Students' perceptions of a virtual team assessment item (VTAI): An Australian case study

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In today's global business environment, business graduates are often required to work as members of virtual teams. This paper presents the findings of an electronic survey of distance education students' perceptions concerning a virtual team assessment item (VTAI) using asynchronous discussion. The VTAI was set for an undergraduate marketing course at an Australian university. The findings revealed that while the distance education students did not necessarily enjoy the VTAI and found the assessment task to be both frustrating and time-consuming, they agreed that the task was beneficial to their learning and should be included in future course offerings.

Introduction

Globalisation of business and increasing reliance upon communication via electronic mediums means that today's business graduates must develop effective electronic communications and virtual teamwork skills (Cascio, 2000; Chase, 1999; Townsend, DeMarie & Hendrickson, 1998). Electronic means of communication have removed barriers for participation for distance education students and allowed national and international students to become members of a virtual learning community independent of place and time (Berge & Collins, 1993; Whatley & Bell, 2003; Wu & Hiltz, 2004). Online interactions facilitate social and collaborative learning processes that support the shift away from a teacher-oriented, instructivist approach toward a student-centred, constructivist teaching paradigm (Stacey, 2002). Further, the WebCT learning management system allows students to be grouped in virtual teams to work together on assessment tasks and thus develop important teamwork skills. The main objective of this study was to determine distance education students' perceptions toward participation in a virtual team assessment task via an asynchronous online discussion board in terms of achieving course learning outcomes. Other objectives included identifying what students liked and did not like about the VTAI, as well as identifying strategies for more effective implementation of virtual team assessment items.

Background

Modern teaching practice emphasises student-centred learning where knowledge is constructed by individuals and groups on the basis of their experiences, rather than through a one-way information transfer by teachers (Whatley & Bell, 2003). In this constructivist paradigm, teachers become facilitators of learning by placing greater emphasis on peer interactions for cognitive development (Curtin, 2002). For this study the 'constructivist' approach involves the belief that better learning occurs when knowledge is the result of a situated construction of knowledge (Bonk & Cunningham, 1998). Team-based discussion and assessment allows collaborative learning to occur and encourages the development of important teamwork skills for business students.

Learning involves both cognitive and social processes, and under a social constructivist paradigm students are encouraged to collaborate and engage in active dialogue with team

members to construct knowledge (Bruner, 1990; Jonassen, 1999). Further, social interaction influences cognitive development and is important for raising the quality of distance learning programs (Moore, 1989; Vygotsky, 1978; Wilson & Stacey, 2004). Providing students with an opportunity to work together with a team and extend their current knowledge ('scaffolding'), by encouraging them to go beyond simply answering questions, and to actively engage in critical dialogue with other students ('reciprocal teaching'), supports a social constructivist paradigm (Garrison et al. 2001; Hausfather, 1996).

Asynchronous online discussions allow students who are studying at a distance to construct knowledge together as part of a team by sharing and reflecting upon their experiences and perspectives to arrive at shared meanings and perspectives (Goodyear, 2001; Kolb, 1984; Wilson & Stacey, 2004).

Teamwork and learning outcomes

Teamwork can be problematic for student teams operating face to face, but these problems may be exacerbated when operating in virtual teams, where non-verbal cues cannot be observed and where asynchronous discussion means that immediate responses and feedback cannot be gathered. Conversely, Berry (2002) argues that virtual teams may allow teams to focus more clearly on specific objectives and avoid non-constructive discussion (Buckley & Yen, 1990; Nunamaker, Applegate & Konsynski, 1987).

While some studies have revealed that there are no differences between virtual teams and face-to-face teams on decision-making tasks (Hollingshead, McGrath & O'Connor, 1993), other studies have revealed that, as compared to virtual teams, face-to-face teams result in a higher degree of cohesion and greater satisfaction with both team interaction processes and outcomes (Warkentin, Sayeed & Hightower, 1997). Posting written responses in the virtual team context encourages thoughtful composition of contributions to the discussion forum. Indeed, Garrison et al. (2001, p.6) suggest 'that there is a probable connection between the use of text-based communication and the achievement of higher-order learning objectives'.

Case study: Marketing channels course

A virtual team assessment item (VTAI) was set for an undergraduate marketing course at an Australian university for on-shore and off-shore distance education students. The students were required to discuss a case study and prepare a group case brief within a team of five using the course discussion board (WebCT) and group email. The objectives of the assessment were to allow students to acquire important graduate skills including communicating electronically and working as part of a virtual team. Further, as case analysis can be quite a difficult task, a team-based approach to the assessment was used to assist students to come to terms with the case analysis process in a collaborative learning environment. Detailed explanation of the task was provided at the commencement and during the semester. The course leader also posted suggestions for addressing the task and encouraged students to take a proactive approach. Marks were assigned for both the content of the case brief and the contribution of each team member to the task.

