The Use of Case Study Teaching To Promote Autonomous Learning

Background and Rationale

Learning becomes more effective, when students are actively involved in the learning process (Bonwell and Eison, 1991; Sivan et al., 2001). The case-study approach to teaching is a way in which active learning strategies can be implemented. There are a number of definitions for the term case-study, for example Fry et al. (1999) describe case studies as complex examples which give an insight into the context of a problem as well as illustrating the main point. Most importantly, case studies are student-centred activities based on topics that demonstrate theoretical concepts in an applied setting; the student-centered approach is emphasized in the University of Wales, Institute Cardiff (UWIC) strategic plan. The structure and format of case-study learning can be likened to project-based learning as described by Savin-Baden (2003). The case-study approach differs from the problem-based learning approach in that larger numbers of students can engage in the process at one time, which is appropriate for UWIC as classes at undergraduate level are growing rapidly. The students also get more guidance in case-study learning compared to problem-based learning as the learning outcomes are clearly set out, and the process is supervised and often supported by lectures.

Sport and Exercise Science is ideal for using case-study teaching because of the wealth of practical, real-life examples that can be used to contextualise the theoretical concepts. Educational research has shown case studies to be useful pedagogical tools. Grant (1997) describes the benefits of using case studies as an interactive learning strategy, shifting the emphasis from teacher-centred to more student-centred activities. Case studies have also been linked with increased student motivation and interest in a subject (Mustoe and Croft, 1999). Nationally and in the Cardiff School of Sport (CSS), students are becoming more assessment
driven and less likely to learn for the sake of learning, case-study teaching is student-centred and will promote autonomous learning. Additionally students need to be exposed to a range of teaching and learning strategies and this is one such effective process, case-study teaching allows the gap between theory and practice to be bridged by the demonstration of the application of theoretical concepts. It therefore provides an opportunity for the development of transferable key skills such as communication, group-work, information gathering and analysis, problem-solving, time-management, presentation skills and increases the students’ enjoyment of the topic and hence their desire to learn. The student will 'learn to learn' and will be able to apply their knowledge to real life situations they might come across once they start working. This supports the aim of the current UWIC Learning and Teaching strategy focus to “Enhance the employability and lifelong learning skills of the UWIC graduate”. Case-study teaching encourages students to share knowledge and information through group work and discussions, which links in with the second aim of the UWIC Learning and Teaching strategy focus “To provide a supportive and effective learning environment for an increasingly diverse student population.” Furthermore, case-study teaching fits in with the strategy of the CSS where there is an emphasis on developing innovative Learning and Teaching strategies.

The Innovation

The project aimed to promote autonomous learning through the implementation and evaluation of case-study teaching in a 1st year Sport and Exercise Science module. During the first year of the project six case studies were written that supported the learning outcomes of the module. During the second year of the project the module was taught through these case studies during both the lead lectures (once a week) and the tutorials (every other week).

The use of group work during tutorials facilitates the acquisition of knowledge and several other desirable attributes, such as communication skills, teamwork, problem solving, independent responsibility for learning, sharing information, and respect for others. Case-study teaching can therefore be thought of as a small group teaching method (that can also take place within a large lecture theatre with a large group of students) that combines the acquisition of knowledge with the development of generic skills and attitudes.

At the start of the module students were divided into teams (~5 students / team). Students worked within the same team throughout the module. Tutorial groups were made up of groups of 4-5 teams of students and a tutor that facilitated the session. Case studies were discussed during all tutorials and, where appropriate, during lead lectures. Students sat within their teams during all the lead lectures and tutorials. To ensure that students worked effectively within the small teams a peer evaluation was put into place according to a model used at University of Buffalo.

The module assessment consisted of individual and team course work as well as individual and team class tests. Student marks were determined by scores in three performance areas: individual performance, team performance and peer evaluation. The individual work constituted 75%, and the team performance constituted 25%, of the total module mark. The team performance mark was modified by the peer evaluation. For the peer evaluation each individual (anonymously) rated their team members at the end of the module. Individual peer evaluation scores were the average of the points they received from their team members. If there were five members in the team, each individual assigned 40 points among their four team members. If a student received an average of 10 points, then he received all of the possible marks of the team. If he received an average of 9, he received only 90% of the possible team mark. Additional directions given were that students should only assign equal points if all members contributed equally to the group work, and that they could allocate a maximal of 15 points. Students did not
have to distribute all points if they felt this was unwarranted. Students had to give reasons for giving someone more or less than 10 points, and also had to write down what they thought they deserved themselves and why.

