Teaching Project Management Principles in an Online Environment

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BIOGRAPHY
Anthony Wood is a Program Director at the University of South Australia. Anthony manages the Master of Project Management program offered online through Open Universities Australia. As an educator, Anthony has taught the principles of project management to many hundreds of tertiary students, both online and in classrooms in Adelaide and Vietnam. Anthony also has extensive experience as a professional project manager, having completed numerous government infrastructure and project management maturity projects over a period of about 15 years. Anthony is particularly interested in developing Project Management as a profession, and seeks to contribute to this cause by education and competence measurement throughout the industry. Anthony has been a member of AIPM for about 10 years, is currently serving on the SA Chapter Council and the National Membership Council, and is an accredited competency assessor within AIPM’s Registered Project Manager program.

ABSTRACT
Courses taught wholly online are an emerging feature of tertiary education yet there are considerable challenges involved in designing learning and teaching arrangements that can support desired learning outcomes. Many online courses are simply set up to mirror their internal or face-to-face equivalent without taking into account the particular characteristics and requirements of the online medium. This paper reports on a pilot study which focuses on the design and delivery of a project management principles course offered entirely online. The issues encountered cover a range of perspectives, from those of the student to those of the teacher, as well as a range of technologies, from human interface to cutting-edge communication tools. The analysis suggests there may be some justification for including synchronous learning and teaching activities, particularly where collaboration is required. This can assist students to work together in concurrently whilst engaging with course material in asynchronous modes.

Keywords: project management, online education, synchronous and asynchronous delivery, reflective practice

INTRODUCTION
The nature of project management is not so much about the management of tasks as it is about managing people because it is people who perform the tasks. Indeed, effective project management requires collaboration with others in order to achieve outcomes because few complex projects are managed by sole practitioners.
This research investigated issues arising from the author’s perceptions of impracticalities and likely ineffectiveness of teaching project management principles through an electronic medium. The literature shows that online learning has more advantages and more disadvantages than traditional classroom learning (refer Table 1), which validates some perceptions of impracticalities while disproving others.

It is not difficult to teach the theory of a topic such as project management through electronic media. However, the teaching of the practice is not so easily delivered. Conflict arises because the value of the theory is compromised when not supported by competent practice skills. For comparison, the same course delivered face-to-face is deliberately structured in such a way that most of the students’ learning comes from active engagement in collaborative activities. Transposing this course into an online structure immediately presents challenges as asynchronous discussion boards take the place of real-time discussion.

The issue is that not all students have an inherent ability to transfer theory to practice; it is a function of higher education to assist the student to draw such connections. Accordingly, this research aimed to ascertain the degree to which online course delivery is able to achieve this in the project management discipline. Further, this research aimed to identify the main issues arising from the perceived impracticalities of teaching project management principles electronically. It was not expected that the research would identify all the issues; rather, it would demonstrate whether the perceptions of impracticality were valid and whether there are grounds for further study.

To achieve this, it was necessary to identify students’ personal preferences in terms of online teaching and learning tools/media, to determine the extent to which they found the tools provided in the online course supported their learning, and to reflect on the findings of this research in terms of my personal teaching practice and future delivery of the course.

Whilst this study was initially prepared to help understand more about how students learn online, it was also a useful forum for reflective practice [1], a concept well known in higher education but also seen in general management as Deming’s ‘Plan-Do-Study-Act’ (PDSA) cycle [2]. In education, reflective practice is the process of an educator studying their own teaching methods as a means to understand what works best for the students. The application of this practice proved valuable in the validation or correction of my perceptions and will influence subsequent deliveries of the course.

BACKGROUND

Project management as a course lends itself well to delivery through individual study and collaborative engagement with peers. The former is readily delivered through flexible, online learning systems, while the latter requires some effort on the part of the teacher and the student. There appears to be no easy solution to the perceived impracticalities of teaching ‘people skills’ courses through an electronic medium.

While traditional classroom learning and online learning have their respective advantages and disadvantages, increased access to flexible learning opportunities comes with a greater requirement for maturity and self-discipline from the students than traditional classroom education [3].
Teaching Project Management Principles in an Online Environment

Table 1: Traditional classroom learning vs. e-learning [3].