Research methodology

Near the end of semester, an electronic survey was conducted to gather students' perspectives on the VTAI. Students submitted anonymously and the researchers could only access a summary of responses from a dedicated database. Students were asked to express their level of agreement to a number of statements about the VTAI on a five-point Likert scale. Some statements were based on a review of the literature which identified a number of potential cognitive and social learning outcomes of online discussions. Other statements reflected course objectives, including the development of key graduate attributes, such as developing effective electronic communication and virtual teamwork skills. Qualitative data were collected using

open-ended questions which asked students what they liked most and liked least about the VTAI. Demographic data on gender, age, employment status, courses completed, place of study (Australia or off-shore) and prior access to course discussion boards were collected to allow analysis across groups. In addition, the teaching team also met at the end of semester to discuss the VTAI, in terms of how they perceived students performed on the task and how the task could be improved.

Findings

Twenty valid responses from the forty-four students who completed the VTAI were collected representing an effective response rate of 45 per cent. Females represented three quarters of the respondents (75%), with half of the respondents (50%) aged eighteen to twenty-five years, 40 per cent of the respondents aged twenty-six to thirty-five years, and 10 per cent of respondents aged over thirty-five years. Most respondents were full-time employed (45%), with a further 25 per cent being part-time or casually employed, and 15 per cent being full-time students. Most of the respondents (75%) were studying in Australia rather than off-shore (25%). The majority of students (65%) had completed at least ten courses prior to this course. Just under half of the students (45%) indicated that they had accessed the web course homepage in previous courses more than once per week, with a further 45 per cent reporting access at least once per fortnight. Hence, the respondents were relatively experienced in accessing course homepages.

Students were asked to indicate the extent to which they agreed or disagreed with a number of statements concerning the virtual team assessment item (VTAI) (table 1).

Table 1 Students' perceptions of the VTAI (%). Percentages and means of students' agreement with statements concerning the VTAI – 5 point Likert scale ranging from 5 = strongly agree (SA) to 1 = strongly disagree (SD)

Statement	SA	A	N	D	SD	Mean	StD
The VTAI allowed me to develop more *effective electronic communication skills*	5.0	40.0	30.0	30.0	5.0	3.2	1.0
The VTAI helped me to become more *confident in using the course discussion board*	5.0	55.0	25.0	15.0	0.0	3.5	0.8
The VTAI allowed me to develop more *effective virtual teamwork skills*	0.0	50.0	30.0	15.0	5.0	3.3	0.9
The VTAI provided me with an *opportunity to meet other students* in the course	15.0	60.0	20.0	5.0	0.0	3.9	0.7
The VTAI allowed me to develop *closer relationships* with other students in the course	15.0	20.0	30.0	35.0	0.0	3.2	1.1
The VTAI helped to *reduce the sense of isolation* that I sometimes feel as a distance learner	10.5	36.8	10.5	36.8	5.3	3.1	1.2
Discussing the case with other students via the VTAI was useful in terms of *coming to terms with the case analysis process*	21.1	47.4	15.8	15.8	0.0	3.7	1.0

Having developed a case brief with other students via the VTAI has allowed me to feel more *confident about writing my individual case analysis report*	5.3	42.1	10.5	36.8	5.3	3.1	1.1
Knowing that a *teaching team member was monitoring* the VTAI gave me more confidence in approaching the task	15.8	52.6	21.1	10.5	0.0	3.7	0.8
The VTAI should be used for *future course offerings*	0.0	52.6	10.5	21.1	15.8	3.0	1.2
I was concerned about *equity issues* due to uneven participation and contribution by other students in the VTAI	36.8	36.8	21.1	5.3	0.0	4.1	0.9
I felt that I *contributed more* to the VTAI than other team members	21.1	15.8	47.5	15.8	0.0	3.4	1.0
Preparing a case brief with other students via the VTAI was *less stressful* than preparing the case brief on my own would have been	0.0	26.3	15.8	31.6	26.3	2.4	1.2
Preparing a case brief with other students via the VTAI was more *time consuming* than preparing the case brief on my own would have been	26.3	42.1	15.8	15.8	0.0	3.8	1.0
I experienced *difficulties accessing* the course homepage during the period of the VTAI	21.1	42.1	0.0	21.1	15.8	3.3	1.5
I gained a *better grade* for this assessment item having completed it with a virtual team than I would have by completing it by myself	10.5	15.8	63.2	5.3	5.3	3.2	0.9
The VTAI allowed me to *develop some useful graduate skills*	0.0	47.4	26.3	21.1	5.3	3.2	1.0
The VTAI was an *enjoyable* assessment task	10.5	31.6	15.8	31.6	10.5	3.0	1.2
The VTAI was a *frustrating* assessment task	15.8	36.8	31.6	10.5	5.3	3.5	1.1
The VTAI was *beneficial to my learning* in this course	10.5	47.4	26.3	15.8	0.0	3.5	0.9
I felt some team members were too *dominant and/or opinionated*	0.0	15.8	42.1	31.6	10.5	2.6	0.9
I felt *frustrated with the lack of input and effort* by some team members	36.8	15.8	26.3	10.5	10.5	3.6	1.4

