

Encouraging Information Search in Accounting Cases by Using Avatars as Sources – But Students Still Wanted to be Given the Information on Paper!

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Real-world relevance can be developed through classroom case pedagogy that has an in-situational orientation, requires information search in and of the situation, and expects the use of this information for in-situational analysis and critical thinking. This paper reports on a case-based pedagogical developmental project using interactive avatars as situational sources of accounting information that students needed to search for and find. Students preferred, however, to be given the information on paper, perhaps because this is what they had learned to expect. Powerful organizational processes in business schools militating against situation-analytical and real-world relevant teaching are identified.

INTRODUCTION

Over the latter part of the twentieth century corporate hiring and promotion of business school graduates and resultant student demand for business degree credentials continued to grow, and increasing numbers of schools were established worldwide (*Globalization of Management Education*, 2011). In recent years, in North America, business school graduates have come to constitute 20-25% of each year's university graduates overall (*CAUT Almanac of Post-Secondary Education in Canada, 2013-2014*; United States Department of Education, 2015).

Along with this growth and up until the present time, there have been continuing charges that business graduates, programs and schools themselves (including faculty members) have been lacking relevance to the real-world of business and management. See, for example: Livingston, (1971); Behrman & Levin, (1984); Leavitt, (1986); Fielden & Gibbons (1991); *Fortune*, (1991); Elliott & Goodwin, (1994); Pfeffer & Fong, (2002, 2004); Gioia & Corley, (2002); Doria, Rozanski & Cohen, (2003); Mintzberg, (2004); Bennis & O'Toole, (2005); Ghoshal, (2005); Khurana, (2007); *Financial Times*, (2011); and Muff, (2012). More specific charges have included arguments that business schools inculcate a self-centred, mercenary ideology, (Saul, 1993), and that business school graduates-as-managers' self-interests can take precedence over stakeholder and societal responsibilities, and managerial ethics (Hayes & Abernathy, 1980; Ghoshal, 2003; Carroll & Mui, 2008; *Business Week*, 2001, 2008a,b, 2009; Mintzberg, 2009).

Business schools from time to time have responded by publicising programming initiatives aimed to address these charges. See, for example: Porter & McKibbin, (1988); *Business Week*, (1991, 1993); Leith,

Kovacheff & Price, (1994); Boyzatis, Cowen, Kolb & Associates, (1995); *Management Education at Risk*, (2002); and the Association to Advance Collegiate Schools of Business (AACSB), (2017).

Faculty members always have been aware that: “*What is needed is some evidence that students can do something with their knowledge, that is, that they can apply the information to new situations and problems... This has been labelled “critical thinking” by some, “reflective thinking” by Dewey and others, and “problem-solving” by still others*” (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956, pp.38 & 39). However, concerns regarding business school curricula and pedagogy have been raised. See, for example, Navarro, (2008); Rubin & Dierdorff, (2009); and Mintzberg, (2009). As well, Arum & Roksa (2011, p.105), found that over the first two years at college, business students’ scores in writing the Collegiate Learning Assessment (an essay test of writing and reasoning skills) improved less than students in a range of other disciplines. Glenn, (2011) suggested reasons for this.

Now, more than ever, students in business schools need to learn situational critical thinking so that they can be relevant in real-world situations. Society and governments more and more are demanding that managers demonstrate morality and ethics, and that business corporations live up to their societal/social and stakeholder responsibilities. Product, process and information technologies and innovations, and internationalization are powerful drivers that are changing the nature of competition and the bases for competitiveness. Management in the real-world is becoming more situationally complex and changeable. Now, there are calls for improving curricular relevance (Rubin & Dierdorff, 2011), rethinking the MBA (Datar, Garvin & Cullen, 2011), teaching evidence-based practice (Rynes, Rousseau & Barends, 2014), and even re-invention of management education (Beyes, Parker & Steyaert, 2016).

This paper reports on a case-based pedagogical developmental project using interactive avatars as sources of accounting information. The project was aimed to encourage students’ situationally relevant investigative, analytical and critical thinking, including use of prior theory knowledge and search for information in and of the situation at the time. Findings and conclusions are presented regarding students’ experiences with avatar technology particularly in accounting cases. Of concern was students’ prior lack of awareness of requirements for in-situational orientation for real-world relevance, investigative information search, and for developing their own analytical and critical thinking processes and frameworks. Powerful institutionalized culture and process forces in business schools that can militate against faculty members teaching in-situational investigative, analytical and critical thinking are identified. Future research directions are indicated.