<table>
<thead>
<tr>
<th></th>
<th>Traditional Classroom Learning</th>
<th>E-Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advantages</strong></td>
<td>Immediate feedback</td>
<td>Learner-centered (sic) and self-paced</td>
</tr>
<tr>
<td></td>
<td>Being familiar to both instructors and students</td>
<td>Time and location flexibility</td>
</tr>
<tr>
<td></td>
<td>Motivating students</td>
<td>Cost-effective for learners</td>
</tr>
<tr>
<td></td>
<td>Cultivation of a social community</td>
<td>Potentially available to global audience</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unlimited access to knowledge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Archival capability for knowledge reuse and sharing</td>
</tr>
<tr>
<td><strong>Disadvantages</strong></td>
<td>Instructor-centered (sic)</td>
<td>Lack of immediate feedback in asynchronous</td>
</tr>
<tr>
<td></td>
<td>Time and location constraints</td>
<td>e-learning</td>
</tr>
<tr>
<td></td>
<td>More expensive to deliver</td>
<td>Increased preparation time for the instructor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not comfortable for some people</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Potentially more frustration, anxiety, and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>confusion</td>
</tr>
</tbody>
</table>

*Student preferences*

Studies show that while online teaching can increase student participation, students still report a preference wholly or partially, for learning in classroom environments.

In 1999-2000 the UNITEC Institute of Technology (Auckland, New Zealand) shifted its course in Internet & Web Design from classroom mode to an online format. During concurrent research into the success of the initiative, students reported a preference for face-to-face communication, immediacy of communication, informal contact, and the option to attend a classroom for timeliness of questions and answers [4]. While the students complained of a ‘lack of personal tutor-student contact’, the teachers reported a lower than expected burden in terms of electronic contact with students. Students also reported it was difficult to work in groups, especially when they did not know each other, while teachers found that the lack of immediacy and face-to-face interaction, including tone of voice, facial expression and body language, made it more difficult to identify and deal with problems with group dynamics in a timely manner.

A similar outcome was returned from a survey of 469 computer students undertaking different Australian degree courses in Hong Kong, Malaysia, Singapore and Vietnam, which found that most students did not want their courses delivered fully online, despite improvements in technology. Miliszewska [5] says, “Face-to-face communication was preferred, as it offered instant feedback, afforded easier communication with fellow students and instructors, was better suited to the resolution of study problems, and gave better motivation to study.”

These findings have significant relevance for the online version of the project management course which relies heavily on online group activities as a means of facilitating self-learning and student engagement.

*Real-time versus asynchronous delivery*
Although the suite of electronic media available to designers of online courses is diverse and constantly expanding, the selection of individual tools must be well-considered in terms of the course objectives and learning needs of the students. For example, online courses can be designed for synchronous or asynchronous interaction; the former being where all students need to arrive ‘in class’ at the same time (the internet version of the teleconference), the latter being a stand-alone set of lessons that students can work through at their own pace. Synchronous delivery ‘feels right’ because it works in much the same way as a physical classroom, and is therefore readily adaptable to group work. However, many students enrol in online courses because they desire the flexibility of self-paced learning offered by asynchronous modes, which are not so easily suited to group work, especially when the students are at different stages in the course [6].

A review of the University of New South Wales (UNSW) Master of Business and Technology program [7] considered how a teaching team of experienced project managers enabled students to develop project management skills through a web-based interactive project management course. The strategies used by the facilitators included virtual project teams, in which students from diverse backgrounds worked in different time zones. The UNSW teachers believe that the course was ‘extremely successful’ in terms of popularity and attendance, with feedback from students indicating an increase in their knowledge and skills.

The course investigated in this paper has been designed to run in asynchronous mode, which presents a challenge in that almost all the students are at different points in the course at a given time, and therefore are not able to easily work in groups, albeit remotely, working to chronologically-dependant objectives. While anecdotal evidence from the students in past iterations of this course and in the UNSW study indicates that asynchronous delivery can be successful, student preferences would suggest otherwise [4].

**Encouraging student participation**

The project management course in this research is based on a ‘constructive alignment’ approach to instruction [8], in which consistency and logical relations exist between learning objectives, learning and teaching arrangements, and assessment.

Online discussion forum technology has been a feature of the course and is a vehicle for students to broadcast their thoughts and experiences. However, attempts by teachers to utilise online discussion forums as a means of encouraging student participation can return a surprising – and unfavourable – result. These tools may in reality encourage lower levels of thinking and discussion than what might occur in physical classroom environments [9]. This finding may have a critical bearing on the project management course which makes extensive use of asynchronous discussion groups for autonomous and collaborative work.

