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ABSTRACT

The paper outlines the merit of using case studies in teaching, such as providing real life examples to contextualise theoretical concepts and shifting the emphasis from teacher-centred to more student-centred activities. While there are a variety of case types the material they provide is traditionally static. However, in real life, solutions are affected by changed circumstances reflecting a volatile environment. Hence, the paper reports on the approach of using a ‘living’ case where students are confronted with teacher-initiated interventions while solving the case. The specific case was that of a university deciding to make, purchase or outsource an Information Technology (IT) project for which students applied techniques taught in the unit. Interventions occurred in three stages and reflected the authentic challenges confronted by an IT professional. The paper reports on students’ reactions to the interventions they experienced at short notice, their performance in developing the project case and conclusions that can be drawn on the more sustained learning that resulted from the approach.

INTRODUCTION

Case study teaching is widely practised as it provides clear and demonstrable benefits to both the teacher and the student. For example, the teacher is able to effectively show how knowledge taught is reflected in practice while the student learns through active participation thereby satisfying the proverb of ‘involve me and I will learn’. An argument can therefore be made that case teaching provides a highly effective basis for authentic learning.

On closer examination the above premise can be challenged. Case study material is usually provided to students as a package of material, for example a description of the case, which is held constant for the duration of the study, i.e. the semester. However, in real life, solutions are affected by changed circumstances reflecting today’s volatile environment. Murray (2007) quotes Mark Rice, Dean of Babson College, as saying that, in respect of case studies, “what you are losing is the rapid fire response that managers are often confronted with in real life. Because in the real world, you don’t have 48 hours to respond – you have to be able to think quickly on your feet, aggregate a lot of information quickly, make a decision and take a position.”

Hence, the paper reports on the approach of using a ‘living’ case where students are confronted with teacher-initiated interventions while solving the case. The objective of the research was to gain insight into the student performances when confronted with such case teaching. The empirical aspects of the study were conducted by exploring the nature, challenges and outcomes of case study teaching within a post-graduate Management Information Systems (MIS) unit within the School of Management at an Australian university.

To achieve this aim, an ethnographic approach was taken that is qualitative and in context. As the approach implies, the researcher is an active participant in the program which enables him/her to have studied the phenomenon at close range. Ethnographic research is essentially phenomenological in nature and the researcher constructs a meaning in terms of the situation being studied. Hence, it falls within descriptive/interpretive research paradigm and ‘law-like’ generalisations cannot be derived

(Remenyi et al, 1998). Nevertheless, the conclusions drawn in this paper should be of interest and value to other lecturers offering or contemplating to offer case study teaching.

NATURE AND TYPES OF CASE STUDIES

Essentially case study teaching is an effective strategy “because of the wealth of practical, real life examples that can be used to contextualise the theoretical concepts” (Davis and Wilcock, 2003). It exposes the student to real life issues and problems. From a pedagogical perspective, it has been shown that case studies shift the emphasis from teacher-centred to student-centred learning (Grant, 1997) and increases student motivation and interest in the subject (Mustoe and Croft, 1999).

Lundberg et al (2001) traced case study teaching back to the 1930s and identified the key objectives during that time as carrying out analysis on information provided, conducting open discussion, and recommending appropriate action. They surmised “that the original intent of teaching cases was to enhance discussion – for appreciation, for understanding, for analysis, and for action – in the service of thinking” (p. 457). During the 1950s it became increasingly clear to them that the nature of information provided for analysis and subsequent discussions had to reflect real life situations to bring the worlds of teaching and practice together.

Savin-Baden (2003, referenced in Davis and Wilcock (2003) highlights the differences between problem-based case learning and project-based case learning and these can be summarised as shown in Table 1. As will be discussed in a later section, the approach used in this study was of the nature of project-based learning.

Table 1: Project-based and Problem-base Case Studies

Project-based Learning	Problem-Based Learning
Predominantly task orientated with activity often set by tutor	Problems usually provided by staff but what and how they learn defined by students
Tutor supervises	Tutor facilitates
Students are required to produce a solution or strategy to solve the problem	Solving the problem may be part of the process but the focus is on problem-management, not on a clear and bounded solution
May include supporting lectures which equip students to undertake activity, otherwise students expected to draw upon knowledge from previous lectures	Lectures not usually used on the basis that students are expected to define the required knowledge needed to solve the problem

Besides the above dichotomy, various types of cases can be identified according to format and/or intended learning outcomes (Lundberg et al, 2001). In this study the approach had characteristics of the following types of cases.