BACKGROUND TO THE PROJECT

Cases are used in accounting courses usually with the aim of leading students to apply theoretical accounting concepts to business situations. However, such cases can be artificial in that data and information have been collected and sorted by the case writer. In the real world basic data typically would be available but individuals have to gather and verify their own information by searching through records and meeting with employees in other departments. In their workplace situations individuals need to know the information to look for, where to find it, how to analyze it, and how to identify and address the real problem. Written cases providing the required information ready-sorted, and with the problem already identified therefore are unlikely to lead students to develop their own situation investigative, analytical and critical thinking skills. As well, students also can be left thinking (wrongly) that, when they are working in organizations, the required information will be provided to them and the problem will be identified for them so that all they need to do is to state their answer.

The Sobey School of Business at Saint Mary’s University has been promoting innovation in teaching and learning through making grants available to professors to research and develop innovative teaching methods. Aiming more effectively to develop students’ situational relevance and critical thinking through a more realistic information search experience one of the authors (Rixon) obtained a \$1,500 grant. The innovative project was to explore the benefits of using avatars in cases in two managerial accounting courses, so as to provide students with information search processes and experiences analogous to those they would encounter in real-world organizational workplaces. Recognising that

today's students have grown up using digital devices and information technologies it was thought also that interaction with avatars would better engage their interest and lead to more effective situation-relevant learning.

We make an important distinction as follows. "Application to" is seen as taking a perspective outside the situation, i.e., as a spectator. As such, it must be non-relevant in the situation, permitting only the doctrinaire mouthing of theory-normative generalities. "Applying in" is seen as taking a perspective inside the here-and-now situation and, as such, it must be relevant. Necessarily, it will involve use of prior theory knowledge and investigative search for information in and of the situation at the time.

RESEARCH METHODOLOGY

Avatars can be created by individuals as computer-generated manifestations of themselves, with imaginary personas and engaging in imaginary experiences, in online virtual spaces (Falloon, 2010, p.109). Considerations and concerns relating to the use of avatars for student learning, including transference from the virtual to the real world, have been discussed by Wang, (2011).

In this project students were not required to create their own personal avatars because the intended learning was for students to orient themselves in the situation and investigatively search for and find accounting information needed to analyze the situation and identify and address the problem or issue. The case avatars already were created as "talking heads" on the computer screen. Students interacted with them by typing their questions and the avatars responded verbally. Students also could view an 'interview' with a department manager avatar.

This setup was intended to be analogous to real-world situations where accounting employees have to prepare a list of specific information to be sought and questions to be asked, and then try to find information from other individuals in the organization. In practice, trying to find information that is timely, pertinent, reliably accurate and complete can be frustrating and in the end may not be possible. It therefore was considered instructive if students experienced some frustration in trying to obtain information from the avatars, even if this was due to technical issues rather to real-world personal agendas and interactions.

Cases using avatars were developed for two courses: Introductory Managerial Accounting, in the second year of the degree program, and taught as a distance course; and Intermediate Managerial Accounting, in the third year of the program, taught in-class. The avatar software technology was acquired through Second Life.

Introductory Managerial Accounting (Second Year, Distance Course)

This is a required course for all business students. The Winter 2015 semester class size was 27 students. The case was assigned as a take-home project to be completed individually and worth 7% of the total evaluation. It was based on a Canadian company that manufactured and sold barbeques, and focused on identifying why actual sales revenue and expenses had deviated from budget. Students were required to prepare a report analyzing the variances, discussing the company strengths and weaknesses as illustrated through the variances, and providing recommendations to address the problems identified. The printed case was two pages in length containing some information, and instructions for working with the avatars to obtain most of the information. A Powerpoint slide package was used to explain the project requirements and was provided to students along with a supporting video.

Three avatars were created to represent meetings with three department managers. A script was developed for each manager avatar providing reasons why their respective department's costs differed from the budget. Colleagues in the Sobey School played the roles of the three managers and recorded the scripts. If avatars had not been used the content of the scripts typically would have been provided as meeting notes included as appendices to the written case.

