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THE USE OF COMPUTER-ASSISTED, INTERACTIVE ROLE-PLAY
SIMULATION IN HONG KONG

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ABSTRACT

This paper reports feedback from both undergraduate and postgraduate students' participation in Fish Bank, Ltd., a computer-assisted, interactive role-playing simulation in which teams are to manage a fishing company to compete in the fishing industry. The survey focused on how students viewed computer-assisted, interactive role-playing simulation as a learning tool for them and how they perceived that this type of role-playing simulation can actually help them understand the subject matter more in depth. Overall results are highly favorable at postgraduate level and favorable at undergraduate level respectively.

INTRODUCTION

Significant points of views have been sought on the use of business games from both the teachers and students (Roberts and Strauss, 1975; Hegarty, 1976; Wolf 1985; Faria, 1987, Faria and Wellington, 2004; Decker, et al 1993; Williams, 1993; Keeffee, et al 1993; and Chang et al, 1997, 2003, 2005), but still there has not been much study sought out from the students' points of view on a computer-assisted, interactive role-playing simulation in Hong Kong. In this case, Fish Bank, Ltd., (supplied by Sustainability Institute) a computer-assisted, interactive role-playing simulation of which teams are formed to manage a fishing company, was selected to be used in a 3-hour session. Thus, the authors wish to explore how students in Hong Kong view the use of such

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computer-assisted, interactive role-playing simulation as part of their learning experience.

DATA COLLECTION

A survey questionnaire was conducted amongst the part-time postgraduate students as well as full-time undergraduate students who enrolled in the subject of strategic management/business strategy. Participants in this survey attended a 3-hour workshop in Fish Bank Ltd, a computer-assisted, interactive role-playing simulation. A total of 57 survey questionnaires for the undergraduate students and 61 for the postgraduate students were administered. The response, 118 usable questionnaires were received.

RESULTS AND DISCUSSION

In section A of the survey questionnaire, only two out of fifty-seven (3.5%) undergraduate full-time students indicated they had previously been involved in computer simulations. As for the postgraduate part-time students, fifteen out of fifty-nine (24.6%) denoted they had experienced computer simulations prior to this encounter. The low percentage shows that the faculty members in Hong Kong (universities??) generally do not utilize computer simulations as a teaching and learning tool. This suggests that simulation and gaming is still not popular in Hong Kong as the selected student samples are in their final year.

RESPONDENTS' FEEDBACK ON COMPUTER-ASSISTED, INTERACTIVE ROLE-PLAYING SIMULATION

In section B of the survey questionnaire, students were asked to evaluate this computer-assisted, interactive role-playing simulation based on eleven questions after completion of a 3-hour session which included briefing, play, debriefing, and question and answer. A five-point Likert Scale: strongly agree=1, agree=2, neutral=3, disagree=4, and strongly disagree=5 was adopted for use by respondents to indicate their opinions. These questions are listed below (Appendix B shows the survey questionnaire in detail):

1. *Using the Fish Bank Ltd. (Simulation & Gaming) was helpful to me in understanding business strategy.*
2. *Fish Bank Ltd. (Simulation & Gaming) allowed me to apply what I learned to a real-life situation.*
3. *I learned a lot about the field of business strategy from the Fish Bank Ltd. (Simulation & Gaming).*
4. *Fish Bank Ltd. (Simulation & Gaming) helped me gain insight into the pressures faced by strategy makers.*
5. *Learning the Fish Bank Ltd. (Simulation & Gaming) was worth the effort.*
6. *I believe the Fish Bank Ltd. (Simulation & Gaming) is valuable for business policy and strategic management courses.*
7. *I recommend using the Fish Bank Ltd. (Simulation & Gaming) for other business strategy classes.*
8. *I was highly involved with the Fish Bank Ltd. (Simulation & Gaming).*
9. *Fish Bank Ltd. (Simulation & Gaming) made the course more interesting.*
10. *Playing Fish Bank Ltd. (Simulation & Gaming) was enjoyable.*
11. *Incorporating the Fish Bank Ltd. (Simulation & Gaming) into the class curriculum suggests that the instructor/lecturer cares about me learning business strategy.*