- It was primarily an ‘application’ case. The case “describes a situation in which students can apply some known technique. Such cases typically provide much information, but it may be highly unstructured” (Lundberg et al, 2001, p. 458). As discussed later, students were required to apply the knowledge and skill they had acquired to complete a specific project.
- There were some elements of an ‘iceberg’ case: “Students are urged to consider what additional information they might like to have and where and how they might be able to get it” (Lundberg et al, 2001, p. 458). As seen later, the information provided was inadequate and students identified additional data required to be able to complete all parts of the assignment.

Case studies involve learning of both unit content and practising key skills. Careful consideration therefore needs to be given as to how to assess these different aspects. James and McInnis (2001) distinguish between two approaches to assessment, namely “developmental (‘formative’ – concerned with students’ ongoing educational progression) and judgemental (‘summative’ – where the emphasis is on making decisions on satisfactory completion or fitness to progress to the next level)” (p. 5). They go on to observe that the boundaries between the two approaches are not clear cut and that universities have until recently given more attention to the latter than the former. Both are however, entirely legitimate in their opinion. For case studies, a more formative approach is necessary for evaluating key skills development, as different skills are demonstrated during the completion of the case, and ongoing feedback is provided to encourage students to reflect upon their learning experiences.

RESEARCH METHODOLOGY

As stated earlier, the research used a ‘living’ case approach in which students are confronted with teacher-initiated interventions while solving the case. The objective of the research was to gain insight into the student performances when confronted with such case teaching. In the following sections, the research methodology is described.

Case Material

The material was presented in the form of a project-based case study, designed to meet the criteria as set out in Table 1 above. First, students were expected to carry out three task set out for the assignment (see below) by the lecturer. Second, they had to produce specific ‘deliverables’ for each of the three parts. The lecturer exercised supervision by providing feedback and direction for each part (see role of instructor below). Furthermore, the students were taught the knowledge and skill to complete the tasks by using two methodologies, namely ‘Active Benefit Realisation’ (ABR - see Remenyi et al, 1997) and ‘Value from IT’ (VALIT – see ITGI, 2006). In addition, not mentioned in Table 1, the assignment had a normative focus (Cappel & Schwager, 2002) since the case outcome was future rather than past orientated (i.e. developing project material) and required opposing views about the problem to be expressed (e.g. evaluating alternative solutions) by different actors (i.e. students).

The case material was titled “Make, Source, or Buy: The Decision to Acquire a New Reporting System”, published by Ross et al (2006) in *Journal of Cases on Information Technology*. It outlined the needs of The College of Business (COB) of Northern Washington University (NWU) for a number of information systems. They are confronted with decision processes and options on implementing five systems. The assignment required students

“to analyse the case and provide a report (in three parts) to the Dean of COB with the following title: The Business Case for the IS investment. You should identify the issues in the case study that have relevance to a business case and produce a business case as best as possible from the information available. Use headings you deem appropriate by referring to the material (e.g. ABR, VALIT) covered in the unit. Submit your report in the following parts:

- Part 1: The “why” stage: reasons for investing in the information systems.
- Part 2: The “what” and “which” stage: identify the options available, analyse them and determine the best option.
- Part 3: The “how” stage: outline the implementation activities for the option you recommend in Part 2.

When put together the whole report should reflect a professional standard and be between 2400 and 2600 words long.”

Case Completion

The study objective, as stated earlier, was to gain insights from conducting a ‘live’ case study. Participants were students in a small (11 students) postgraduate unit in the Faculty of Business at an

Australian university. They had not experienced this before as case study assignments completed previously were static in that the case material was provided in text form and remained unchanged for the duration of the semester.

The design of completing the case study was based on the ‘cognitive’ dimensions of Henri (1992) and the ‘reflective thinking’ types of Mezirow (1991). The former includes elementary clarification, in-depth clarification, inference, judgement, and strategies while the latter is about content reflection, process reflection and premise reflection. The dimensions provided two criteria against which the learning activities (e.g. analysing, solving) in case learning were chartered as shown in Table 2. It shows how the first step in studying a case involves understanding of content which requires both elementary and in-depth clarification. This is followed by the processes of analysis and solving the problem requiring inference and judgement. Finally, premise reflection is required to recommend strategies for implementing actions for the case under review.

Table 2: Dimensions of Case Learning

Cognition /Reflection	Content	Process	Premise
Elementary clarification	Understanding ↓		
In-depth clarification	Understanding ↓		
Inference	→	Analysing ↓	
Judgement		Solving ↓	
Strategy		→	Recommending

The assignment was deliberately designed in three parts in order to increase the authenticity of student learning. **Part 1** required students to carry out a high level strategic analysis justifying the need for investing in new Information Systems (IS) at NWU. The teaching objective was to provide an understanding of the case itself before completing the more extensive parts 2 and 3. Understanding was assessed by conducting a subsequent classroom discussion. As observed by Ellis et al (2004) “Learning through discussion or conversations is a fundamental part of teaching and learning” (p. 73). In essence, discussions help to provide foreground to learning leading to a deeper engagement by the student with content thereby affecting conceptual change (Ellis et al, 2004).