Intermediate Cost Accounting (Third Year, In-Class Course)

Most students taking this course are majoring in accounting. During the Fall 2015 semester, one of the authors (Rixon) coordinated all three sections of this course which comprised just over 100 students in total. She taught two sections and the third section was taught by a colleague who used the same avatar cases and administered the same student survey. Students self-selected groups of four to work on the case as a take-home group project.

The case (written by Rixon) was based on two not-for-profit organizations sharing office space and operating costs. A large charity owned the building and a smaller charity paid rent for space, janitorial and information technology services. Students were asked to identify alternatives available to share common costs and make a recommendation. In doing so, students were expected to think about costs and potential ways to share them, for example, based on square footage occupied, number of employees, or income. Data was not provided in the written case and students were expected to identify the data and information they required, and to ask questions of the interactive Treasurer Avatar. Students could type questions regarding, for example, the income for each charity, how many square feet were occupied by each charity, and their numbers of employees. The avatar was designed to reflect real-world situations where accounting analyst staff must ask questions of various employees and managers to obtain information used to provide explanations, identify problems, formulate courses of action and make recommendations.

This interactive avatar was considerably more complex than the scripted avatars used for the Introductory Managerial Accounting course. An example case with a sample avatar was created to show how the system worked and was demonstrated to the students by the MBA Student Research Assistant. This included specific questions that students could type in order to obtain their sought-after data or information. (For the interactive avatars to work properly the questions had to be very specific.)

Development of the Avatars

Introductory Managerial Accounting: In developing the three one-way scripted manager avatars assistance was obtained from a contract professor assigned to Saint Mary's Centre for Academic and Instructional Design. The contract professor jointly wrote the three scripts containing information on why actual results varied from the budget, recorded the scripts as interviews with each of the three managers, and created the avatars.

Intermediate Cost Accounting: An MBA Student Research Assistant developed the case avatar, and the sample case avatar used to illustrate to students how specifically to formulate their questions to obtain information from the case avatar.

Follow-up Survey

This was administered after students in both courses had completed the case projects. Students were offered two bonus points for completing the survey. The survey was designed to be anonymous so as to encourage students to provide candid and constructive feedback. Results for each course were sent directly either to the contract professor or to the MBA student assistant. The teaching professors were given a list of students who had completed the survey but were not given individual responses.

FINDINGS

Student Survey Responses – Introductory Managerial Accounting

All 27 students completed the online survey and detailed responses are included in Appendix 1. This was their first time taking a distance course for 48% of the students. While 70% had completed case study projects in other courses only 22% had taken courses where avatars were used to provide information. Seventy percent of respondents indicated they would have preferred for the information provided by the avatars to be included in the written case narrative.

- *Rate the avatars in this course compared to avatars used in other courses you have taken*

6 responses: 67% indicated the Introductory case avatars were better

- *How helpful did you find the avatars for your project?*

27 responses: 7% very helpful, 78% helpful

- *Representative of real life situations in the workplace*

27 responses: 22% very representative, 67% somewhat representative,

- *Did the use of avatars make the project more interesting?*

27 responses: 15% much more, 59% a little more interesting

When asked for suggestions for improvements, nine Introductory students responded as follows:

- The avatars could be improved by allowing them to stop and rewind (5)
- A text version be included (1)
- The avatars should have stated their name and job title (1)
- The avatars added nothing to the case (1)
- It helped them learn the perspective of others (1)

Student Survey Responses – Intermediate Cost Accounting

All 100 students in the three sections completed the survey and detailed responses are included in Appendix 2. Fifty-one percent of respondents had completed cases in other accounting courses while 49% did not have exposure to accounting cases. Although only 3 respondents indicated they had previously encountered avatars in other courses, 18 respondents completed the question on rating avatars in this course versus avatars in other courses. It is possible that 15 students were incorrectly comparing the Intermediate avatar project with other case projects that did not include avatars. Eighty-one percent of respondents preferred that the data that they had to obtain from the avatar be included in the written case.

- *Rate the avatars in this course compared to avatars used in other courses you have taken*

See comment immediately above.