Although online learning may arguably have more advantages and less disadvantages than traditional classroom learning (refer Table 1), the difficulties in finding a ready solution to the perceived impracticalities of teaching a ‘people skills’ course through an electronic medium cannot be dismissed so easily. The individualised nature of asynchronous, online learning should, in theory, lead to greater student engagement as students have a greater role in the timing and depth of their learning [10]. However, the presence of constraints such as submission dates and other schedules within the program impedes the degree of learner control.
Teaching Project Management Principles in an Online Environment

It is a difficult challenge for the program or course designer to achieve a suitable balance between the simple act of ‘digitising’ a traditional course and creating a learning environment that facilitates genuine student engagement. It is clear that information communications technologies should support teaching and learning rather than becoming the main focus of activity in the international classroom [11], and that technology is useful as an adjunct to facilitate learning, but not as an end in itself [12]. The solution is more likely to be found by distilling the array of available technologies to arrive at a smaller sub-set of tools that assist the teacher and student to arrive at the desired learning outcomes. Principally, a program is ‘defined by the quality of its academic conversations, not by the technologies that service them’. [10]

METHODOLOGY AND METHOD

The research utilised an anonymous, online questionnaire. For the needs of this pilot study, the advantages of a questionnaire outweighed the disadvantages thus the nature of this study determined the method for data collection. In particular, this method is an efficient and effective means of eliciting information from the majority of students in the course who were based either interstate or overseas. The return of the completed questionnaire was taken as an indication of each participant’s consent to participate and this satisfied the University’s ethical requirements.

RESULTS AND DISCUSSION

Cohort characteristics

The pilot study was conducted on a class of 24 students located across Australia, Africa, Asia and Europe. Responses were received from 17 students (approximately 70% of the cohort).

Student engagement in learning

Sixteen of the respondents felt that the website resources actively engaged them with understanding project management concepts and principles. By comparison, there was a slight flattening and broadening of the distribution curve as students were asked to identify the extent to which discussion boards and group reports assisted with developing a sense of engagement. The majority of responses were in agreement to some extent that interaction with other students via the discussion boards and undertaking group reports helped to engage them in understanding project management concepts and principles. However, a small number of students returned ‘neutral’ for these questions, indicating that they were not wholly convinced that the discussion boards and the group assignment had the same ‘engagement power’.

Use of online discussion boards

None of the students expressed negative feedback on the course’s asynchronous online discussion board. Indeed, 11 respondents offered positive feedback on this. Respondents generally valued sharing knowledge and learning with other course participants, as each week required them to respond to questions and post their ‘homework’ for peer discussion. Consequently, students benefited from the imposed discipline, increased clarity from multiple exposure to concepts, viewpoints and the various experiences of the other course members. As one student put it, ‘the tutorial boards helped me to fully understand parts of topics that I was unsure of by having a multitude of answers written differently. It also helped me see
topics from different perspectives after having only worked in government not private industry’.

The discussion boards were appreciated by newcomers to university learning as a helpful guide to the way studies should progress, as well as by those who enjoyed the interactivity, ‘which made it an enjoyable experience’. An important benefit arising from the anonymity and asynchronous nature of the online discussion facility is that less assertive students are afforded (as expressed by one student) the ‘opportunity to ask questions or bring up topics that a student may not otherwise contribute in a classroom environment’, thus facilitating open discussion and the flow of new ideas and approaches. The usefulness of the online discussion facility was well summarised by one student, who commented that they ‘provided an effective weekly learning platform for me to gather information while engaging in debate and discussion’.

The group report as a collaborative learning exercise

It was expected that the most challenging element of the online course would be the execution of a group report. Feedback was generally positive, although it is clear the course participants had to work hard to enjoy the benefits. At a simplistic level, one student considered the group report useful to get to know other students and ask questions, whether or not related to the project. Others felt the delivery of the group report provided a project-like environment, which affirms the objective of the assessment design. One student commented that, ‘The group report covered all the fundamentals/ principles of project management in one comprehensive assignment, it also enabled demonstration of effective communication amongst group members in order to produce a business report ‘project’ within a deadline’. One student commented that the various time zones made working on the report difficult; however the benefit was ‘obvious in the end’.

Online technologies used to communicate with other students

The online course was developed with the expectation that email and discussion boards would be the primary online technologies used for inter-student communication, however students also took the initiative to utilise additional technologies, such as Skype, chat forums, telephone calls, teleconferences, video conferences, and physical meetings.

While all students were neutral to strong in their agreement that core technologies (i.e. email and discussion boards) assisted them to communicate with other students, additional technologies were used by more than half the group. In particular, the apparent popularity of teleconferences (29% of students in strong agreement that the technology was helpful) suggests that technologies to facilitate synchronous communication should be considered for inclusion in the course.

