The Use of Role-Playing To Help Students Understand Information Systems Case Studies

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ABSTRACT

A role-playing approach that introduced "real world" cases of information systems issues in business was compared to the traditional approach of discussing case studies for 32 first year university information systems students. Results showed students considered the role-play approach to be superior to the traditional case study discussions, although observers of role-play were not as enthusiastic as participants. Students considered the role-play approach helped them understand how information systems can be used in business. They also considered that role-play enhanced their learning and they felt very comfortable with the role-playing approach. The authors suggest that role-playing is useful for first year students provided that all members of the tutorial class participate and sufficient preparation done by teaching staff before the tutorial. Students suggested that they would feel more comfortable if each character in the role-play consisted of two or three students. This would reduce the stress associated with one person having to field all questions with the additional benefit of having all students involved.

Keywords: Case studies, Role-play, First-year Business information systems students

1. INTRODUCTION

One of the primary concerns in the discipline of Information Systems is helping students understand the practical aspects of the integration of information systems into business. For example introductory texts such as O'Brien (1999) and Oz (2002) make extensive use of "real world" case studies and problems to assist students in their understanding of how information technology fits into business. Huff and Lucas (2002) describe business cases as "a vehicle for teaching management concepts and this method is best known from "case method" schools, notably the Harvard Business School". Huff *et al* (2002) have stated, "when we have taught information systems using the traditional lecture method we have been left with disinterested students and a feeling that the textbook answer does not reflect the messiness and complexity of actual organisations". Huff *et al* (2002) describe the case approach as "a case history of a real situation faced by a real person or persons in a real organisation." The authors consider it to be

an unbiased, textual "snapshot" of a company in which the reader implicitly assumes the role of the decision-maker. The case is meant to challenge readers to answer the question "What would you do here?"

According to the University of Melbourne (2002), case studies in Information Systems encourage students to "be familiar with the experiences of a variety of organisations as they design, develop, implement, and use information systems. In addition students will have experience in dealing with the complexity, politics, and reality of information systems in actual organisational contexts. The students are also expected to develop analytical, synthesis, listening, and presentation skills by having experience with the case method of learning. They are also expected to develop the know how to learn and generalise from the experiences of individual organisations; and be exposed to the operations and culture of organisations, both well and poorly run, in various countries". These transferable skills are what Light and Cox (2001) describe as characteristic of "lifelong learning" and are important attributes for graduates, as it allows them to

continue to learn new knowledge, skills and practices.

However, disadvantages in using cases include students not taking the case seriously enough because some of the advantages of realism can be lost Huff *et al* (2002). These authors suggest that this can be overcome by the instructor taking a dim view of students being late or missing classes and allocating at least 40% of each student's course grade for class participation.

Biggs (2001) describes three levels of teaching. Level one which focuses on what the student is (emphasis on good or bad students), level two which focuses on what the teacher does (emphasis on the teacher's transmission of concepts and understandings) and level three which focuses on what the student does (emphasis on teaching as supporting learning). The approach designed to overcome late or missing students as outlined by Huff *et al* (2002) appears to fit into the level one teacher as described by Biggs (2001) and does not appear to be helpful if we are trying to focus on what the student does as evidenced in level three teaching.

An introductory course titled "Business Information Systems" is designed to include case studies in tutorial sessions. The concepts discussed during tutorial sessions are evaluated through short answer questions in the final examination. Student feedback from past classes indicates that some students have become bored with the case studies. This could be a reflection of some students not taking the case seriously enough. Whatever the reason, it was concluded that other methods of conducting case studies needed to be implemented. According to Toohey (1999), role-playing seemed to offer an alternative approach to the traditional tutorial format.

Davis (1993) provides a method of conducting role-playing exercises. This method was adapted for this study in order to fit the information systems case studies found in the introductory textbook by O'Brien (1999).

2. THE STUDY

This study was conducted to explore a) the attitudes of information systems students towards role-playing and case study learning approaches, and b) the attitudes and experiences of information systems students participating in the role-playing exercise (Participants) compared with those observing the role-playing exercise as part of the class audience (Observers). It was expected, based on the above discussion, that students would report more positive attitudes to role-playing in terms of their learning. It

was also expected that Participants would derive more positive learning outcomes from the role-play than Observers. The current research was also interested in the opinions of information systems students regarding how case studies and role-plays are delivered in class, and the perceived strengths and weaknesses of each learning approach.

3. METHOD

3.1 Participants
Thirty-two first year university students undertaking an information systems course took part in this study. Twelve of these students volunteered to take part in the role-play (Participants) while the remainder observed the role-playing exercise (Observers). Students were guaranteed that their responses would be anonymous and that they had the right to withdraw at anytime without penalty.

