Facilitating student interaction in a group project: Experience with the use of *Blackboard*

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This paper aims to reflect on the experience of using Blackboard's "Group Pages" functionality to facilitate students' interaction in a group project assessment. The unit used in this project is an Information Technology Strategy course. It is a post-graduate level course. Preliminary findings indicate that there appears to be a strong association between the use of the tools and the group marks. However, we can't claim that the use of the tools was the only or even the major factor that has affected group marks. The paper concludes with some observations.

Keywords: group project, blackboard, assessment, information technology, collaborative tools

Introduction

The change in the competitive landscape of the higher education environment has opened up the higher education market to intense competition. Increasingly, universities are pressed to make their offerings as flexible as possible and produce graduates that are work-place ready (Biggs, 2003; Ramsden, 2005). Effective utilisation of information and communication technology (ICT) tools to supplement but not supplant mainstream and time-tested teaching and learning strategies can open a window of opportunities for universities to achieve some of these goals. With the advancement of the Internet and e-learning, Universities have unique opportunities to re-think the way education content is presented, extend the reach and richness of academic programs, enhance the effectiveness and efficiency of course delivery and improve the content, variety and administration of assessments (Jackson and McDowell, 2000). Small group teaching and group assessment are areas that can benefit from the use of ICT tools.

Group projects are ideal not only to teach functioning knowledge but also to develop students' cooperative skills, which are critical to success in a workplace (Biggs, 2003: 187). However, students usually face a number of problems when they work in a group project. The use of information technology might assist to mitigate some of these challenges students face in group assessments. In particular, collaborative tools create occasions that enable learners to synchronously and asynchronously interact with the course content, the instructor, and their peers (Hardaway and Scamell, 2005). A number of studies have reported on students' experience with e-learning systems and the impact of these systems on teaching and learning. There is however less research that addresses the use of these systems to achieve specific learning outcomes such as better group interaction and performance.

The purpose of this paper is, therefore, to reflect on the author's experience of using Blackboard's collaboration tools to facilitate and support student interaction. The main questions to be explored in this paper include:

1. To what extent the students have used the e-learning tools?
2. Which of the tools have been used frequently and what is the use pattern?
3. Can the use of technology help to tackle some of the problems learners face in group assessments?
4. Is there any relation (correlation) between the extent of use and group marks?

Background literature

Small group based teaching and assessment allow learners to cooperate among each other and maximise their own and each others' learning (Garfield, 1993). It also facilitates the construction of knowledge. Some, if not all, education theorists consider the constructivist approach, with its emphasis on what learners do rather than their perspective, an effective mechanism to encourage active and deep learning and achieve better learning outcomes (Biggs, 2003; Ramsden, 2005). Practically, this implies that educators should strive to create occasions for students to work in small groups. Post-university, most

graduates will be required to operate in teams or groups. Group work is therefore an effective ground to develop vital work-relevant skills and capabilities such as inter-personal, communication, leadership and "followership" (Race, 2001). In addition, it provides a conducive-environment for learners to flex and practice these skills.

There are, however, a number of difficulties in small group learning in general and group based assessments in particular. Some of these include: difficulty to coordinate activities and times, lack of continuous engagement once individual roles/tasks are defined and allocated, limited resource sharing, lack of integration of individual contributions and late starting of project (Biggs 2003; Brown and Glasner; 1999; Garfield, 1993; Morris, 2001). Teachers face a host of problems too. These include (1) identifying and dealing with free-riders (2) fairly evaluating individual contribution and learning (3) monitoring group progress and providing actionable feedback and (4) using group assessments as part of their teaching strategy (Brown et al, 1997; Race, 2001). One of the questions worth exploring therefore is to what extent the use of technology can help to tackle some of these challenges.