- *How helpful did you find the avatars for your project?*

79 responses: 9% very helpful, 32% helpful, 59% somewhat helpful

- *Representative of real life situations in the workplace*

100 responses: 25% very or somewhat, 54% not very, (21% completely unrepresentative)

- *Did the use of avatars make the project more interesting?*

100 responses: 37% very interesting or interesting, 38% somewhat, (25% not interesting)

When asked for suggestions for improvements all 100 Intermediate students responded as follows:

- Did not have any suggestions for improvements (3)
- Found the avatar approach helpful (5)
- Tone down the avatar's sassy attitude (3)
- Do not use avatars in cases (5)
- Cumbersome, difficult to ask questions, needs to be able to interpret complex questions, needs to respond more like a human, should be more flexible (84)

Comparison of Introductory and Intermediate Course Participant Responses

In comparing the survey responses for both classes there were significant differences and similarities (Appendix 3). First, 70% of the Introductory students stated that they had completed similar case projects in other courses, while only 51% of the Intermediate students reported similar past projects. This is questionable since third-year students have completed more business courses. It is possible that the third-year Intermediate students may have misinterpreted the question to mean case projects with avatars rather than the intended question of case projects in general. When asked if other courses had included avatars, only 3% (3/100) of the Intermediate and 22% (6/27) of Introductory students had used avatars previously. When comparing preferences for avatars versus information provided in the written case, the results were

similar, with 81% of the Intermediate and 70% of the Introductory students expressing preference for the information to be provided in the written case.

Comparing the responses for the Introductory students versus the Intermediate students as provided above:

- *How helpful did you find the avatars for your project?*

Introductory responses (27): 7% very helpful, 78% helpful

Intermediate responses (79): 9% very helpful, 32% helpful, 59% somewhat helpful

- *Representative of real life situations in the workplace*

Introductory (27): 22% very representative, 67% somewhat representative,

Intermediate (100): 25% very or somewhat, 54% not very, (21% completely unrepresentative)

- *Did the use of avatars make the project more interesting?*

Introductory (27): 15% much more interesting, 59% a little more interesting

Intermediate (100): 37% very interesting or interesting, 38% somewhat, (25% not interesting)

Overall, the Intermediate students were much less enthused with the avatars than the Introductory students. Perhaps their longer experience in the program had trained them to expect all the required information to be provided to them in writing.

Observations

1. Information Technology Support and Expertise

The lack of institutional information technology (IT) support for new learning technology such as avatars was a major challenge. For the Introductory Managerial Accounting course, informal assistance was obtained from a contract professor temporarily assigned to the University's Centre for Academic and Instructional Development. An MBA Student Research Assistant was available for developing the interactive case and sample avatars for the Intermediate Cost Accounting course. Both individuals had to spend considerable time to self-learn how to use the software. Unfortunately, as the project has ended and the contract professor and the MBA student have gone on to other things, the expertise gained with the avatar technology has been lost.

2. Limitations of Avatar Software

For the Introductory Managerial Accounting course the scripted avatar software used to create three recorded interviews worked well. In contrast, it was challenging to create interactive avatars for the Intermediate Managerial Accounting course. The system required students to be very precise in terms of how they posed their questions, and this became cumbersome. The Intermediate avatar was somewhat interactive in that it provided a verbal response if the questions were posed correctly, but it could not be described as artificial intelligence.

The avatar technology used appeared to be more suited to recording information (one-way communication) as for the avatars used in the Introductory course. The technology appeared not to be well suited to the two-way interactive functionality intended for the Intermediate case avatar, and the requirement for very specific questions and keywords led to student frustration. If the interactive capability of the software could be improved avatars likely would be better received by students. The Research Assistant noted the following items: (1) choosing and programming the keywords was complicated; (2) Regarding the programming, all avatars under the same account share the same keywords and responses, and the avatars on file could not be differentiated from each other; (3) Customizing the avatar is straightforward and there is a range of 2D and 3D models with multiple voice options; and, (4) It is convenient to have the completed avatars exportable as solo links, and that they can be embedded in websites. It also was noted that avatar software from various other providers could be investigated.

3. *International Students*

In both courses 40% - 50% of students were international with English as their second language. This made it harder for them to interact with the avatar software. In particular, where students needed to use a dictionary to translate words as they were being spoken by the avatar this was more challenging compared to translating words on paper. Several students in the Introductory Managerial Accounting Course indicated they had to play the interviews several times. Some students in the Intermediate Managerial Accounting course found it difficult to determine the specific wording for their avatar questions.

