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POSTGRADUATE CERTIFICATE IN TEACHING IN HIGHER EDUCATION

Cylch Dygwyd 3 | Teaching Cycle 3

Teaching to Promote Deep Learning and Critical Thinking

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Teaching cycle 3

Teaching to Promote Deep Learning and Critical Thinking

1. Introduction and Needs Assessment:

1.1. Brief Overview of Situation:

This report will introduce, describe and evaluate a teaching intervention carried out as part of a taught undergraduate module. The module ‘Sport and Exercise Psychology’ was a 20 credit second year undergraduate module taught over one semester. There were approximately 70 students enrolled on the module, with the taught components comprising of two 50 minute lectures and a 50 minute seminar per week. I had taught on the module for two years prior to the cycle and therefore had a good grasp of the material covered and the typical level of knowledge of students at this stage of the undergraduate degree.

1.2. Needs Assessment – what needs developing?

The rationale for this teaching intervention was to develop critical thinking and deep learning by employing a different approach to teaching than has been used previously in this module. This would also involve spending more time on this topic discussing the subject matter than what is allocated for in others in an attempt to promote deep learning and to help students to prepare for the examination. The examination in this module is different to the usual format of an examination, where students are asked to write the discussion for a research article which they are presented with in the exam, minus the abstract and discussion sections. In previous years, I have noticed that students find preparing for this exam anxiety provoking as for the majority, it is not the type of exam they have experienced before.

Whilst teaching on this module in previous years, it had become evident that this was a challenging task for the students at this stage of the degree. There are a number of topics included in this module (both sport and exercise psychology), which in some previous cases have resulted in surface learning because of the amount of information, thus there was a clear need to promote deep learning approaches. Because of the nature of the module exam, critical
thinking is paramount for this assessment and therefore the promotion of critical thinking, how to engage in it and how to employ it in the exam was required. From previous experiences, students found this exam hard to prepare for and anxiety provoking. Thus, there was a need to provide opportunities for students' to engage in tasks and activities that aided preparation for the exam and allowing them to identify what the exam requirements were. This was also intended to provide students’ experience of critical thinking and exam style activities that are designed to alleviate negative emotions related to this style of examination.

1.3. Previous Literature

Different approaches are taken to teaching in University and this may differ depending on the type of class, discipline or material covered. Traditionally, teaching in the sciences takes a deductive approach, where relevant theory is taught and text-book exercises may be used before introducing real-world applications (Prince & Felder, 2007). This real-world application appears to be of high importance. For example, Kardash and Wallace (2001) report that students who fail to connect the real world with course content can leave the sciences. Employing inductive teaching approaches has been suggested to be a more appropriate way of motivating students. Using this approach students are presented with specific challenges or complex real-world problems to solve, which students may grapple with, recognizing the need for skills, facts and conceptual understanding, whilst the teacher provides support for the students to tackle a problem and learn on their own (Prince & Felder, 2007). It has also been suggested that inductive teaching approaches encourage deep learning and that challenges presented as part of inductive methods act as stimulators for intellectual development (Felder & Brent, 2004).

There are a variety of inductive teaching methods such as problem-based learning and inquiry-based learning. The commonality of inductive teaching methods is that a challenge is presented to students and through this they learn what to address in order to solve the challenge. They may differ however in terms of time scale, such as a single lecture or a series of classes or the degree of support available from the teacher (Prince & Felder, 2007). Problem-based learning is one such method which is a common teaching technique in the sciences and is extensively used in medical and health-related disciplines (Savin-Baden &
Major, 2004). There are many benefits of problem-based learning, for example, Dochy et al. (2003) demonstrated that students are more likely to retain knowledge for longer periods when problem-based learning techniques are used as opposed to conventional teaching methods. Problem-Based Learning is a student centred approach that is based on active learning (Colliver, 2000), that promotes knowledge and understanding through using problem cases or scenarios (Wood, 2003) and allows students to develop knowledge through peer group discussions and self directed learning (Hmelo-Silver, 2004).

Prince and Felder (2006) also suggest that problem-based learning can be an effective method to develop problem solving skills, conceptual understanding, ability to apply meta-cognitive and reasoning strategies, teamwork skills and to improve class attendance.

1.4. The key aims of the teaching cycle were:

(i) To use an inductive teaching approach.
(ii) To promote critical thinking and deep learning.
(iii) To provide opportunities to allow students to prepare for the examination.
(iv) To use problem-based learning.

2. Planning and justifying an intervention:

2.1. Summary of design of the teaching cycle:

The teaching cycle was designed to develop critical thinking and deep learning. There was an increased amount of contact time with students allocated to this specific topic which involved teacher-led activities, reinforcement of the subject material, followed by student participation in sessions and embedded learning activities. The intention of using an inductive teaching approach was to allow students to make the links between the real life situations and challenges presented and theory. Furthermore, employing inductive teaching approaches has been demonstrated to encourage deep learning (Felder & Brent, 2004).
The teaching cycle was also intended to aid students’ preparation for the exam using specific activities relating to the requirements of the module exam. The rationale for this teaching cycle was that employing problem-based learning approaches and reinforcement through increased contact time between student and lecturer would not only promote deep learning but allow student to engage more with the material and the problem-based learning activities designed as part of the cycle, would aid preparation for the exam.