Several researchers have investigated the suitability of ICT-based learning to specific learner attributes (see for example Linn, 1995 and Alavi and Leidner, 2001). The utility of IT tools to create flexible instructional and learning frameworks that can fit to the learning styles of students have been explored. Flexibility is generally defined as "offering choices in the learning environment so that a course of study can meet the individual needs of students" (Bryant et al, 2003: 41). Use of ICTs can remove the traditional inflexibilities of time, location, content, interaction and instructional approaches (Collis, 1998). ICTs allow learning to be individualised and self-paced and facilitate better teacher-student and peer-to-peer interactions (Bryant et al 2003; Ramsden, 2005). Some works have therefore focused on developing instructional frameworks, such as "Scaffolded Knowledge Integration (SKI) framework" (Linn, 1995) 'Computer Supported Cooperative Learning (CSCL)" (Scardemalia and Bereiter (1996) and technology mediated- learning (Alavi and Leidner, 2001) that use computers as learning partners. In some cases, this extends to the use of technology as an alternative to traditional teaching methods (Bryant et al, 2003).

In group works in particular, ICTs are ideal to facilitate team interaction and mitigate some, if not all, of the challenges discussed above. Especially, collaborative ICT tools create space to enable learners to synchronously and asynchronously interact with course content, the instructor, and their peers (Hardaway and Scamell, 2005). Research indicates that effective use of these tools can potentially create a sense of community that encourages sharing of resources and perspectives; develop expressions of support and encouragement among students; overcome the limitations of space and time; promote student reflection; and positively influence the quality of learning (Alavi, 1994; Hardaway and Scamell, 2005; Lim and Benbasat , 1997). Scardemalia and Bereiter (1996) refer this process where learners, working as a group, use technology to build their ideas, share it with one another and receive feedback as "*Knowledge Forum*".

My university's e-learning shell (Blackboard) provides some collaborative tools. It is equipped with group tools such as discussion board, virtual classroom, file exchange and group e-mail. In this paper, I reflect on the experience of using some of these tools in the Information Technology Strategy unit assessment.

Research method

The research methodology falls under the realm of action research (Bell, 2005:8-9). The specific method used for data collection is archive evaluation. The data were analysed using descriptive statistics and correlation analysis.

The setting

The IT Strategy unit is a core subject in the Master of Business Information Technology program. It also recruits from the Master of Enterprise Architecture, Master of Commerce, Master of Professional Accounting, and Master of Science in Information Technology programs. The group project constitutes 60% of the course assessment. The student profile is quite diverse- full time vs. part time, international vs. local, young vs. matured, and students with no vs. with over 20 years work experience. Their disciplinary background is diverse too. While some have no or limited IT education or work experience, others have done an IT undergraduate degree and/or have been working as IT professionals including in managerial positions.

My experience in teaching the course (and other courses that involve group project assessments) reinforces the problems of group projects discussed in the literature review section. In addition, because of the diversity of the student population in the course, students face communication and cultural challenges. Part-time students struggle to come to campus for project meetings. In face-to-face discussions, full-time and younger students often get overshadowed by the more vocal and experienced part-time students. There is also a lack of coordination of group activities. Individual students often fail to understand how their contribution fits to the project as a whole. As an instructor, I don't have much chance to supervise project progress and provide constructive feedback and input along the way of the project. This means, I do not have much chance to use the assessment as part of my teaching strategy and become a partner in their learning.

As one of the solutions to tackle the above challenges, I implemented the "Group Pages" functionality of Blackboard with discussion board, group file exchange and group e-mail tools to groups that had volunteered to have such a space in the second term of 2006. This report focuses on the first two tools only. The group page use was voluntary and no mark was allocated for using the facility. Students were encouraged to use the facilities and as an incentive I promised to provide feedback on discussions, draft works and work-in-progresses exchanged through the group spaces. The nature of this feedback was mostly lecturer-push rather than student-pull, i.e. I regularly visited the discussions and files exchanges and provided comments, directions, suggestions, ideas, encouragements and resource pointers when I perceived the need to do so. Groups that haven't volunteered to use the space received feedback on demand basis either during face to face consultations or via e-mail, an option which was also available to those other groups who opted to use the group page.