CONCLUSIONS ON THE AVATAR CASE EXPERIENCE

This case project was very different from most other cases that students had encountered in previous courses and they generally were unfamiliar with avatar technology. The avatars used in the Introductory course were designed for one-way communication. The avatar used in the Intermediate course was designed for two-way interactive communication and was significantly more complex. Students in the Intermediate course displayed significantly more frustration with the interactive avatar software. This can be attributed to Intermediate students having to be very specific in how they worded their questions to the avatar. However, when Intermediate students were asked whether they had reviewed the demonstration case and sample questions they generally admitted that they had not. Perhaps also, as Intermediate students likely have completed more traditional on-paper case projects this experience could bias them against information search and interacting with avatars.

Students found that it was more time-consuming to obtain information from an avatar rather than from a printed case. Most students, and particularly those in the Intermediate course, were not interested in learning to use the avatar technology. A large majority of students in both courses wanted all the relevant information to be provided in the written case document. Overall, most students in both courses did not appear to benefit from the inclusion of avatars in the case projects.

Student experience with using avatar technologies as information sources could be improved by leading them to gain prior familiarity with such avatars. This could include, for example, using avatars for routine class announcements, more avatar-based information search exercises and group projects, and providing lists of pre-programmed keywords. Also, on-going technical support for students learning to work with avatars could be made available, so that difficulties with the technology do not get in the way of the intended learning. From an educator perspective, on-going IT support in creating and maintaining avatars is essential, and while there is a significant investment in time upfront to develop avatar applications this learning curve should improve over time.

This project has provided insight into the challenges and opportunities regarding the incorporation of avatars as information sources, to enable more realistic information search in accounting case exercises. The research highlights challenges associated with interactive avatars as “talking heads” on the computer screen, and where students used the keyboard to type in their questions one-way communication was easier than two-way interactive communication. The one-way avatars were viewed by students as more representative of workplaces and more interesting than two-way avatars, but this may be reflecting difficulties with the technical requirements for key-word specificity for the interactive avatars.

Avatars as talking heads with student questions typed using the keyboard could be further explored in one-way and two-way interactions. As well, students could be asked to create their own personal avatars for interaction with the information source avatars in virtual space. Although avatars, including student-generated avatars and their personas and interactions in virtual space, can have something to offer for learning (Falloon, 2010) there are also questions and concerns (Wang, 2011). In any case, new technology used as a tool for learning can become an end in itself deflecting attention away from the desired subject learning, and technical in-use requirements can get in the way. Why not, therefore, use actors to role-play information sources? This appears to be an avenue for further research. Second, information on companies, e.g., financial reports and market information, is publicly available. Students themselves could be put in the role of a stockbroker analyst and simply be asked to identify the information they

need, search for and find the information, and use it analytically and critically to make investment recommendations.

DISCUSSION ON SITUATIONAL ORIENTATION AND INFORMATION SEARCH

Regarding the Introductory Managerial Accounting course, 70% of survey respondents indicated that they preferred that the information provided by the avatars be included in the written case. For the Intermediate Cost Accounting course, 81% of respondents preferred written information. We recognise the possibility that students may be reacting to technical difficulties they encountered in interacting with the avatars. On the other hand, it is possible that students were expecting to be given the required information on-paper so that they could simply pick out the numbers, unthinkingly put them into the theory and calculate “the answer” to get the marks. It is of concern that students having this prior expectation are likely to be unaware of in-situational application for relevance, including the need to specify, search for and find their own information in and of the situation at the time. As such, they likely have learned (by default) a theory-doctrinaire mindset that must be lacking real-world relevance. They always can say in theory what needs to be done but they have neither awareness of, nor capability for doing it in situational practice. Such a mindset could be one reason for the longtime charges that business school graduates generally have been lacking real-world relevance.

Students learning information search have to learn to decide for themselves what situational information they need to search for and where to look for it. In learning analytical and critical thinking students have to learn to decide for themselves what to do with information to make findings, conclusions and recommendations. Students are unlikely to develop this real-world relevant learning if they do not receive real-world relevant teaching. This is difficult as students must be left to learn and to think for themselves and with only sufficient guidance and support that they are not told specifically what to do – otherwise they will learn only to follow instructions. Ideally, this learning should be individual as each and every student carries out his or her own learning explorations – and the teaching time and effort explodes accordingly. However, there are powerful underlying cultural and administrative forces in university business schools. These forces can militate against real-world relevant teaching of in-situational investigative information search, analysis and critical thinking, and it is likely that they have continued to do so for some time (Skipton & Furey, 2017).