3.2 Measures and Procedure
First year information systems students at the University were introduced to the role-playing concept. The students had previous experience with the case study approach in six one-hour weekly sessions prior to introduction of the role-play. The case study approach consisted of students reading a case prior to the tutorial and discussing the issues with other students and the tutor. The case studies were based on "real world" examples of the integration of information technology into business enterprises and also demonstrated to students some of the innovative ways that information systems could enhance the competitiveness of a company. All the case studies were found in the first year text O'Brien (1999) and the case studies were conducted during tutorial sessions with much of the discussion initiated by a tutor.

Three tutorial groups were asked whether they wanted to be involved in the role-playing exercise and all students agreed. The role-playing exercise was conducted during the usual tutorial period in week eight. The roles were determined from the Amazon.com case study and one student was allocated to each role. The remaining students were Observers.

A short survey was administered after the role-play exercise. Participants and Observers were asked to rate how important it was for them to understand the use of information systems in business on a 5-point Likert scale from 1 (= strongly disagree) to 5 (= strongly agree). Students then completed a 10-item measure to assess their attitudes about the effectiveness of the case study (5-items) and role-play (5-items) approach to increase their understanding of the integration of information systems in business. The questions assessed how each approach (a) helped students understand how information systems can be used in business, (b) whether the approach was boring,

Table 1 - Means and standard deviations for attitudes about role-playing and case study approaches

Item	Participants Mean (SD) N = 12	Observers Mean (SD) N = 20	Total Group Mean (SD) N = 32
1. The case study approach helps me understand how IS can be used in business	3.50 (0.90)	3.95 (0.89)	3.78 (0.91)
2. The role-playing approach helps me understand how IS can be used in business	4.42 (0.79)	3.65 (0.67)	3.94 (0.80)
3. The case study approach is boring	2.42 (1.37)	2.95 (0.94)	2.75 (1.14)
4. The role-playing exercises are boring	1.92 (1.16)	2.55 (1.10)	2.31 (1.15)
5. Role-playing enhances my learning and understanding of this course	4.33 (0.89)	3.60 (0.94)	3.88 (0.98)
6. The case study approach enhances my learning and understanding of this course	3.58 (1.31)	3.85 (0.93)	3.75 (1.08)
7. The case study approach stimulates my interest in the area of business integration of IS	3.17 (1.19)	3.50 (1.00)	3.38 (1.07)
8. The role-playing approach stimulates my interest in the area of business integration of IS	4.08 (1.00)	3.65 (0.74)	3.81 (0.86)
9. How comfortable are you with the case study approach?	3.83 (1.11)	3.60 (1.23)	3.69 (1.18)
10. How comfortable are you with the role-playing approach?	4.25 (0.62)	2.90 (1.21)	3.41 (1.21)

(c) whether the approach enhanced their learning and understanding of the course, (d) whether the approach stimulated their interest in the area of business integration of information systems, and (e) how comfortable they were with the approach. Responses for these items were also rated on a 5-point Likert scale from 1 (=strongly disagree) to 5 (= strongly agree).

In the second part of the survey, Observers were asked open-ended questions about the strengths or benefits of the role-play to their learning, any improvements they would suggest to make the role-play more beneficial to their learning, and whether they could suggest any other ways case studies could be taught and analyzed. Participant role-players were also asked about the strengths or benefits to their learning in terms of the role-play, the disadvantages (if any) to their learning in terms of their participation, how the role-play could be improved, and whether they could suggest any other options for teaching case studies.

4. RESULTS

Students indicated that it was very important to them that they understand how information systems are used in a practical way in business (M = 4.63, S.D. = 0.61). The means and standard deviations for each of the role-play and case study attitude questions are shown in Table 1, for the total group, and separately for Participants and Observers. The table shows that information systems students overall had more positive attitudes in terms of the role-playing approach. The highest scores were given for the items that suggested

role-playing helped students understand how information systems could be used in business, enhanced their understanding and learning of the course, and stimulated their interest in the area of business integration. The least favorable attitudes were clearly in terms of the case study approach.

A series of t-tests were performed to examine any differences on the 10 attitude items for Participants versus Observers in the role-play exercise. Participants reported significantly more favourable attitudes to the following three items compared with Observers: "the role-playing approach helps me understand how IS can be used in business", t (31) = 8.55, p < .01; "role-playing enhances my learning and understanding of this course", t (31) = 4.75, p < .05, and "how comfortable are you with the role-playing approach?", t (1, 31) = 12.79, p < .001. These differences held when the effect of multiple testing was corrected for using the Bonferroni method.

Finally, the open-ended responses to the survey were examined separately for Observers and Participants. Results suggest that the majority of student Observers (N = 18) found the role-playing approach beneficial in the sense that it increased their understanding of the case presented by making the problem more realistic, and because of the different perspectives adopted by the role-players. Some of the answers given included:

"Being a bystander to the ongoing debates, strengths, limitations to different business systems could be seen."

"Makes the scenario /problem more realistic."