Cognitive learning outcomes. One of the major objectives of the VTAI was to allow students to develop confidence in the case analysis process. This objective seemed to have been met with more than two-thirds of students (68.5%) agreeing that discussing the case with other students via the VTAI was useful in terms of coming to terms with the case analysis process, and almost half of the students (47.4%) agreeing that developing a case brief with other students via the VTAI had allowed them to feel more confident about writing their individual case analysis report. However, while almost two-thirds (57.9%) of students agreed that the VTAI

was beneficial to their learning in this course, less than one-third of the students (26.3%) agreed that they had gained a better grade for this assessment item having completed it with a virtual team than they would have if they had completed it by themselves. Indeed, two-thirds of the students (63.2%) indicated that they did not know whether or not doing the task with a team had led to a better grade.

Social learning outcomes. The majority of students (75%) agreed that the VTAI had provided them with an opportunity to meet other students in the course, while about one-third of the students (35%) also agreed that the VTAI had allowed them to develop closer relationships with other students. Moreover, almost half of the students (47.3%) agreed that the VTAI had helped to reduce the sense of isolation that they sometimes experience as a distance learner.

Development of key graduate skills. Forty-five per cent of the respondents agreed that the VTAI had allowed them to develop more effective electronic communication skills, half of the respondents agreed that the VTAI had allowed them to develop more effective virtual teamwork skills, and about two-thirds (60%) agreed that the VTAI had helped them to become more confident in using the course discussion board. Further, almost half of the respondents (47.4%) reported that the VTAI had allowed them to develop some useful graduate skills.

Students' perceptions of the virtual team assessment item. The majority of respondents (52.6%) agreed that the VTAI should be used for future course offerings, despite less than half of students (42.1%) agreeing that they had enjoyed the assessment task. Many students found the assessment task to be frustrating (52.6%), more time-consuming than completing the task on their own (68.4%), and almost two-thirds of the students (57.9%) disagreed that preparing a case brief with other students via the VTAI was less stressful than preparing the case brief on their own. One factor that might have impacted on the enjoyment and created frustration was difficulties with accessing the discussion board, with two-thirds of the students (63.2 %) of respondents agreeing that they had experienced difficulties accessing the course homepage during the period of the VTAI. Unfortunately, the university had experienced a major server breakdown during the period of the VTAI which prevented access for a number of days and necessitated the granting of an extension. However, more than two-thirds of the students (68.4%) agreed that knowing a teaching team member was monitoring the VTAI gave them more confidence in approaching the task.

The majority of students (73.6%) agreed that they were concerned about equity issues due to uneven participation and contribution by other students in the VTAI, with more than half (52.6%) agreeing that they felt frustrated with the lack of input and effort by some team members. Indeed, many of the respondents (36.9%) agreed that they felt that they had contributed more to the VTAI than other team members. However, dominance by team members did not appear to be a major issue with only a few students (15.8%) agreeing that some team members were too dominant and/or opinionated.

What students liked and disliked about the VTAI. Qualitative data were collected from open-ended questions which asked students what they liked most and least about the VTAI. Responses indicated a mixed reaction to the VTAI with one student stating, 'the VTAI concept is excellent for external students and I hope that it is developed further and continues', while another student stated, 'this was the least enjoyable assignment of all my courses'.

The main issues identified by respondents in terms of what they liked most about the VTAI included the opportunity to develop teamwork skills and for collaborative learning (7 students), the opportunity to meet other students (6 students), and the ability to develop effective electronic communication skills and learn how to use the course homepage (3 students). The major issue identified by respondents in terms of what they liked least about the VTAI was difficulty working with other students, in particular due to lack of participation or inequitable contributions (11 students). Other issues concerned poor access to the course homepage (5 students), difficulty in synchronising discussions (3 students), and the time the task required for only 10 per cent of their final grade (3 students).