Business school faculty members generally work in a brutal “publish-or-perish” academic culture and administrative performance regime. Individuals have long been aware that to keep their jobs, i.e., gain tenure, and to obtain promotion, they must publish as much as possible, in as high-ranked journals as possible. (See, for example, Fielden & Gibbons, 1991.) It is rational and realistic for individuals to maximise time spent on research and publication efforts (Harmon, 2006; Khurana, 2007) and, as a result, to minimise time spent on teaching and academic service, including program and course development. (See, for example, Benson, 1985.) Teaching more real-world relevant in-situational investigation, information search, analysis and critical thinking takes more time and effort, as does the marking of individual assignments needed to provide means for student learning. Individual faculty members who must “publish or perish” sensibly cannot afford to put in the levels of time and effort that can be required. Instead, and either by necessity or by default, and as Bloom et al. (1956) pointed out: “*Because of the simplicity of teaching and evaluating knowledge, it is frequently emphasized as an educational objective out of all proportion to its usefulness or its relevance for the development of the individual* (p.34).” In practice, time spent on classroom teaching can be minimised by teaching only textbook theory-normative knowledge-only, with theory-illustrative examples and using the publisher’s classroom support package, with multiple-choice tests for quick and easy marking. Course assignments can be done in groups as a means to reduce time spent on marking. Large class sizes and a lack of support resources are drivers for further reducing content, assessed work and marking so as to be able to do the teaching in minimum time.

Course teaching evaluation questionnaires (CTEQ’s) administered to students can be used in tenure and promotion considerations. This means that faculty members must “be-popular-or-perish,” i.e., get high scores from students, and with no complaints. The requirement to “be popular or perish” militates

against in-situational, real-world relevant teaching. Students left on their own to figure things out for themselves are likely to become frustrated where their efforts do not straightforwardly produce the answer or even identify the problem, and they can become annoyed when they get lower marks. This can be especially so where students have come to expect to be spoonfed a diet of normative textbook theory that is easy to learn and regurgitate in multiple-choice examinations. Students who have been led with theory examples to expect to be told what to do to get the marks are likely to complain to the dean that a teacher who is leaving them to learn how to think critically is not doing his or her job. They certainly can be expected to reciprocate with low CTEQ scores. Sensible faculty members who want to keep their jobs therefore have a very good reason not to undertake in-situational, real-world relevant teaching in their classrooms. As well, they know that students can be influenced with easy learning and high marks to reciprocate with high CTEQ scores for the teacher (Clayson, Frost & Sheffet, 2006). It follows, therefore, that maximising CTEQ scores can be a powerful driver for further simplifying classroom content, for reducing requirements for student learning, and perhaps for judicious grade inflation.

Business school students who largely experience textbook-knowledge-only teaching in their courses would be expected to develop an ideological, theory-doctrinaire mindset lacking both the awareness of, and means for in-situational application with information search, analysis and critical thinking. Such students must lack the both the awareness of and the capacity for in-situational real-world relevance.

Theory-doctrinaire graduates-as-managers can act as self-interested mercenary technocrats, focusing only on the bottom line and using their positional authority to tell subordinates “What should be done.” Such managers are self-opinionated spectators detached from and oriented outside real-world situations and realities. They do not want to know about the situational realities that subordinates must cope with in “doing it.” Such business school graduates-as-managers may be seen as detached and hubristic (Mintzberg, 2009). It is, therefore, not surprising that charges that business school graduates are lacking real-world relevance have been continuing since business schools were established in North America.

Business school students are not going to get real-world situationally relevant learning unless they experience situationally relevant teaching. Further research therefore must be to survey students at various stages throughout their degree program, to explore their actual classroom acquaintance with teaching and learning for situational application, information search and critical thinking for real-world relevance.

