

Making Project Management Education Happen – On Line!

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Abstract

This paper will discuss how a Teaching Team of experienced project managers (or course facilitators) enable students to develop project management skills based on the Project Management Body of Knowledge (PMBOK®). The project managers facilitate a web-based interactive online Project Management Course in the University of New South Wales (UNSW) Master of Business and Technology (MBT) program.

The paper will elaborate on the strategies used by the facilitators to emulate a project space in the online classes to allow students to gain project management competencies working in virtual project teams. Students from diverse backgrounds work in virtual project teams, in different time zones, and build and maintain effective team skills throughout the project. Some of the challenges faced by the facilitators are getting the students to reach a team agreement, rewarding the team product rather than individual contributions, and ensuring that students expand their critical thinking skills.

Members of the Teaching Team, comprising an academic course coordinator, an education designer and six course facilitators (some of whom are located internationally), operate as a community of practice (CoP). The team communicates regularly through email and meets annually to improve course effectiveness to enable the students to develop project management knowledge and skills that can be directly applied in their work environment.

Keywords

Project Management

e-learning

Project Management Education

Community of Practice

Management Education

Making Project Management Education Happen – Online!

Introduction

The Project Management (PM) course forms a key nucleus of the Master of Business and Technology (MBT) program at the University of New South Wales (UNSW). The MBT program was introduced in the early 1990s as a unique multi-disciplinary program, combining technology and business skills required for current and future management needs. Most students select the PM course as one of their course choices, since it provides generic management skills that are essential in many different areas of industry and services.

Today, more than 200 students enrol in the PM course each year. The course was originally delivered in the traditional face-to-face mode. Then, distance delivery, later incorporating an online classroom, was introduced as an alternative. Distance delivery has now become the dominant delivery mode for this course. Currently about 80% of the parallel classes are delivered online and the remaining 20% in the traditional face-to-face mode on campus.

Considering the transition of the PM course from face-to-face to online delivery, from small student numbers to significant enrolment numbers, from single teaching staff to multiple facilitators located in different countries around the world, the challenges for an effective educational approach become quite obvious. In addition, PM is not a traditional engineering discipline based on facts and figures, but requires human interaction, personal judgment and teamwork, which creates even more challenges for online delivery.

In order to meet these challenges and to offer an effective learning program, specific answers to the following questions had to be developed. How can we develop management skills and critical thinking online? How can we actively conduct team work online? How can we motivate students to meet their team commitments? How do we deal with under-performing students in teams? How much guidance or freedom do we give the students for managing their teams? How can we assure equal quality and performance measures across different classes with different facilitators?

These are just some of the questions that have been addressed over many years of collaborative course development, leading to a solid basis of experience in facilitation and teaching as well as to a course structure. These have proven to be attractive to students and deliver a unique and effective learning experience.

In the following paper several of the success factors of the PM course such as the development of students' critical thinking, the emulation of a project management environment, teamwork, and class facilitation will be discussed.

History of the program

The program was initially offered in 1991 as an alternative to a Master of Business Administration (MBA), and was structured for engineers who wanted to progress to management in a technological business environment. The PM course was initially written for the construction and engineering context and articles such as *The Building of the Hoover Dam* were relevant to the curriculum.

The flexibility of the program, particularly the ability of students to choose the courses they wished to take and the order in which they took them, made the MBT Program increasingly attractive to students from other disciplines, particularly Information Technology (IT).

The MBT Program offers most of its courses in both face-to-face mode at the main campus of UNSW and distance (or online via internet) mode. In the earlier years, face-to-face mode was the more popular option by far, with about three to four large classes per semester as opposed to one small distance mode class. Some large corporations had enough employees to fill an entire class, so in a few such instances the face-to-face classes were conducted on their premises (e.g. Kellogg's and Honeywell).

With the increased use of the internet and wider reliable access, distance mode has grown in popularity to the point where the vast majority of MBT students study in distance mode. Students are predominantly Australian although many are studying from overseas locations.