Table 2: Percentage of students in agreement that online technologies assisted them to communicate with each other (* indicates technologies officially provided in the course).

<table>
<thead>
<tr>
<th>Online Technologies</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Did not use this technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email *</td>
<td>41%</td>
<td>41%</td>
<td>18%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Discussion lists *</td>
<td>41%</td>
<td>41%</td>
<td>18%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Teaching Project Management Principles in an Online Environment

Chat forums | 12% | 12% | 6% | 12% | 0% | 59%
Telephone calls | 18% | 29% | 6% | 6% | 0% | 41%
Teleconferences | 29% | 29% | 0% | 12% | 0% | 29%
Video conferences | 0% | 6% | 6% | 6% | 0% | 82%
Physical meetings | 12% | 0% | 12% | 0% | 0% | 76%

Online technologies used to interact with other students to produce a business report

Assessment included a business report to be completed in groups of four students working collaboratively, irrespective of their location. The groups were established with dedicated discussion boards and email addresses shared between the respective group members. In general, individual study groups supplemented the email and discussion lists with additional technologies. Whilst all students were neutral to strong in their agreement that the core technologies (email and discussion boards) assisted them in their interaction with other students to produce a business report, the additional technologies introduced by students were utilised by more 58% of the group.

Table 3: Percentage of students in agreement that respective technologies assisted them in their production of a business report.

<table>
<thead>
<tr>
<th>Online Technologies</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Did not use this technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email</td>
<td>41%</td>
<td>35%</td>
<td>24%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Discussion lists</td>
<td>24%</td>
<td>53%</td>
<td>24%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Chat forums</td>
<td>12%</td>
<td>12%</td>
<td>12%</td>
<td>0%</td>
<td>0%</td>
<td>65%</td>
</tr>
<tr>
<td>Telephone calls</td>
<td>12%</td>
<td>41%</td>
<td>6%</td>
<td>6%</td>
<td>0%</td>
<td>35%</td>
</tr>
<tr>
<td>Teleconferences</td>
<td>35%</td>
<td>18%</td>
<td>12%</td>
<td>12%</td>
<td>0%</td>
<td>24%</td>
</tr>
<tr>
<td>Video conferences</td>
<td>0%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>0%</td>
<td>82%</td>
</tr>
<tr>
<td>Physical meetings</td>
<td>6%</td>
<td>12%</td>
<td>12%</td>
<td>0%</td>
<td>0%</td>
<td>71%</td>
</tr>
</tbody>
</table>

Whether additional online technologies assisted students with their learning

Students were asked how additional online technologies, if used, assisted them with their learning. The uptake of additional technologies was widely variable (uptake values ranged from 18% for video conferences to 71% for teleconferences). Responses affirmed the usefulness of technology for communicating the understanding of project management and its principles, and recognition that additional technologies provide alternative ways for students to relate with each other.

CONCLUSION

This paper has described a pilot study that focused on the design and delivery of a project management principles course offered entirely online.

The evidence is that the strategies such as emphasis on asynchronous participation, which allowed students to engage at their own pace and on their own timetable, and assessments that
Teaching Project Management Principles in an Online Environment

forced the students to participate in weekly discussion boards and to engage with their peers, have been successful.

Inclusion of opportunities for synchronous delivery for some elements of the course was proved to be justified where collaboration is required, albeit with logistical challenges such as how to schedule around multiple time zones. This finding challenged the author’s perception that students that elected to study online because their work or lifestyle choices obviate regular attendance at specified dates and times, thus would not choose to attend real-time sessions and virtual meetings.

In light of the findings of this research, it appears that online courses that have been set up to mirror the classroom format using technologies such as podcasts and audio streaming to replicate lectures are not likely to be so successful. Students in the pilot study generally recognised value in terms of sharing knowledge and learning with the other course participants - a benefit not likely to be readily realised in a predominantly lecture-style courses. Further, comments from students generally validated the ongoing use of the group report assessment as a facilitator of students’ engagement in their learning of project management practice.

This research has simultaneously validated and challenged the author’s teaching practice, in that there is clear support for the provision of asynchronous tools such as discussion boards, while there is also demand for methods for real-time communication, albeit across multiple time zones. The research also challenged the author’s belief that teaching a ‘people skills’ course could not be effectively achieved online, as it was found that the students were quite able to emulate the behaviours of dispersed, virtual project teams in practice.

REFERENCES