The first seven questions asked students their opinions on the merits of the computer simulation itself. Questions 8-9 look at students' own emotional state towards the simulation and gaming since this particular computer simulation also emphasizes their role-play as well. The last question makes an attempt to find out if respondents agree that the lecturers/instructors care about them learning the subject matter by integrating this computer simulation into the class curriculum

The results of the survey undertaken by the postgraduate students show the five highest combined scores of "strongly agree" and "agree" on question 1, 90.2%; question 5, 90.2%; question 7, 91.8%; question 9, 93.4% and question 10,

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93.3%. The highest score is 93.4% which is on question 9 – *Fish Bank Ltd. Made the course more interesting.*

As for the survey undertaken by the undergraduate students, results show the five top highest combined scores of “strongly agree” and “agree” on question 1, 84.2%; question 4, 80.7%; question 5, 87.7%; question 6, 84.2%; and question 9, 87.7%. The highest score achieved in this group is 87.7% which is on both questions 5 & 9 – *Learning the Fish Bank Ltd. was worth the effort and Fish Bank Ltd. made the course more interesting.*

Of comparing the top five highest scores among the undergraduate and postgraduate surveys, both groups had questions 1, 5, and 9 on their five highest scores list. On the other hand, the undergraduate respondents had questions 4 and 6 as another two of their top five highest scores while the postgraduate students had questions 7 and 10. It is observed that both of the postgraduate (93.4%) and undergraduate (87.7%) students had their highest scores on question 9 – *Fish Bank Ltd. Made the course more interesting.* The use of such computer-assisted, interactive role-playing simulation seems to attract both groups of students.

The lowest score on “strongly agree” and “agree” in this survey chosen by the postgraduate and undergraduate respondents is on question 3 – *I learned a lot about the field of business strategy from the Fish Bank Ltd.* (68.3%) and question 2 – *Fish Bank Ltd allowed me to apply what I learned to a real-life situation* (56.1%). This suggests that the computer simulation cannot serve the purpose to teach students about the subject matter on its own and is best to be combined with other teaching methods in order to enhance the overall learning experience for the students.

MERITS OF THE COMPUTER SIMULATION

Students were asked if the Fish Bank was helpful in understanding business strategy (question 1); Fish Bank allowed applying in a real-life situation (question 2); Students learnt a lot in the field of business strategy (question 13); Fish Bank helped gain insight into the pressures

faced by strategy makers (question 4); Learning Fish Bank was worth the effort (question 5); Fish Bank was valuable for business policy and strategic management courses (question 6); Students would recommend it to other business strategy class (question 7).

Results show a percentage of 90.2 (question 1); 77 (question 2); 68.3 (question 3); 72.1 (question 4); 90.2 (question 5); 85.2 (question 6); and 91.8 (question 7) on combined “strongly agree” and “agree” for the postgraduate respondents.

As for the undergraduate respondents, results indicate a percentage of 84.2 (question 1); 56.1 (question 2); 61.4 (question 3); 80.7 (question 4); 87.7 (question 5); 84.2 (question 6); and 78.9 (question 7) on combined “strongly agree” and “agree” for the postgraduate respondents.

Generally, respondents on the postgraduate level tend to be more favorable towards these six questions compared with those of undergraduate level. It is interesting to note that on question 4 – *Fish Bank Ltd. helped me gain insight into the pressures faced by strategy makers*, undergraduate respondents tend to be more favorable (80.7%) compared with those postgraduate (72.1%). The explanation can be that most of these undergraduate students have yet to work full time in Hong Kong whereas the postgraduate students have been working for quite some time in their own fields. As a result, the postgraduate respondents have already accumulated certain experiences in their own working environments whereas the undergraduate respondents have as yet gained no insight at all in the practical and business world.