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APPENDIX 1
SURVEY RESPONSES – INTRODUCTORY MANAGERIAL ACCOUNTING

No. Respondents: 27

Question	Yes	No
Is this the first time you've taken a distance course	13 (48%)	14 (52%)
Did you take your other distance courses at SMU	14 (52%)	13 (48%)
Have you completed projects in other courses, using case studies similar to the one in this course	19 (70%)	8 (30%)
Did any of your other courses use Avatars to provide information	6 (22%)	21 (78%)
Would you have preferred it if the information provided by the Avatars had been included in the case document	19 (70%)	8 (30%)

Rate the Avatars in this course compared to Avatars used in other courses you have taken

Avatars were significantly better than others	0	0
Avatars were better than others	4	67%
Avatars were comparable to others	0	0
Avatars were not as good as others	2	33%
Total No. Respondents	6	100%

How helpful did you find the Avatars for your project?

Very helpful	2	7%
Helpful	21	78%
Not helpful	4	15%
Total No. Respondents	27	100%

Representative of real life situations in the workplace

Very representative	6	22%
Somewhat representative	18	67%
Not very representative	2	7%
Completely unrepresentative	1	4%
Total No. Respondents	27	100%

Did the use of avatars make the project more interesting?

Yes, much more interesting	4	15%
Yes, a little more interesting	16	59%
No, the project would have been just as interesting without the avatars	6	22%
No, there was nothing that could make this project interesting to me	1	4%
Total No. Respondents	27	100%

APPENDIX 2

SURVEY RESPONSES – INTERMEDIATE MANAGERIAL ACCOUNTING

No. Respondents: 100

Question	Yes	No
Have you completed projects in other courses, using case studies similar to the one in this course	51 (51%)	49 (49%)
Did any of your other courses use Avatars to provide information	3 (3%)	97 (97%)
Would you have preferred it if the information provided by the Avatars had been included in the case document	81 (81%)	19 (19%)

Rate the Avatars in this course compared to Avatars used in other courses you have taken

Avatars were significantly better than others	4	22%
Avatars were better than others	1	6%
Avatars were comparable to others	13	72%
Avatars were not as good as others	0	0%
Total No. Respondents	18	100%

How helpful did you find the Avatars for your project?

Very helpful	7	9%
Helpful	25	32%
Somewhat helpful	47	59%
Total No. Respondents	79	100%

Representative of real life situations in the workplace

Very representative	1	1%
Somewhat representative	24	24%
Not very representative	54	54%
Completely unrepresentative	21	21%
Total No. Respondents	100	100%

Did the use of avatars make the project more interesting?

Very interesting	9	9%
Interesting	28	28%
Somewhat interesting	38	38%
Not interesting	25	25%
Total No. Respondents	100	100%

APPENDIX 3

COMPARATIVE RESULTS: INTRODUCTORY VERSUS INTERMEDIATE STUDENTS

No. Respondents: 27 No. Respondents: 100

Question	Introductory		Intermediate	
	Yes	No	Yes	No
Have you completed projects in other courses, using case studies similar to the one in this course	19 (70%)	8 (30%)	51 (51%)	49 (49%)
Did any of your other courses use Avatars to provide information	6 (22%)	21 (78%)	3 (3%)	97 (97%)
Would you have preferred it if the information provided by the Avatars had been included in the case document	19 (70%)	8 (30%)	81 (81%)	19 (19%)

Rating of Avatars in this course compared to Avatars used in other courses you've taken

No. Respondents: 6 No. Respondents: 18

	Introductory		Intermediate	
	No.	%	No.	%
Avatars were significantly better than others	0	0%	4	22%
Avatars were better than others	4	67%	1	6%
Avatars were comparable to others	0	0%	13	72%
Avatars were not as good as others	2	33%	0	0%

How helpful did you find the Avatars for your project?

No. Respondents: 27 No. Respondents: 79

	Introductory		Intermediate	
	No.	%	No.	%
Very helpful	2	7%	7	9%
Helpful	21	78%	25	32%
Somewhat helpful	4	15%	47	59%

Representative of real life situations in the workplace

No. Respondents: 27 No. Respondents: 100

	Introductory		Intermediate	
	No.	%	No.	%
Very representative	6	22%	1	1%
Somewhat representative	18	67%	24	24%
Not very representative	2	7%	54	54%
Completely unrepresentative	1	4%	21	21%

Did the use of avatars make the project more interesting?

No. Respondents: 27 No. Respondents: 100

	Introductory		Intermediate	
	No.	%	No.	%
Very interesting	4	15%	9	9%
Interesting	16	59%	28	28%
Somewhat interesting	6	22%	38	38%
Not interesting	1	4%	25	25%