Part 2 was designed to get feedback on the progress of analysing the case. During this period, students were requested to complete a short questionnaire which explored the difficulties that they may have been experiencing. Student opinions were sought about the newness of knowledge, deadlines, other commitments and complexity. For **Part 3**, students were instructed to recommend activities, via email to the instructor, which would enable the project to be implemented.

Instructions and Assessment

As lecturer, two roles were played. First, to satisfy the objective of providing an authentic learning environment, the lecturer provided direction to the project in various capacities. For part 1, the role was that of a senior manager who is responsible for strategy. In this role, additional data was provided to enable students to complete part 2. For part 2, the role of IT project manager was adopted since the completion of the analysis activities was the most time and resource intensive of all case activities. For part 3, the role of senior management was again adopted since students were requested to recommend activities that should be completed to implement the project and an edict was issued to proceed with the outsourcing option.

The second role was that of teacher. This role in case learning should not be underestimated since knowledge transfer takes place when students and teacher interchange ideas. According to Stange (2005), the role of the instructor in an advice-giving context involves both the intellectual (e.g. high-

level knowledge, exceptional understanding, exceptional judgement) and interpersonal domains (e.g. sensitivity, compassion, empathy), and should reflect experience. In effect, the advisor is being relied upon to provide insights that differ from those of the students, thereby supporting the multi dimensional nature of case studies.

Regarding assessment, this is an important tool for the educator for the key reason that it can be effectively used to enhance students' learning and it provides a measure of learning. It becomes even more important when considering the student's perspective. "Assessment literally defines the curriculum for most students – by spelling out the learning that will be rewarded, it is a potent strategic device for educators." (James and McInnis, 2001, p. 4) In this study, formative assessment was applied for the purpose of improving learning and student performance as discussed earlier.

The following table summarises the research methodology reflected in the discussions above.

Table 3: Summary of Research Methodology

Case Design	Data Collection	Instructor as Business Person	Instructor as Educator
Part 1: Understanding	Assessment + subsequent class discussion	Senior Manager	Increase understanding
Part 2: Analysis	Short questionnaire + subsequent assessment	IT Project Manager	Provide context
Part 3: Recommendation	Email + subsequent assessment	Senior Manager	Provide context

Table 3 shows the objectives of the three parts of the case study assignment and associated methods of data collection and the roles played by the instructor. For example, in part 1, a class discussion took place following the assessment. The professional role performed was that of a senior manager while as an educationalist, the objective was to provide greater understanding to students on how to complete the subsequent activity, namely the analysis of the case study.

FINDINGS

Part 1 (Understanding)

Following submission of part 1 (the 'why' stage) of the business case, it became clear to students that insufficient financial data was originally available to evaluate the three options being considered in the decision to acquire a new reporting system. The class discussions that took place aimed at establishing student's understanding of the situation they had encountered. In real life, IS professionals often are confronted by incomplete data or information.

- Recognising missing data. Students indicated that they had quickly realised that the data was "not balanced" and that "key cost items were missing."
- Effects on completing part 1. They felt "uncomfortable" when submitting part 1 because of the missing data and felt only "70% confident" with the work they had submitted. The "need for more data" was strong.
- Situation in real life. Students suggested that they would "request more data and rework" this part of the assignment. If not available they would "make assumptions" but this would reduce their confidence in the work done.
- Benefits of additional data. When offered additional data, they felt that this would "make a difference" and be "very helpful".

Students were therefore informed that

“Hence, the COB at NWU has provided a summary of financial data already available as well as additional data. This data, together with much information on non-financial costs and benefits provided in the case study material, should be used in part 2 (the “what” and “which” stage) of the business case to carry out a cost-benefit analysis (e.g. ROI, Payback) for each of the three options.”

Part 2 (Analysis)

This part was the most extensive one, worth 50% of the assignment, since it involved the “what” and “which” stage in which student identified the options available, analysed them and determined the best option. To gain insight into the progress of completing the analysis, the following email was sent.

“The project sponsor in NW University has heard rumours that the business team evaluating the three options for the COB reporting system may be struggling to complete part 2 (the “which” stage) of the business case. He has therefore asked you to respond to the following questions. Would you like an extension of the deadline for submitting part 2 by one week? Answer “Yes” or “No” If the above answer is “yes” rank the following reasons from 1 to 6 where one is the most important reasons and 6 the least important. Each item must have a number between 1 and 6 to indicate its importance to you.”

An analysis indicated the following ranking:

1. The deadline after the submitting part 1 of the business case is too soon;
2. Other commitments are also requiring my time;
3. The knowledge to prepare part 2 is very new to me;
4. I need feedback before submitting;
5. The case study is complex and not easy to solve.