STUDENT’S EMOTIONAL STATE TOWARDS THE SIMULATION AND GAMING

Students were asked if they had been highly involved with Fish Bank (question 8); felt that Fish Bank made the course more interesting (question 9); and felt that playing Fish Bank was enjoying (question 10).

Results show a percentage of 75.4 on combined “strongly agree” and “agree” for question 8 on postgraduate students and 71.9 on undergraduate students. A percentage of 93.4 on combined “strongly agree” and “agree” for

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question 9 on postgraduate and 87.7 on undergraduate were also recorded. Another 93.3 percent of the postgraduate respondents and 77.2 percent of the undergraduate either strongly agree or agree on question 10. Overall, the results depict a positive and favorable attitude of all the respondents toward the Fish Bank.

CARE SHOWN BY LECTURERS IN USING SIMULATION AND GAMING IN CLASS

Students were asked if they felt their lecturers and instructors care about them by incorporating this simulation and gaming in their class for them to learn more about business strategy. Results show a percentage of 78.7 on combined “strongly agree” and “agree” on postgraduate students and 70.2 on undergraduate students for question 11. Overall, the results indicated are positive.

DESCRIPTIVE STATISTICS ON RESPONDENTS

Data shows that ‘Strongly disagree’ was chosen in undergraduate level on questions 2, 6-8, 10-11 while none of this appear on the postgraduate level. It seems that the postgraduate students tend to be more patient, understanding, and tolerant (They arrived punctually for the 3-hour workshop and were well prepared for the

session, understanding the role-play scripts well) while the undergraduate students tend to be somewhat impatient, emotional, and challenging at times. (Approximately 10 students did not turn up on time and several of them showed up without any preparation at all).

Table 1 shows the postgraduate survey data. The lowest mean is 1.62 on question 9. The second lowest is 1.73 on question 10 and the third lowest is 1.75 on question 7. On the other hand, the highest mean is on question 3 with a mean of 2.25. Overall, on average, respondents agreed to statements listed in the survey questionnaire.

Table 2 shows the undergraduate data, the lowest mean is 1.81 on question 9. The second lowest are equally 2.02 on questions 5, 7, and 8. But, the highest mean is on question 2 with 2.54. On average, the undergraduate respondents also agreed on all of the 11 questions.

When comparing data in both tables 1 and 2, the mean is rather lower at postgraduate level than those at undergraduate on questions 1 to 10. But, this is not the case on question 11 when undergraduate students tended to feel that their lecturers and instructors cared about them by making extra effort to bring computer simulation into classroom teaching (postgraduate: 2.08;

Table 1. Descriptive Statistics on Postgraduate Respondents

	N	Minimum	Maximum	Mean	Std. Deviation
A. Participation	59	yes	no	n/a	n/a
B 1. Understanding	61	1	4	1.97	.547
2. apply daily	61	1	4	2.13	.670
3. Simulation	60	1	4	2.25	.680
4. strategy makers	61	1	4	2.02	.785
5. worth learning	61	1	4	1.79	.710
6. buss policy	61	1	4	1.97	.632
7. buss classes	61	1	4	1.75	.650
8. Gaming	61	1	4	2.15	.679
9. Course	61	1	4	1.62	.711
10. Playing	60	1	4	1.73	.634
11. Lecturer	61	1	4	2.08	.640
Valid N (listwise)	57				

Note: A five-point Likert Scale: strongly agree=1, agree=2, neutral=3, disagree=4, and strongly disagree=5

Table 2. Descriptive Statistics on Undergraduate Respondents

	N	Minimum	Maximum	Mean	Std. Deviation
A. Participation	57	yes	no	n/a	n/a
B 1. Understanding	57	1	4	2.11	.699
2. apply daily	57	1	5	2.54	.803
3. Simulation	57	1	4	2.30	.731
4. strategy makers	57	1	4	2.05	.692
5. worth learning	57	1	4	2.02	.612
6. buss policy	57	1	5	2.04	.731
7. buss classes	57	1	5	2.02	.896
8. Gaming	57	1	5	2.02	.826
9. Course	57	1	4	1.81	.743
10. Playing	57	1	5	2.18	.854
11. Lecturer	57	1	5	2.05	.745
Valid N (listwise)	57				

Note: A five-point Likert Scale: strongly agree=1, agree=2, neutral=3, disagree=4, and strongly disagree=5

undergraduate 2.05).