PM is one of 23 courses offered under the MBT program at UNSW. The course is scheduled for 1.5 hours per week for 14 weeks in the face-to-face delivery mode. The distance delivery mode is more flexible. Communications between the facilitator and class participants is asynchronous (not in real time) and is structured around learning activities set by the facilitator. However, students do need to keep up the pace of their study to conform to a weekly schedule.

For distance delivery a software package, or course management system, called Webteach is used, which was specifically developed in-house for distance delivery at UNSW. Class sizes are usually 20 to 25 students, with one facilitator guiding the class through the semester. On average there are six to eight parallel classes per semester, the majority of which are delivered in distance mode.

A course coordinator is responsible for coordinating the different classes and for assuring quality in teaching and assessment across classes. Class facilitators, who are currently located in Australia, USA and Switzerland, are provided with guidelines for teaching and student assessment, which have been developed in collaboration between the facilitators, the course coordinator, and the MBT administration. All classes (both face-to-face and distance modes) use the same learning resources and have the same assessment requirements. Students are provided with a comprehensive study guide that has been written to complement the textbook "Project Management" by Meredith and Mantel (2003).

Literature Review

The growth in the interest in the project management field is evident from the rapid expansion of the Project Management Institute (PMI®). Total membership as of 30 April, 2005 is 165,007 which is a 25% increase from the previous year. Total Project Management Professionals (PMPs®) for the entire program are 110,906. The number of members of the PMI® Chapter in Queensland has doubled over the past two years. Yet recent literature reviewed indicates that most organizations do not pay sufficient attention to training their project managers.

A survey conducted by Carbone and Gholston (2004) representing both the public and private sector organizations, shows that less than half the organizations had any type of PM training while 73% of the project managers who had been trained felt that it prepared them for their new role.

How should project managers receive training? Carbone and Gholston recommend that the training should be based on the “Project Manager Competency Development Framework (PMCD® 2002)” based on the knowledge areas of the Project Management Body of Knowledge (PMBok® 2002). Bobrowski and Kumar (1992) propose the use of internship, with academics serving as a sounding board, to reduce the educational gap between the classroom and the workplace. Brown (2000, p53) observes that classroom experience using case studies may not be effective in PM training and computer simulations do not cover a wide range of experience. She asks her students to apply PM skills to a community service effort.

What about online learning for project managers? Browne (2001, p137) states that e- learning has several advantages compared to traditional learning: access to learning material at any time and from any place, ability to set own pace of learning and timely and accurate feedback. The disadvantage of asynchronous online learning is that it limits student contact with their peers.

In Ellis, Thorpe and Wood (2004, p137) commenting on distance learning for PM state that “there was no statistical difference in the performance and confidence of students in the computer-aided learning, multiple media and part-time groups”. The student learning and application increased in all delivery modes on completion. In summary, distance learning in PM is considered effective for postgraduate programs.

The literature advocates that an effective PM course should cover a broad range of PM competencies, encourage teamwork on a real project with sufficient complexity. In the MBT PM program, these features are met except for working on a *real* project. However, the students are required to work on a hypothetical project for their assessment. A real project would be impossible given the limited 14 week time frame of the course, the potential sensitivity of the material, and the diversity of student locations and profiles.

Common to all approaches to PM education, and indeed all university education, is the desire to develop the critical thinking skills of students. Rather than producing graduates who can simply apply PM methodologies and follow standard procedures, programs endeavour to develop managers who can be creative, innovative and further develop and improve the discipline of PM.

Managers should be able to work effectively with others and adapt their skills to new and complex projects.

To develop such project managers, the learning and assessment strategies have to be designed to develop critical thinking. In his seminal work Benjamin Bloom (Bloom, Englehart, Furst, Hill and Krathwohl 1956) proposed a taxonomy of six levels of cognition: knowledge, comprehension, application, analysis, synthesis and evaluation. If one has to develop critical thinking, the learning and assessment strategies need to require students to demonstrate their skills at the higher levels of cognition. This means, for example, rather than asking students to demonstrate that they can select and use appropriate PM methodologies, they need to analyse new situations, synthesise all the relevant information, develop creative solutions and evaluate outcomes.