Group work has been shown to benefit learning in terms of information retention (Prince, 2004). Students also become more articulate in expressing ideas and appreciate different viewpoints when compared to the traditional lecture method. In terms of employability, most jobs today depend on good interpersonal skills, students need to experience working in teams in class to improve these skills. One thing that is vital when making use of group work is that each team set rules that they will follow, they draw up a contract and all members sign it. All members of the team also set sanctions or penalties for those people that break the rules. Teams revisit these rules and revise them after the first few weeks of the module. The process of rule development along with the peer evaluations is necessary for good team work to take place.

**Evaluation**

The module was evaluated by the students through a structured questionnaire. The questionnaire was developed through adapting existing validated questionnaires such as the versions of the course evaluation and course rating questionnaires by the Institute for Transforming Undergraduate Education (University of Delaware, 1999). Series of closed questions were used to extract information about: ‘working in groups’ (number of questions related to this theme [NOQ]: 10), ‘transferable skills developed during the module’ (NOQ: 6), ‘learning outcomes of the module’ (NOQ: 8), ‘ability of the lecturers’ (NOQ: 6), ‘the learning process’ (NOQ: 2), ‘problem solving abilities’ (NOQ: 1), ‘lectures and tutorial content’ (NOQ: 2), ‘appropriateness of the assessments’ (NOQ: 1), ‘effort required’ (NOQ: 1), ‘amount learnt in this module compared to other modules’ (NOQ: 1), and the ‘quality of the module’ (NOQ: 1). The closed questions were scored on a 5-point scale (5 = strongly agree, 4 = agree, 3 = neither agree nor disagree, 2 = disagree, 1 = strongly disagree). Six open questions enquired about which aspect(s) of the module contributed most to learning, whether the module made a difference in other academic or social situations, how many hours were spend on the module, whether the student benefited from the process of investigating and discussing problems, changes that should be made to improve the module, and any problems that were encountered during the module. These evaluations were compared to the student evaluations of the same module taught in a more traditional way in the previous year, therefore involving a different cohort. This ensured that the effectiveness of the case-study method was checked and compared to the traditional methods of teaching in terms of key skills and autonomous learning, rather than following a cohort of students, who might have matured in terms of ‘learning to learn’ ability.

A significant difference was observed between groups for the ‘working in group’ scale. The group taught through traditional methods (TM) reported lower (34.3 ±5.0) levels of satisfaction with their ability to work in groups than the intervention group (CSM) (40.4 ±3.8, p <0.001). The case-study teaching method therefore alters the way the students perceive their ability to work in groups and how beneficial they found working in groups to their ability to learn.

The intervention group felt that more transferable skills were gained during the module (CSM: 22.1 ±2.5; TM: 18.9 ±2.1, p <0.001). These transferable skills were also mentioned in the open questions, where numerous students on the module taught through the case-study approach mentioned having ‘learnt to find information’ as an aspect that contributed most to their learning and their ‘ability to reference correctly’ made a difference in other modules followed.

Both groups agreed that the learning outcomes of the module had been met (TM: 3.3 ±3.0; CSM: 3.8 ±3.0; p =0.32). The lack of difference between the groups on this aspect of the questionnaire demonstrates that the case-study method can achieve both improved student interaction and
cover content. This finding argues against previous concerns about the ability of the case-study method to cover content and achieve learning outcomes compared to traditional teaching methods, it must be remembered that covering content is not the same thing as learning. This ties in with significant difference that was observed between groups for the questions related to the ‘learning process’ (CSM: 7.1 ±1.1; TM: 6.3 ±1.1; p <0.001). Specifically students felt more able to work independently, using effective planning and time management skills, and were better at evaluating their own performance through self-appraisal and reflection. The intervention group rated the questions related to the ‘ability of the lecturers’ significantly higher than the traditional group (CSM: 23.5 ±2.4; TM: 21.3 ±2.5; p <0.001). The teaching staff on the module was almost the same for both teaching methods. The increased interaction between staff and students is therefore the most probable explanation for this finding.

