and biomechanical experiments and during seminars where students must take on the role of the psychologist in debates about certain theories. Along this theme, students acting as tutors and tutees in certain situations is something I started to implement in my year 1 statistics seminars in relation to social constructivism (Palinscar 1998). This theory focuses on how social interaction and cultural processes can drive cognitive processes. If social interaction and group activity is encouraged in a meaningful way, students may develop a deeper understanding of the meaning of the task they are involved with. This is in conjunction with the idea of trying to enable students to gain a greater understanding of concepts and not allow them to be passive receivers of information from the module ‘expert’. When I have described a statistics concept to a student, they must then explain it to the next student who is struggling with the concept and so on and so forth. The students exchange in dialogue may help the theory to be learned. Another practice I implemented was to engage the students in the data collection that was going to be analysed as part of their seminar. They instantly had an interest in what significant findings they may come across which actually encouraged the students to run the statistics themselves so they could understand the data. This was the most effective way of engaging the students.

A coursework element to the statistics module was discussed with students who agreed this was a good idea to incorporate the computer analysis into assessment, therefore aligning learning outcome 2 (be able to use SPSS to run basic statistical tests) to an assessment. Continual assessment can encourage practical application of statistical theory (Edward and Thatcher 2006) and if this was assessed, students would be able to demonstrate a deeper understanding in the statistical analysis of data which would address learning outcome 3. Statistics coursework is a better way of applying knowledge to real situations and ultimately encourages deep learning rather than retention of facts to be put down on paper during an exam (Edward and Thatcher 2006). However, the issue here is that in most of the other modules in sport and health science, this is exactly how the coursework is structured, often to prepare students for their third year project (HEA 2007b). So, learning outcome 3 could be formatively assessed and a change in exam structure could allow marks for explaining the importance of statistics with short answers. Another idea for deep learning which was discussed with a colleague ties in with the notion of group interaction which is also aligned with the social constructivist theory presented by Palinscar (1998). If social interaction and group activity is encouraged in a meaningful way, students may develop a deeper understanding of the meaning of the task they are involved with. As part of the third year employability module, students will be in charge of running an entire lecture on their own which will address some of the main learning outcomes of the module. They are encouraged to plan together and discuss ideas to help formulate the lecture they will run as a group.

An important point to note here is gained from Coffield et al. (2004) who suggest that sectioning deep and surface learning in two separate categories is not necessarily correct. To try and move away from conventional summative assessments where surface learning may easily take place, the authors suggest an individual can take part in both surface and deep learning and still be a well-rounded and knowledgeable student. They also suggest that specific demands of subjects and
modules may benefit from a mixture of assessments that test both surface and deeper learning. I think we just need to make sure we try and get the balance right.

Conclusion

Here, I have outlined some ways of showing respect for different ways of thinking in appreciating learning styles through teaching practice. I will continue to improve this aspect further in my own teaching and try to encourage students to become more aware of these styles through reflective methods. I have implemented plans to encourage independent and critical thinking through allowing the students to engage more in the process of learning and teaching rather than as a passive receiver of knowledge. This will be fully demonstrated in the implementation of the lecture taken by students. Re-evaluation of the assessment methods in statistics to make this more constructively aligned with the learning outcomes for this module will be discussed further with my director of education to implement. I have finally become more aware of my strengths and weaknesses in teaching and I will continue to explore my academic identity which will improve my confidence to encourage an effective learning environment for the students I teach.

References


Quality Assurance Agency. UK QAA. [http://www.qaa.ac.uk/AboutUs/Pages/default.aspx](http://www.qaa.ac.uk/AboutUs/Pages/default.aspx)


[http://www.uwstout.edu/soe/profdev/resources/upload/LearningPortfolio_000.pdf](http://www.uwstout.edu/soe/profdev/resources/upload/LearningPortfolio_000.pdf)