Improving the VTAI. Key areas for improvement that were identified by the respondents included improving access to the discussion board (5 students), improving participation (4 students), and facilitating synchronous discussions (3 students). However, four students stated

that the assessment item did not need any improvement with one student stating, 'the VTAI is well structured and is a good idea'.

Finally students were given an opportunity to make any other comments concerning the VTAI. Most issues that were raised concerned the difficulty experienced in accessing the course homepage and the need to synchronise discussion times.

Reflections of the teaching team. At the end of semester, the teaching team also met to discuss the VTAI. During the semester, the teaching team had closely monitored the VTAI process and associated discussions, and had observed that while some groups functioned well and seemed to enjoy the task, other groups experienced quite a number of problems. Problems included lack of participation and inequitable participation and, further, some groups appeared to have very little idea of how to operate as a virtual team. The teams appeared to function more effectively when one member of the group adopted an informal leadership role and where participation by team members commenced earlier in the semester and was more regular. Indeed, in one well-functioning team, two of the team members realised that they lived in the same city in the United States and met for lunch to discuss the case. Problems experienced by less functional teams appeared to result primarily from inadequate or irregular participation. Lower levels of participation appeared to be associated with difficulties accessing the course homepage, time constraints, lack of motivation, or poor commitment to the task by some team members. However, while some teams experienced conflict during the task they seemed to manage this conflict quite well.

Limitations and implications for practice

One of the major limitations of this study is the small sample size leading to possible response bias, however the diversity of opinions indicated that both students who liked and disliked the assessment task did respond to the survey. The findings of this survey are limited to one course and one assessment task. Future research could be extended to other courses at both the undergraduate and post-graduate levels, as well as different assessment items.

As a result of the findings of this research and observations from the teaching team, a number of strategies for the effective implementation of virtual team assessment items are recommended. First, due to diverse opinions on working as part of a virtual team on an assessment item it is proposed that teamwork be optional in future offerings. However, due to the potential cognitive and social learning outcomes of the VTAI and the important graduate skills that can be gained, students should be actively encouraged to work in a virtual team.

Greater direction on operating as an effective virtual team should be provided to students, such as the need to establish group roles, assign tasks and responsibilities, and set ground rules for interaction and participation. Further, clear criteria for evaluation of the assessment of the task should be provided so that students are aware that they are being assessed for their contribution to the task and how they operate as part of a virtual team, and not solely for the written output of the team-based assessment.

The data revealed that the teams appeared to function more effectively when one member of the group adopted an informal leadership role and where participation by team members commenced earlier in the semester and was more regular. Therefore, the nomination of a team leader and the use of pacing strategies, such as designated times to commence and post project plans and progress reports, are recommended implementation strategies. It is also recommended that peer evaluation be factored into the assessment process, to help overcome the articulated issue of inequitable contribution by some team members. However, these pacing strategies and scaffolding of the team activities may place a greater workload on the teacher during the operation of the VTAI. Nevertheless, nomination of a team leader and peer evaluation should place most of this operational responsibly back onto team members, thereby building effective teamwork skills, plus minimising the impact on teaching load. However, the role of the teacher should not undervalued, as research indicates that when a proactive role is adopted by the teacher, in terms of facilitating the functioning of the virtual team, student activity is increased and higher-order thinking is supported (Fabro & Garrison, 1998).

Inconsistent access to the course homepage was identified as another issue in this case study. However, technology and access are constantly improving, so it is anticipated that this will not remain a major issue. Indeed, the university has now implemented a policy outlining minimum computer hardware and internet access requirements for all students, thus access should be less of an issue in the future.

Conclusion

The development of key graduate skills including being able to communicate effectively using electronic means and working as part of virtual teams is essential for today's global business graduates. In this paper, the findings of an electronic survey of distance education students' perceptions concerning a virtual team assessment item (VTAI) using asynchronous discussion were presented. Students reported a diverse range of views on the VTAI. However, the findings revealed that while the distance education students did not necessarily enjoy the VTAI and found the assessment task to be both frustrating and time-consuming, they agreed that the task was beneficial in terms of achieving cognitive and social learning outcomes, and for developing more effective electronic communication and virtual teamwork skills. The students agree that the VTAI should be included in future course offerings. Implications for practice including making the task optional and providing more direction on how to operate as part of a virtual team were identified.

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