The intervention group scored significantly higher than the traditional group on the question related to the amount of effort that was required for the module compared to other modules (CSM: 3.5 ±0.8; TM: 3.0 ±0.9; p <0.001). Working in smaller groups might have led to an increased feeling of responsibility towards others in the team to do the set tasks, and therefore a sense of increased effort.

The intervention group rated the quality of the module as a whole significantly higher (CSM: 4.0 ±0.6; TM: 3.5 ±0.8; p <0.01) and also felt they learnt more on this module compared to other modules than the traditional taught group (CSM: 3.3 ±0.8; TM: 2.5 ±1.1; p <0.001). ‘Lectures and seminar content’ (CSM: 7.6 ±1.2; TM: 6.6 ±1.4; p <0.001) and ‘appropriateness of the assessment’ (CSM: 3.9 ±0.7; TM: 3.5 ±0.7; p <0.001) were also scored higher by the intervention group. The use of case studies in the module led to students rating their ability to solve problems effectively and efficiently higher, than those students who followed the traditionally taught module (CSM: 3.7 ±0.6; TM: 3.1 ±0.8; p <0.001). The learning outcomes and the assessment were however, the same for both groups of students. The case-study method allows the learner to seek their own learning method. Instead of sitting and listening, the student is required to find the information that is required to solve the case. Group work also encourages the students to report their findings to the rest of the team. Discussion often takes place within the team allowing the information to be repeated in several different formats, thereby reinforcing the information. Johnson et al. (1991) performed a meta-analysis of over a thousand studies comparing the effectiveness of cooperative-learning strategies with the traditional lecture-based classroom. The data are unambiguous: students working in groups retain information better, like the subjects better, develop a better appreciation for a diversity of opinions, and develop better skills in self-expression. The results from the current study therefore reinforce these findings.

Benefits and Drawbacks

Attendance levels were monitored throughout the module, these were high (>90%) throughout the academic year, compared to other modules, and higher than the previous year when there was no group work or peer evaluation in place. This increased attendance could be due to several factors. Firstly, by asking students to sit in their teams during lectures and seminars, students were aware of absenteeism within their group. The team peer evaluation could be used by students to upgrade/downgrade members of their team in terms of their involvement in the team discussions and course work. Student peer evaluations during the module were found to be honest and their mark for the peer evaluation reflected their attendance. Secondly, it was easier for staff to keep an eye on attendance as it was clear during smaller group work when students were absent. Thirdly, students felt an increased sense of responsibility towards others in their team to attend the classes, as their knowledge was needed to score high on group tests. Group work also led to staff getting to know the students better, even in such a large class setting. This enabled staff, despite the large number of students on the module, to monitor attendance, ‘pick up’ on problem students, and provide improved pastoral care.

One of the objectives of the project was to enhance lecturers’ understanding of the potential of case-study teaching to promote autonomous learning. Lecturers involved in the project were
asked about their feelings towards the effectiveness of the teaching method. All staff involved with the module were enthusiastic about the teaching method. They reported the teaching experience to be more enjoyable than when they delivered the same content the previous year in the traditional teaching format, several lecturers commented on the increased levels of student engagement. Workshops were provided within the school, across UWIC and externally to disseminate the knowledge gained during the project. These workshops facilitated the further development of case-study writing and teaching within the school and UWIC.

Drawbacks of the project were the administration of the module, for example finding timetable space (adequate classrooms for the tutorial groups) and management of student numbers (increased from 60 students in the 1st year to 175 in the 2nd year and 240 in the 3rd year of the project.

**Future Developments**

A staff workshop is planned, during which staff that attended the dissemination workshops will discuss their own implementation of the case study method. It is envisaged that the feedback from staff will highlight the advantages and disadvantages of this method for teaching in different subject areas. Exchanging experiences will lead to further dissemination of this teaching method and the implementation in different teaching settings.

A follow up of the students will be made to investigate which parts, if any, of the case studies, they remember. They will also be asked which skills they felt they developed in the module and whether these were in other modules.

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**References**