Result

Acceptance and use

There were a total of 25 groups with five members per group on the average. Out of these, 17 have requested for the group page, showing an acceptance intention of 68%. Each page is accessible to the course tutor and members of that group only. Of the 17 groups, two haven't used any of the tools resulting in 15 of the groups (60%) using the group page functionality. To understand usage patterns, the number of files exchanged and discussion threads posted were counted (see Table 1). There was a huge variation among the groups in terms of using each of the tools (see Table 1). As can be seen form table 1, two groups have used the file exchange tool only and even in those two cases, only a couple of files were exchanged. With the exception of Group 14, the groups that made the most use of the discussion board (such as groups 12, 13 and 15) were the same groups that have exchanged most of the files. Among themselves, these three groups constituted almost 50% of the total use. Overall, the four groups (12, 13, 14, and 15) made 68% of the total use. The students also make a slightly more use of the discussion board (with 304 instances of use) compared to the file exchange.

Table 1: Frequency distribution of use

Group	Number of files exchanged	Number of messages	Total
Group 1	2	0	2
Group 2	3	0	3
Group 3	6	5	11
Group 4	6	2	8
Group 5	9	1	10
Group 6	6	12	18
Group 7	12	8	20
Group 8	16	6	22
Group 9	17	0	17
Group 10	9	17	26
Group 11	25	9	34
Group 12	36	52	88
Group 13	42	2	44
Group 14	7	96	103
Group 15	39	94	133
	235	304	539

The content of files exchanged can be categorised in to four major areas (Figure 1). These include (1) resources such as project relevant reading and report writing guides, (2) individual contributions, (3) interim reports, i.e., reports where individual contributions are aggregated and presented for group members to comment and (4) project management related documents such as Gantt chart, task allocation, work breakdown, group meeting minutes, and group contracts.
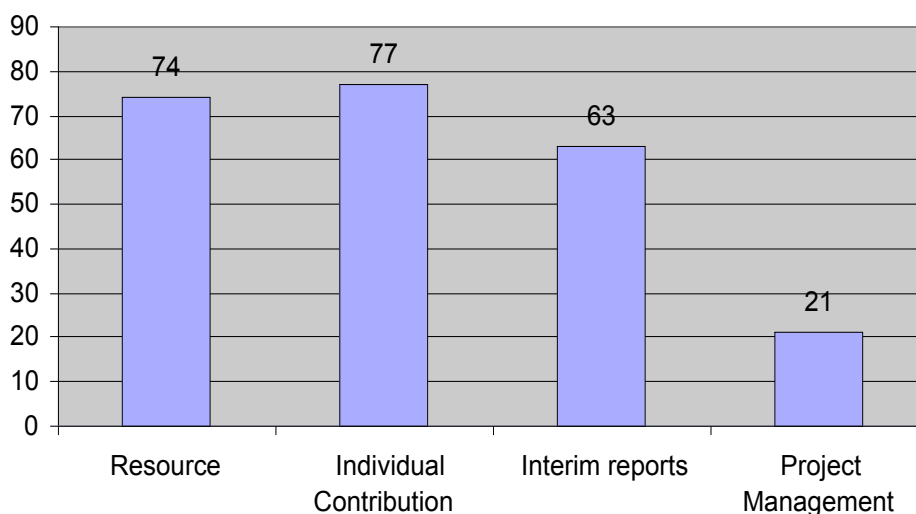
Figure 1: Content of files exchanged

The content of the messages in the discussion board include

- Organising meetings– both off line and online
- Open discussion, sharing jokes
- Discussion of ideas and perspectives
- Help/input to complete an individual task
- Peer feedback on individual contributions and interim reports
- Engagement with instructor

The contents of the files and discussion board messages exchanged can indicate the nature of collaboration among the group members. The result here provides further anecdotal evidence to Scardemalia and Bereiter's (1996) idea of how computer supported collaborative learning facilitates "*Knowledge Forum*" where learners use technology to build their ideas and share it with one another and receive feedback. The jokes and open discussions can indicate group cohesion and the formation of a learning community.

The instructor has given 67 instances of feedback. Since the feedback was based on group activities on the group pages, those students who used the pages most have received most of the feedback. While some of the feedbacks were a couple of lines long, most were detailed comments to guide students in their project. Below are four examples.