CONCLUSION

The authors attempt to find out how students both at postgraduate and undergraduate levels in Hong Kong view the use of Fish Bank, Ltd, a computer-assisted, interactive role-play simulation in their class. Overall, the majority of the respondents in both groups showed favorable results and agreed to the questions being asked. The average for the postgraduate students is also between a low of 1.62 and a high of 2.25. As for the undergraduates, the average score from low to high is 1.81 to 2.54.

As a matter of fact, the results are shown to be very favorable to Fish Bank since the majority of the respondents have not been exposed to this type of computer-assisted, interactive role-playing simulation before.

The implication seems to be that greater majority of students showed a preference to have the computer simulation in their class and they have benefited from it. Perhaps, further research is needed to target and study why computer simulation in general is not included in the classroom for teaching and learning purposes.

Thus, a preliminary study is needed to focus on faculty members in Hong Kong universities to find out why there is not more use of computer simulations in the teaching of business subjects.

Though the current study is limited in that it includes only a sample population of 118 Hong Kong students in 2006, it attempts to explore the impact of incorporating computer-assisted, interactive role-playing simulation in the course. In addition, further research is needed to include a broader student population as well as more comprehensive research methods to explore whether the computer simulations used in the strategic management class would really enhance and stimulate the process of student learning and lecturer teaching.

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Appendix A *Fish Banks, Ltd.*

A computer-assisted, interactive role-playing simulation is supplied by Sustainability Institute. Teams are formed to manage a fishing company. Participants try to maximize their assets in a world with renewable natural resources and economic competition. This game exercises higher-order reasoning, communication, and group problem solving. Each Fish Banks game kit includes: a board, wooden playing pieces, manuals, Mac/PC program CD (v.8), and a complimentary copy of the introductory video..

Appendix B
Survey Questionnaire on Fish Bank, Ltd.

Section A

Have you ever been asked to participate in any computer simulations in your previous study in university before?

___ yes If yes, the name _____ and used in what subject _____
___ no

Section B

Please select answers 1-5 for the following questions:

1- Strongly Agree. 2 - Agree. 3 - Neutral. 4 - Disagree. 5 - Strongly Disagree

- | | 1 | 2 | 3 | 4 | 5 |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1. Using the Fish Bank, Ltd. (Simulation & Gaming) was helpful to me in understanding business strategy. | <input type="radio"/> |
| 2. Fish Bank Ltd. (Simulation & Gaming) allowed me to apply what I learned to a real-life situation. | <input type="radio"/> |
| 3. I learned a lot about the field of business strategy from the Fish Bank Ltd. (Simulation & Gaming). | <input type="radio"/> |
| 4. Fish Bank Ltd. (Simulation & Gaming) helped me gain insight into the pressures faced by strategy makers. | <input type="radio"/> |
| 5. Learning the Fish Bank Ltd. (Simulation & Gaming) was worth the effort. | <input type="radio"/> |
| 6. I believe the Fish Bank Ltd. (Simulation & Gaming) is valuable for business policy and strategic management courses. | <input type="radio"/> |
| 7. I recommend using the Fish Bank Ltd. (Simulation & Gaming) for other business strategy classes. | <input type="radio"/> |
| 8. I was highly involved with the Fish Bank Ltd. (Simulation & Gaming). | <input type="radio"/> |
| 9. Fish Bank Ltd. (Simulation & Gaming) made the course more interesting. | <input type="radio"/> |
| 10. Playing Fish Bank Ltd. (Simulation & Gaming) was enjoyable. | <input type="radio"/> |
| 11. Incorporating the Fish Bank Ltd. (Simulation & Gaming) into the class curriculum suggests that the instructor/lecturer cares about me learning business strategy. | <input type="radio"/> |