It is important to note, however, that many of the Observers (N = 14) suggested non-participation in the role-playing exercise also had several disadvantages. Many mentioned they felt excluded or restricted not being able to present their point of view. Others commented that they were less likely to think about the problem for themselves because they were less involved in the exercise. In support of the quantitative result showing the lower comfort score for Observers, two students mentioned the discomfort they would feel if they were required to participate in a role-play situation. The following comments illustrate some of these issues:

> "You don't develop the ideas yourself, only listen to what others say and if you have ideas that are different you can't voice them."
> "I would not have much to say, for example I would be extremely uncomfortable being a "character"."

In line with the results regarding disadvantages for Observers, many suggested key ways to improve the role-play would be to involve the whole class through a facilitator, have multiple students represent a character, and have multiple teams performing the role-play concurrently.

The large majority of Participants (N = 11) mentioned advantages associated with being in the role-play. The advantages seemed to fall into two main categories showing considerable similarity with those comments made by Observers. Similar to Observers, Participants mentioned that role-playing made them think more about the issues because of their involvement, and that it made the exercise more meaningful and real for them. However, it is important to note that the quantitative results suggest the advantages were more intense for Participants.

Several Participants (N = 7) mentioned that they could see no disadvantage in taking part in the role-play. Disadvantages that were mentioned by Participants mainly involved having insufficient background information about the case and insufficient time to prepare and digest all the case study information while focussing on their part. Comments made by students for improving the role-play experience tended to suggest that teaching staff would need to do more preparatory work before the role-play tutorials commenced. The following comments illustrate this point:

> " Have pre-written parts, might make it easier to understand and involve everyone make it interesting and fun"
> " More data/background information provided to students to help them with the assigned roles."
> " More in depth discussion, small projects, research needed to bring to the discussion."

This aspect of role-playing tutorials could make implementation more resource intensive for teaching staff than traditional case study approaches where cases are provided in a textbook.

Overall, answers to the open-ended questions for the entire sample indicate that students consider that role-playing allows them to become more involved in the case as well as making the subject easier to understand and more realistic. Students also thought that it was better to be a Participant than an Observer and that more research into each business case is needed before the role-playing exercise commences.

5. DISCUSSION

O'Toole (1992) suggests that unintended trivialisation of the subject matter during role-playing exercises can become a problem, especially if people in perceived authority (such as lecturers) are involved in the role-playing exercise. The same author also suggests that this type of interaction usually ends up being somewhat self-conscious with an approach to the drama, being based on the notion of public performance.

Despite the recommendations of O'Toole (1992) regarding people in authority not being involved, the authors consider that the tutor should be part of the role-play as it is difficult for students to initiate some discussions. In addition, many students felt uncomfortable playing the chief executive officer (CEO) as he or she was usually in the hot seat and having to answer tough questions. In addition, the tutor can help with the flow of dialog during role-play. There did not appear to be any self-consciousness among students when the tutor became involved.

Glass (1995) found that role-playing was a useful technique for teaching ethics in information systems courses and that role-playing allowed students to discover insights about themselves and others. It allowed students to express strong opinions and this resulted in a challenging of their own positions and an understanding of other peoples' positions. The study discussed in this paper relates to first year students and the authors consider that an early introduction to the role playing approach will help in later years for situations such as those described by Glass (1995).

Based on student comments and observations given in the open-ended question section of the survey, it is also concluded that more preparation is needed and that students want to do some independent research before the role-playing exercise. This will lead to fewer cases being discussed during the year but will result in a better, more thorough coverage of relevant topics. However, it will mean a greater workload for teaching staff. It is suggested one case is covered per tutorial and that the session begin with 20 minutes comprising web-

based research of the case that is followed by 10 mins establishing roles and characters. This should be followed by 20 mins of role-playing and finally 10 minutes de-briefing. It is suggested de-briefing consist of determining whether the group has answered the questions posed by the textbook case study.

It has been suggested by students that all members of the tutorial group be involved with the role-play and that each character consist of two or three students. This would have the effect of reducing the stress associated with one person having to field all the questions with the additional benefit of having all students involved.

6. CONCLUSIONS

This research has established a precedent for the use of role-playing in the conduct of tutorials for a first year, business information systems course. Through this research and student feedback, the authors have concluded that too many case studies were being covered during tutorials and that students can learn more by doing a smaller number of cases more thoroughly. Students have also recommended that each case be researched thoroughly before commencing the role-play exercise.

Role-playing appears to offer a more friendly and fun environment for students to learn about information systems. The results indicate that all students should participate in the role-playing exercise, as non-participants do not appear to get as much benefit from the role-playing exercise.

It is recognised not all students would want to be actively involved and some may in fact feel intimated by the process. While the authors consider this could be a problem, it probably reflects students who normally do not talk much during traditional case study discussions anyway. It is also recognised that adopting a role-playing approach may lead to an increase in teaching staff workload and this will have to be considered when implementing role-playing during tutorial sessions.

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