Biggs and Collis (1982) also developed a taxonomy to describe the hierarchy of complexity of thinking required in academic work. This taxonomy, Structure of the Observed Learning Outcome (SOLO), offers the following categories: prestructural, unistructural, multi-structural, relational and extended abstract. Again a postgraduate program needs to design learning and assessment tasks which require relational thinking (similar to Bloom's level of synthesis) and extended abstract thinking (which requires learners to construct new knowledge and make new meanings).

The learning and assessment models in the MBT PM course engage learners at these higher levels of thinking by asking students to

- read from a wide range of sources and synthesise a range of perspectives
- reflect on their own work experience in the light of new learning
- exchange views and challenge each other's thinking in structured learning activities in the online classroom
- analyse case studies and relate learnings to their own contexts
- work collaboratively, and virtually, on a hypothetical project.

The learning and assessment tasks in the course

The course comprises of 12 units covering general principles of PM. The resource material includes a textbook, a study guide, websites and selected articles from the literature.

The learning and assessment program requires students to demonstrate learning at the higher cognitive levels as described in the Blooms and SOLO taxonomies.

The learning outcomes are included in Appendix 1. The assessment comprises

- participation in class discussions (10%),
- an individual assignment, usually a case study (20%),
- the major group assignment requiring the production of a project plan (30%), and
- a four question examination (40%).

The following is an outline of the key learning strategies employed in the course:

1. Study guide exercises and class discussions encourage students to reflect on professional PM experiences in the context of the literature.
2. Introductory team-building exercises help students get familiar with the online learning environment and encourage team development among students who come from a variety of academic, ethnic, cultural and business backgrounds, both across Australia and overseas.
3. For the major assignment students work in teams (virtual or face-to-face) to develop a project plan in a set time period and with set deliverables. Experience shows that satisfactory outcomes can be achieved by
 - nominating one, “open-ended” project for the class, such as the planning of an advertising campaign or the consolidation of branch offices (Appendix 1)
 - the facilitator allocating group members so that teams are equally balanced in terms of PM experience and geographical dispersion.
 - wherever possible, retaining the same teams as the introductory team-building exercises, so that team members are used to working and communicating with each other.
 - seeking volunteers to lead groups or appointing a team leader
 - providing detailed and clear guidelines for the project plan in the course material. (Appendix 1)
 - limiting groups to three/four persons,
 - the facilitators consulting with groups regularly to provide encouragement/ discipline
 - having regular progress reports, and intermediate and final submissions.
 - the use of a (voluntary) “Team Agreement” whereby each student makes a group commitment (Appendix 1).
4. As with all real projects, students are given a project brief which lacks detail, requiring students to make assumptions and justify their decisions.
5. Teams are awarded marks for the team product rather than individual effort. Awarding one mark for the group project has been found to produce a more concerted team effort and an overall higher standard of work.

This learning and assessment model is not without its challenges.

Challenges faced in the program

The general challenges faced in the program were mainly due to:

Diverse backgrounds

Countering the program’s strength of being a generic PM course, is the challenge of having students from a broad spectrum of educational and industry backgrounds. Facilitators need to draw out the students’ knowledge from their specific backgrounds and create a sharing environment in which they can all learn from each other.

Experience with PM

Students may have varying degrees of PM skills, experience and expectations from the course. Students with a science or technology background are accustomed to solving numerical based problems, while others require coaching. Striking the right balance between these two groups is a major challenge.

Class modes

There are major differences in facilitation and communication styles and techniques between face-to-face and distance modes. Distance mode facilitators have only the written word to create an impression, conjure up an image, explain concepts and communicate with students. In face-to-face mode body language, physical bearing, voice modulation and tone and conduct also play a vital role, as does the availability of whiteboards, Microsoft PowerPoint® and videos as teaching aids.