> This is excellent and you are approaching the project strategically! Keep up the good work. I like the punishment idea:
>
> I took the liberty of browsing through your exchanges in the interest of giving constructive feedback. I felt that your approach is slightly tool driven rather than need driven. For instance, you are intending to use both maxims and BSC. Had you moved from the tool and looked at what you really wanted to do, that might help. In that sense, one of the tasks in strategy development is Analysis. The first thing to do here should be to determine what you are going to analyse (scoping) and that will lead you on how to do it better. For instance, you can decide to analyse the current role of IT and/or the extent of alignment and/or the decision making style, etc, etc. Once you made this decision, then how to analyse and which tools (stages of growth models, strategic grid, SWOT (through 7s and 5 forces), etc) to apply become quite easy. Don't use tools just for the sake of using them. You will get more value if you go deeper rather than wider. Regarding ethics issues, RMIT (and our school) has strict ethics guidelines for any research that involves human subjects. That is

why on the assignment description i clearly stated that anyone who intends to conduct primary data collection (as -----was attempting to do) should clear that with me. However, I do appreciate your resourcefulness! Hope this helps

I did have a quick read of the draft document. It reads well. Check if 5.1 is in synch with figure 3.3. I spoke to one of your group members last week Wednesday and you can tap to her to improve this further.

Good competitive and SWOT analysis. It will read great if you capture where UPS stands in terms of these two analyses. Try to link this to your objective definition too. That is, ask yourself, what do the findings of our analysis suggest? Watch for the alignment between your business and IT Maxims. You are still tool driven and as a result you have defined your objective twice once in setting the business maxims and the second time in the BSC. The business maxims should more or less be the same as the objectives in your BSC. The IT Maxims should be the same as the Strategic initiatives in the BSC. This means if you use BSC, there is no need for separate maxims. Perhaps in defining the desired state you can use maxims only and later in making your strategic recommendations you can take some of these business and IT maxims and explode them in the shape of BSC. In addition to the use of BSC, you should determine the level of the organisation where the BSC is designed for, i..e, need to have BSC for different levels of the organisation. Is this the BSC for the CEO? How abut for the IT shop? and how do you ensure that the cascaded down BSC is aligned to the one above and below it. You mentioned a number of facts about UPS. Please make sure to cite all your sources. Use Turnitin to avoid unintended plagiarism- see the course guide on how to use Turnitin.

The project was announced at the start of a 13 weeks term and was due on week 13. In order to see how well in advance students start their project, the weekly use data were grouped into four periods and plotted in Figure 2. Figure 2 shows peak-use in weeks 5-7. This may be because of the first part of the assessment which was due during week 6. Then, the use shows slowing down and picked up after week 10. The pattern in Figure 2 confirms the existing knowledge that assignment submission deadlines or exams are the main factors that influence the extent of time students spend on their studies.
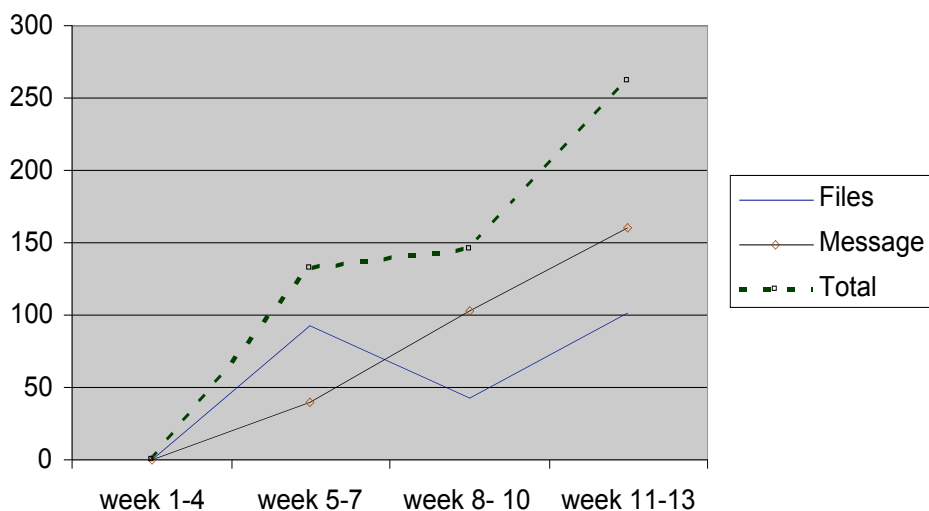
Figure 2: Use pattern