Part 3 (Recommendations)

The following email to students summarises the findings of this part.

“As requested, I received 9 emails suggesting items to be included in part 3. However, quite a few of the suggestions are not relevant as they do not relate to realisation activities. For example, producing initial pictures (ABR) is part of ex ante activities but updating pictures is part of the realisation process. From the list the clear winner was forming and using a stakeholder group. Second was continuous evaluation of costs/benefits of the IT investment as it is being developed, i.e. formative and participative according to ABR. Third was change management as per VALIT. Other valid suggestions included monitoring metrics, implementing governance structures and upgrading the business case. As agreed, you should now develop part 3 via the above headings (stakeholders, continuous evaluation, change management) in respect of the case study.”

DISCUSSION

To recap, the objective of the study was to provide a case study project for students that was as authentic as possible. To achieve this within the constraints of teaching (e.g. completion over the period of one semester) the case study was designed in three parts, each presenting the student with an experience that he/she may encounter in the business world.

The feedback provided to students for **Part 1** showed that marks ranged from 45% to 90% and was summarised in the following statement: “This strategic part of the business case was generally well prepared. However, the following are comments for improvements as observed across the papers.” While the students readily recognised the absence of key financial data (see findings section) there were weaknesses in recognising more sophisticated issues that would impact on the strategic decision whether or not to go ahead with the IT investment. They were primarily in respect of non-financial benefits and costs (often referred to as intangibles and difficult to measure), risks and organisational impact. A further observation was that even though some information was not stated explicitly, inferences could be and should have been drawn from the case material.

Part 1 was about the “understanding” dimension of case learning (see Table 1). The findings showed limited understanding of the class about the many issues that impact on strategic decision-making. This is where the role of the instructor became important in that he/she is able complement student’s knowledge and experiences with those of the instructor. By increasing the level of understanding of the case itself, the subsequent parts of the case would be completed more satisfactorily. As stated in the earlier discussion, the advisor is being relied upon to provide insights that differ from those of the students, thereby supporting the multi dimensional nature of case studies.

The summary comment provided by the lecturer for **Part 2** was as follows: “This part of the case study was very well completed reflecting a good understanding of theory and how it can be applied to a real life situation. The high standard is reflected in the marks: 95%, 90%, 85%, 80% (x6), 70%, 40%. Well done all!” As seen in the findings section above, students appeared to complete this analysis phase of the case study fairly comfortably since they did not believe that the case was complex and difficult to solve. However what they requested was more time, most likely to enable them to provide a thorough analysis. The good results achieved indicated that they had acquired the prerequisite content knowledge to carry out the analysis. This finding was somewhat unsurprising as the two methodologies (ABR, VALIT) provided well laid out and structured guidance on how to analyse the case.

Marks for **Part 3** ranged from 55% to 85% and the comment was made that “The main feedback is that assignments generally provided good practical suggestions for the ‘how’ aspect of benefit realisation while supporting theory was sometimes lacking. If you refer back to the assignment requirements, they indicate that knowledge of ABR and VALIT should be demonstrated in solving the case study.” In this part students had to identify and select from a range of activities contained in the methodology materials. There was no structure or guideline to be followed but items selected required justification for their inclusion. Similar to part 1, this task was less well done and required the overview of the lecturer to put various options into the perspective, i.e. into context of the case itself.

CONCLUSION

The first conclusion that can be drawn is that student experiences increased with a living case as shown by the diversity of tasks, the outcomes and ongoing feedback they received. For the ‘usual’ static approach, experience to learn from the case study would be limited to a summative type of assessment. The emphasis on formative assessment with a ‘living’ case supports constructivist cognitive thinking where students learn to learn as they learn. This is experiential learning where “experience acts as a transformational process which brings about learning – and that experiential learning is based on process – not mere outcomes.” (Taylor and Clemans, 2000, p. 264)

Second, the crucial action of constructing meaning is mental. It should be recognised that students acquire declarative knowledge (e.g. from textbooks) but also require procedural knowledge (e.g. experience) in applying the former. As discussed above, declarative knowledge was well demonstrated in part 2 of the assessment but procedural knowledge was lacking in parts 1 and 3. This is where the role of the lecturer becomes vital, both as teacher and as business professional. Feedback was essential

to maximise understanding and acting in various capacities (i.e. senior manager, IT professional) provided authenticity in student learning.

Third, the living case approach appeared to sustain the interest and, more importantly, the motivation of students. They were encouraged to probe for feedback and engage in reflections with the lecturer on their experiences. Motivation is key to learning. The student's real motivation needs to be established in order to have effective learning. They are largely behavioural and are thus not easily determined. However, by making the case more interactive and dynamic, levels of learning seemed to have been sustained throughout the semester.

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