Both have their distinct advantages and disadvantages, and the challenge of facilitators is to use their mode to greatest advantage. Sydney-based facilitators have a further challenge as they are often required to switch modes depending on the number of students enrolled in face-to-face versus distance classes.

Several challenges were also faced in the program due to the distances across which students participated in the program.

Time zones and nature of work

The geographical dispersion of students around the globe presents a major challenge for students when working in teams, as the different time zones in which they live compound the communication response time lag. This makes team-based assignments particularly challenging.

Different cultural and language backgrounds

Having students from many cultural backgrounds is one of the positive features of any distance class. It does, however, present issues particularly when students work in teams. Some students live in cultures where men and women are not treated as equals. Men from these cultures are often uncomfortable taking instructions from women team leaders, and similarly women team leaders from these cultures often feel uncomfortable being assertive towards male students.

Students whose primary language is not English often feel intimidated to participate in class discussions because of their poor mastery of the language.

Technology

Those on high-speed internet connections often assume that the rest of the world is on it too, whilst the reality for many students, both internationally and even locally, is a 28k baud dial-up connection.

Participation

Every class has its natural leaders or dominant personalities. There are always those who are not only the first cab off the rank, but will submit multiple contributions to an online discussion. While this indeed gets the excitement going, it often inhibits the slower and less dominant students who feel they have nothing further to add. The challenge to facilitators is to devise ways of encouraging the shy and reserved students to participate without dampening the enthusiasm of the others.

How did the facilitators work as a community of practice?

There are many people who contribute to the development and delivery of the MBT PM course: the Director of the MBT program; the PM course coordinator who is a Professor in the UNSW Faculty of Engineering; six facilitators, both UNSW academics and external facilitators from Australia and abroad; and the MBT program educational designer. These people form a “community of practice” (Wenger and Snyder 2000) in that they work as a group on the ongoing improvement of the course; they solve problems together and thereby construct a collective body of knowledge for the course.

According to Wenger and Snyder (2000, p139) communities of practice (CoPs) are ‘groups of people informally bound together by shared expertise and passion for joint enterprise’. Although the MBT CoP is brought together due to formal connections there was no reason to do so. But the members of the CoP were passionate about improving their work methods and learning from each other.

The various tasks that are shared among the CoP are: reviewing the course and the learning materials, facilitating the classes, designing new assessments, marking assessments, evaluating and overseeing quality of the course.

The course is reviewed each year and the review is started with a face-to-face meeting at UNSW where as many members of the Teaching Team as possible participate. They always have their facilitator from the US and have also had their facilitator from Switzerland with them once. Revision processes are then followed up by the group using email and a dedicated website where ideas and documents can be worked on collaboratively.

Even though they meet face-to-face once a year they have numerous contacts through emails during the facilitation of a semester. They share issues, consult each other on-the-run in finding the right solutions, and once they find something that works, they try and standardise it as a good practice to be adopted by all facilitators. Examples are developing marking criteria for assignments and suggesting improvements on how assignments can be improved.

The benefits of this CoP are many. Each member brings specialist knowledge and skills to the group. The Director focuses on ensuring the PM course aligns to the MBT philosophy and policies and desired graduate attributes. The course coordinator provides overall academic quality assurance and leadership to the group. The facilitators bring a broad range of academic and professional experience to the program and teach the courses in face-to-face and distance mode. The educational designer provides guidance and advice on learning and assessment design, and coaches facilitators in online teaching.