In essence, this cycle also provides students with an opportunity to develop skills and knowledge that may not emerge whilst teaching from a deductive teaching approach and may therefore go above and beyond the initial aims of the intervention.

3. Log of Intervention:
The amount of time allocated for the majority of taught content of this module is 1-2 hours of lectures with a one hour seminar. The teaching cycle consisted of two hours of lectures, a one hour workshop and two hours of seminars. The psychosocial aspects of obesity was the final topic covered in the module which gave me the opportunity to design specific activities to aid deep learning of the subject material and opportunities to develop critical thinking that would aid revision preparation and increase knowledge and understanding of how to successfully take the module examination. Having taught on the module previously, it was evident that there is a lot of information and topics covered on the module and it was a different type of examination to the usual format, both of which were the cause of anxiety (based on student feedback in previous years). I also saw this topic as an ideal opportunity to engage students with the material by employing problem-based learning to develop knowledge, application and crucially enhance deep learning and critical thinking. Obesity is a major global challenge and therefore this topic presented an ideal opportunity to design problem-based learning by identifying real life scenarios and presenting real life experiences.

In previous years, students had demonstrated relatively little knowledge of the psychosocial aspects of obesity at this point of the degree, as this had not been a topic which had received much attention in previous modules. As a result, whilst teaching this topic it was essential to provide background information about the condition, such as the current prevalence of
obesity in the UK. Lectures in this module have been presented using a deductive approach and therefore given the potential motivational benefits of an inductive approach I used this teaching approach. This involved allowing students to work on activities, presenting challenges or problems to be solved, and, allowing students to work on their own or in small groups to come up with appropriate responses.

Lecture 1: Establishing the problem

The first lecture was presented in the conventional fashion, but with an emphasis on the problem and the challenges associated with obesity and how this relates to psychology. An overall challenge for students to contemplate throughout the series of classes on this topic and that was introduced to them in this initial lecture was to consider how they might intervene as sport and exercise psychologists with this major health challenge. As part of this lecture I presented students with the problems associated with obesity and asking students to work in pairs to them consider a number of key questions such as how a negative body image may influence other areas of life.

Lecture 2: Discussing the problem

At the beginning of this lecture, students were asked to recall the material covered in the previous lecture to reinforce the learning that had previously occurred. The second lecture continued the theme making links to potential causes of the condition and providing relevant to real life examples of how the environment is designed to promote a sedentary lifestyle and how advances in technology and transport are potential causes of physical inactivity. Students again worked in pairs to discuss the challenges presented to them and were asked to make links to the previous lecture material. The real life examples used were up to date, such as the new form of computer gaming that has transformed the traditionally sedentary behaviour to a more active experience.
Workshop: Dealing with the problem

The final lecture session was conducted as a workshop, with a variety of group activities based on the information provided in the lectures and seminars and from the recommended reading that provided evidence for the links made during the lectures, to suggest strategies of how to intervene with obesity, linking theory with application. The reading was also included for students to identify the structure used in the discussion section of a research article and how theory can be applied to real life settings. In addition to the group activities, I presented students with examples of obesity interventions in other countries and asked them to consider the strengths and limitations of those interventions and consider the potential application to the challenges of the UK obesity epidemic. Whilst students worked in small groups, this enabled me to facilitate group discussions.

Seminars 1 and 2: Exam preparation

In the first seminar students worked in groups on a research paper minus the abstract and discussion to replicate the module exam. Students were asked to identify essential criteria that would be used to construct a discussion using the research article and record their answers on a flipchart A1 piece of paper, before presenting their findings to the rest of the class. For example, suggesting how the research studies relate to key theories identified in the module, the practical implications of the research findings and the strengths and the limitations of the study, to promote critical thinking about the study and the methods employed.

The second seminar was also based on a research article, which was provided to students to read prior to the session. Students were split into two groups for the class and asked to argue either for or against the study, highlighting both positives and negatives, creating a class debate. The aim of the debate was to develop critical thinking by discussing positives and negatives of the research and to provide students with opportunities to demonstrate knowledge and understanding of the material discussed in the lectures and workshop, by incorporating them in their responses as part of the debate.
4. Evaluation and Reflection:

4.1. Student Feedback Received:

An evaluation sheet (Appendix 8) was designed to gather student feedback about the teaching cycle activities and understanding comprising of six questions:

1. How much did you enjoy studying the topic?
2. Do you think you have a good understanding of the topic and the material covered?
3. Do you think the more time spent on this topic than others on the module, aided your understanding of the material?
4. Do you feel that the activities as part of the lectures and seminars have increased your awareness of the exam?
5. Do you feel more prepared for the exam as a result of the lectures and seminars?
6. What would you change if you were studying the topic again, if anything?