To see if there is a difference in the performance of those that have used the group page functionality and those that haven't, their group marks were compared (Table 2). The result indicates that the users in general and the most frequent users in particular (i.e., groups 12-15 in table 1) appear to have performed better than non–users.

Further, correlation coefficient was calculated to examine the association between use of the group pages functionality and group marks. The result is summarised in table 3. The result suggests that there is a stronger and statistically significant correlation between the number of files exchanged and the group mark but not between discussion board use and group marks. As indicted in figure 1, almost 90% of the files exchanged were related to the content of the project and 60% were draft student works. In addition,

as can be seen in the sample comments above, most of the feedbacks were triggered by student's draft works. This may explain why marks are correlated with files and not with messages. Further, the nature of the messages, such as jokes and meeting calls might also explain why messages are not correlated with mark.

Table 2: Use effect on group mark

	Users	Non-users	Heavy users
Maximum mark	54	41	54
Minimum	38	32	44
Mean	44	38	48

Table 3: Correlation between use and group mark

		Mark	Files	Messages	Total
Mark	Pearson correlation	1.00			
Files	Pearson correlation	0.692**	1.00		
	Sig. (2 tailed)	0.004			
Messages	Pearson correlation	0.306	0.357	1.00	
	Sig. (2 tailed)	0.268	0.191	0.00	
Total	Pearson correlation	0.593*	0.620*	0.908	1.00
	Sig. (2 tailed)	0.020	0.014	0.00	

** Correlation is significant at the 0.01 level (2 tailed)
* Correlation is significant at the 0.05 level (2 tailed)

Concluding observation

The development of an IT strategy is inherently a group endeavour that involves managing not only rational organisational objectives and choices but also softer social and political issues. I believe that the group project in this course enables students to learn about managing these softer issues and develop team working skill. The above findings provide evidence to support the following claims in the literature regarding the utility of collaborative tools in group works

- creating occasions that enable learners to interact with course content, the instructor, and their peers;
- developing a sense of community that encourages sharing of resources and perspectives;
- developing expressions of support and encouragement among students;
- overcoming the limitations of space and time;
- promoting student reflection

The findings further suggest that students that have used the group pages appear to have performed better than those that haven't. However, we can't claim that the use of the tools was the only or even the major factor that has affected their group mark. Perhaps, the groups that have performed well may have done so even in the absence of the tools. However, what we can safely speculate is that, the extent of cooperation between group members and their willingness to exchange resources (either with or without technology) seems to have a positive influence on a group's performance. The technology has facilitated and made it easier for the learners to collaborate and for the instructor to push feedback. Without the use of the technology, perhaps it might not have been possible to maintain the level of cooperation and collaboration observed in those 15 groups in general and in the four heavy user groups in particular. Since non-users were not observed, we don't know if they have done all these things in face-to-face mode but without good results. This is one area that can be investigated in the future. Another area is to identify the attributes that distinguish users from non-users and wether or not instructors' involvement inhibits some students from using the facility.

Finally, upon reflecting on this experience, a few points can be highlighted. First, the use of the group page and its tools has allowed me to provide learners with actionable feedback, that is, feedback that they can use to improve their learning. Second, it facilitates the use of assessment as part of the teaching strategy. Third, although I haven't made use of it, it also makes it easier to assess individual contributions and learning in a group work. However, it is a very time consuming exercise for the instructor as he/she has to regularly check the files exchanged and the discussion among group members and give continuous feedback. Hence it might be unsustainable in large classes. There is also an opportunity cost as the time spent on following up student progress and give comment could have been invested on research. As a result, although I continue to use the group page, I decided to scale-down the provision of feedback.

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