Conclusions

The course enjoys considerable success and has one of the highest student participation rates of the 23 courses on offer in the MBT program. Further evidence of the success of the course may be gauged from:

- Student enrolment- the student numbers have risen steadily and now is approximately 200 enrolments per semester,
- Student feedback - student “satisfaction” for PM in 2004 was well over 90% and is ranked consistently with the general satisfaction rating for the program as a whole,
- Student to student recommendation - students often state that they had “chosen the course on recommendation”, and
- Students’ course involvement - through their
 - (a) enthusiasm for Webteach interactions. The average student submits about one comment weekly to discussions and their participation in “virtual team” exercises. In a recent course one facilitator had seven teams and students. In the trial exercise the virtual teams averaged 24 submissions per team over a two-week period, and, in the major virtual team exercise averaged 70 submissions over a four-week period (about one submission per day per student)
 - (b) the general improvement in the quality of their contributions to online seminars and other discussions and the quality of their final virtual team submissions
 - (c) the occasional genuine insight, the “inspirational flash/awakening” when contributions are made, such as “I had never considered this/or that aspect of my organization/department/role....”, and
 - (d) students’ occasional, unsolicited, post-course comment to MBT staff on the value of the knowledge gained and its applicability to their professional situations.

In conclusion, it would be fair to state that the course has been extremely successful; the program charges “full fees” and students seeking to optimize their investment in their self-development choose the course voluntarily. Clearly, while the course is successful, it cannot claim to improve the quality of managing projects in the community. It is not possible to measure whether the knowledge gained in the course actually translates into better managed projects. However, feedback from students clearly indicates that they have obtained additional knowledge and skills that will be of value in their current position.

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Appendix 1

Learning outcomes for MBT PM course:

After successfully completing this course students should be able to

- detail the functions of project management in a small scale project
- describe the role and responsibilities of a project manager
- determine the appropriate organizational type for a particular project
- explain the effect of changing organisational structure on project management
- outline strategies for dealing with lack of organisational support for a project
- detail the various budget-estimating techniques, WBS and risks associated with a project
- recognise the importance of communications, organisation and team leadership skills in project management
- demonstrate tolerance and acceptance of the diversity of people and skills in any project.

Sample project for group assignment

A small company that currently occupies three levels of a city office block has decided to redesign the office space to better meet the needs of new more flexible working practices introduced in recent years.

Your team's task is to produce a project plan to redesign the three floors. Apart from the instructions given here you are free to be creative with the detail of the scenario.

Please refer to pages 245-247 of your course textbook for the specific format and content for the Project Plan.

Project Management Group Assignment Agreement

This agreement would be best agreed within the first week of your team being formed. A copy could be posted in your private team discussion area.

We, the members of<group name>..... agree to the following plan of action regarding our work toward the group assignment tasks:

1. Quality Outcome

We agree to put in our best efforts towards achieving a quality outcome for this assignment, and to that end will cooperate fully with each other and the Project Manager.

2. Task / role allocation

(Note: it is important to allocate the role of the final editor of the complete project plan)

Name	Tasks / Roles

3. Key milestones

Date	Milestone
	<i>e.g. Project start</i>
	<i>Tasks allocated</i>
	<i>First progress report</i>
	<i><add as many milestones as required></i>
	<i>All team members check final version and sign off</i>
	<i>Submission</i>

4. Communication

We will use the following communication channels for the following purposes

Communication channel	Purpose
WebTeach	
Email	
Telephone	
<i>other</i>	

5. Version control of documents

Decide on a file naming protocol to enable you to control versions of documents. *E.g. name of section, initials of person, date – schedulesGB060803.doc*

Monitoring progress in your team

This checklist may help you monitor how things are going in your team. If you find there is a problem you will need to discuss with your team how you will deal with it.

Are you	Me	Group	Comments
Effectively clarifying your task or objective at each stage?			
Checking on progress?			
Clarifying and recording what your group decides?			
Clarifying who is going to do what?			
Clarifying when each task is to be done by?			
Establishing procedures for handling meetings?			
Keeping to agreed procedures?			
Listening to each other?			
Dominating / allowing some members to dominate?			
Withdrawing / allowing some members to withdraw?			
Compromising individual's wants for the sake of the team?			
Recognising the feelings of other members?			
Contributing equally to team progress?			
Following agreed procedures for writing and file naming?			

The checklist is based on one by Sharon Fraser in Scoufis. M. (2000). "Integrating graduate attributes into the undergraduate curricula", Sydney, University of Western Sydney.