I was keen to gauge the students’ perceptions of the topic and their perceptions of the different teaching approach to the format used previously in this module. The first five questions used were designed to collect quantitative responses using a Likert-type response scale (1 = low and 10 high). The sixth question was included to gather more detailed qualitative responses using an open ended question about what they may change to the topic and therefore teaching cycle if they were to study it again, with the intention of using the information for future design of this topic. Student feedback was good overall with a mean score of 8.4 for how much they enjoyed the topic (figure 3). Students tended to think they had a better understanding of the topic and the material covered (M = 8.53), that the more time spent on the topic aided their understanding of the material (M = 8.33), felt the activities included in the lectures and seminars increased their awareness of the exam (M = 8.93), felt more prepared for the exam as a result of the lectures and seminars (M = 9.07).
Qualitative feedback using question 6 was limited which I believe was a result of the positive feedback. For example “Nothing, it was really good”. There was only one suggestion of how to improve the teaching cycle: “more theory based to help with understanding”. I believe as part of the teaching cycle I made the links to theory clear and provided plenty of opportunities for students to ask questions or clarify links. This was demonstrated in the small focus group discussion that I conducted after this teaching cycle with 4 female students to complement the evaluation form results. I asked five questions about the cycle:

1. How did you feel about the exam prior to the lectures and seminars about obesity and exam preparation?
2. In what ways do you feel the classes have helped you to prepare for the exam?
3. How do you think these classes have differed to the others as part of this module?
4. Do you feel you are able to make links between the aspects covered in these classes with other topics in this module?
5. Do you have any other comments you have about the classes?

The students’ responses were very positive and encouraging. In response to question 1, one student responded “I felt very anxious about the exam, as I didn’t know what to expect and that was probably the reasons I was anxious, because I didn’t know what to expect” and
another student said “I was concerned that there is so much information to remember for the exam because of the amount of topics in the module”. One student said that they feel “the classes have helped them prepare for the exam as I didn’t really understand what I was required to do in the exam” and another responded “the classes were useful as you gave plenty of examples of how the information may be useful in the exam and linked the material to the exam in both lectures and seminars”. The only responses to question three that were offered by students were that there was more contact time between teacher and students on this topic in comparison to other topics, however, when I asked question 5, one student mentioned that “I found myself making the links to theory before it was covered in the class and I even offered an answer which I don’t usually do in lectures”. The students’ responses were very encouraging for question 4, answering “I feel better about the exam because of the links I can make between topics and feel approaching the exam will be easier as a result”, and another student said “I was chatting with two of the others the other day and we were saying that some of the links we discussed we had not realised before, but maybe the exam won’t be as hard”.

4.2. Personal Reflections:
I believe this was a very useful teaching cycle given the feedback received from the students. This is an exam that I have noted in previous years as being stressful for students due to the different format from what is conventionally used. Feedback suggests that the teaching cycle has gone some way to alleviating some of the negative feelings associated with this exam and replaced them with more positive perceptions that the exam was less of a threat. I also feel that students demonstrated a good deal of interest and enjoyment in studying this topic and the activities I have designed for both lectures and seminars. This was reflected not only in the focus group and evaluation forms, but I felt this was evident from the engagement students demonstrated with those activities and the greater response when employing a question and answer technique, where a good understanding was demonstrated and links to theory were being made prior to my discussion of the relevant theories. As discussed in teaching cycle 2, interest and enjoyment are proposed to be central emotions in intrinsic motivation (Deci & Ryan, 1985) and therefore this teaching approach may have also increased intrinsic motivation.
Students also demonstrated a high level of knowledge and understanding of the topic and how to link theory with real life situations. In group discussions as part of lectures and from the seminar activities, students demonstrated an ability to critically think about how studies are conducted identifying the limitations of using certain methods of data collection and to compare and contrast research and theory relevant when discussing research findings. I believe that as a result, deep learning and development of critical thinking was achieved through employing an inductive teaching approach. This teaching approach allowed students to make the links between the real life challenges and theory, whereas with a deductive approach those links would have been established by the educator.

Because the final session of the teaching cycle was late in the semester, the number of students who attended the seminar was low and therefore the amount of feedback forms I received was less than I would have liked. This may have affected the results I gained as the number was less than half of the class, however, the scores were very good for all students with only one 7 out of 10 scored for any of the questions on the evaluation sheet. All of the other responses were between 8 and 10 out of 10, which I believe was very encouraging and demonstrates the usefulness of this teaching intervention.

5. Implications
As a result of the positive student feedback, I believe that there are a number of potential implications for my future teaching. By employing an inductive approach, this appeared to enable students to learn topics and make links to knowledge already gained. This being said that knowledge and information needs to be available, and therefore, using both deductive and inductive approaches might be more useful. Thus, in the earlier stages of learning it might be worth taking a deductive approach, using the conventional lecture format, and in later sessions, when information needs to be reinforced and the development of critical thinking is required, it would be worth using an inductive approach, using techniques such as problem-based learning. Where possible, using both approaches may also facilitate learning, for example, by using the first half of a two hour lecture in a deductive manner to provide that information and inductive for the second half giving real-life examples and challenges for students to solve.