Teaching Project Management Skills: An Example of Collaboration between a University and the Local PMI Chapter

Robin Poston
University of Memphis, rposton@memphis.edu

Follow this and additional works at: http://aisel.aisnet.org/amcis2010

Recommended Citation
http://aisel.aisnet.org/amcis2010/170

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 2010 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
Teaching Project Management Skills: An Example of Collaboration between a University and the Local PMI Chapter

Robin Poston  
University of Memphis  
rposton@memphis.edu

Sandra Richardson  
University of Memphis  
rposton@memphis.edu

ABSTRACT

The demand for project management skills in industry is increasing; however the number of individuals who can meet the demand is decreasing. Universities are addressing these changes by developing project management degree programs. In this paper we describe the experience of a collaborative effort between one University and a local chapter of the Project Management Institute (PMI). The result is a popular and highly successful program in which project management professionals from the PMI are engaged in student learning by providing a guest lecture series, serving as mentors for class projects, providing actual organizational projects for students to analyze and apply class concepts, and serving as judges on student team project competitions. The results are students who receive a rigorous education, hands on experience in industry, form relationships with, and learn practical skills from PMI volunteers; grounding their formal education in practical industry experience.

Keywords

Project Management, Education, Collaboration, Teaching

INTRODUCTION

Projects are taking a more prominent position in strategic planning and organizational success in today’s competitive environment and as a result the demand for project management (PM) skills is increasing. Data from the World Bank suggest that about $12 trillion (U.S), or 1/5 of the world’s gross domestic product, is spent on projects (Anonymous, 2010). A 2008 Economist Intelligence Unit survey asked executives to identify the jobs most important to their current and future success which identified project professionals as the single most important management job category (Anonymous, 2010). A U.S. Bureau of Labor Statistics survey reported that the need for project managers is growing faster than the average of all other occupations combined, and another survey found that PM is the number one hiring priority of respondent companies and the most frequently reported as the most “difficult to hire” (Anonymous, 2010). Exacerbating this industry-wide situation is the increasing demand for PM being met with a decreasing supply of qualified individuals. Both U.S. General Accounting Office and Australian Government studies revealed one of the main causes driving the decrease of project managers is an aging workforce population (Anonymous, 2010). They found that about 30% of the current PM workforce will be retiring in next 10 years. Couple the decreasing supply of project managers with the current trend of projects taking a more prominent role in strategic planning and organizational success and the result is a strong continued demand for employees with PM skills.

Universities are responding to the increasing industry demand for PM skills by developing PM degree and certificate programs. Many of these new programs are being developed in Management Information Systems (MIS) Departments, a natural evolution as high percentages of project managers in our local PMI chapter reported that they are working on MIS related projects. It has been reported that one of the biggest challenges that the MIS industry faces is the crisis of quality in software development and deployment where only 20% of large projects are implemented on time and, of those, over 60% experience cost overruns (Jones, 1996). Inadequate PM has been identified as a primary contributing factor for these project failures (Cusing, 2002; Reif and Mitri, 2005). In addition to developing programs, the MIS research community is calling for more research related to MIS PM. An Association for Information Systems special interest group on PM (SIGITProjMgmt) has been established which promotes research across a variety of issues concerning MIS related projects.
The importance of PM in today’s contemporary organization is also illustrated by the formation of influential and active professional organizations. The main PM professional organization is the Project Management Institute (PMI), an international non-profit organization with regional chapters. Currently PMI has over half a million members in over 185 countries (www.pmi.org). As stated on their website, PMI is dedicated to the creation of a common PM language for organizations running projects with diverse groups of stakeholders. PMI is dedicated to the advancement of not only professional activities, but also delivering outreach services to enhance educational, cultural, and societal PM knowledge sharing.

One widely held philosophy about University education is for faculty to not only prepare students for the work force but also to train students to think critically about and potentially add to the current body of knowledge on a subject. Without this universities become simply a provider of vocational training. A variety of training organizations already exist that provide certification for memorizing the project management body of knowledge (i.e., PMBOK training courses, PMP and CAPM training courses, PRINCE2, etc.). Given that there is a high failure rate with projects, especially in terms of project success (rather than project management success) it is important that a University course go beyond the current wisdom to lead industry forward. The persistence and possible deterioration of project failure strongly suggests that industry organizations such as PMI do not have all of the answers, thus the collaboration between Universities and PMI might be the key. Where industry has been unable to breakthrough and provide a body of knowledge that ensures successful projects, universities can lead in the generation of new ideas, better approaches, and improved wisdom of how to pursuing successful projects. Given the need for university involvement, the education of future PM professionals is occurring in Universities, however, many of these programs have not tightly connected industry with the PM professional community. We propose that collaborative efforts between industry and Universities can result in a richer and more holistic education for future PM professionals. We specifically address the question how can MIS Departments provide industry connected PM courses and programs for its students? We offer a case study that describes the experiences of one University and the local PMI chapter’s collaboration and the curriculum and course activities that resulted.

In this paper we first orient the reader to the response of MIS Departments to the demand for PM programs. We then discuss the approach taken by one MIS Department at an urban mid-south university regarding the development of a PM educational program. We specifically address the collaborative effort between the MIS Department and the local PMI chapter that results in unique educational experiences and opportunities.

RESPONSE OF MIS DISCIPLINE TO THE DEMAND FOR PM EDUCATION

Universities are responding to the need for the education of future PM professionals. Given that many organizational projects are related to MIS, the development of many of the PM programs at Universities is occurring in MIS Departments. A model MIS curriculum, developed by a group of industry professionals and academic scholars, supports the need for better PM education and includes in its agenda courses that emphasize PM concepts and practice1.

Several pedagogical studies, related to teaching PM to MIS students, address a variety of topics ranging from the core concepts that PM courses should teach and assessment approaches, to effective class activities for teaching PM concepts. Frailey (2007) discusses teaching Dr. Boehm’s techniques in software estimating, software risk management, and other aspects of software PM. Other studies propose that the stakeholders of PM classes (i.e., current and prior students and employers) have differing perceptions of the value gained from PM courses which should be considered when developing courses (Wearne, 2008). Others target teaching the fundamental MIS concepts (e.g., systems analysis and design, and database) as a key component of a PM curriculum (Soe and Hwang, 2007), and emphasize the importance of having specific PM classes in the curriculum in lieu of embedding PM topics in existing MIS courses (Reif and Mitri, 2005). “Hard” skills such as methodologies, processes, and tools are proposed as critical requirements for a PM curriculum, but alone they are not sufficient (Jewels and Ford, 2004). It is suggested that “soft” skills are equally critical to training future project managers, as statistically “most projects fail because the ‘soft science’ portions of the project have not received enough attention – the human factor has not been adequately addressed” (Jewels and Bruce, 2003). Soft skills include communication skills, critical thinking, leadership, collaboration and teamwork, socio-political demands, and the ability to analyze a situation and develop an effective solution (Jewels and Bruce, 2003).

PM curriculums frequently implement creative assessment techniques for student’s understanding of the tools and concepts learned and the ability of the student to apply those concepts in “action” (Jewels and Bruce, 2003; Murphy, 1999). Studies

1 See the IS 2002 Model Curriculum and Guidelines for Undergraduate Degree Programs at www.acm.org/education/is2002.pdf
propose that enabling students to reflect on their learning and performance leads to improvements in their abilities within the PM context (Mengel, 2008). One study offered a problem-based learning approach to an MBA level PM course that encourages student teams to solve business problems (Kloappenborg and Baucus, 2004; Wilson, 1995). This study describes an assessment process where, a “panel of five Project Management Professional (PMP) certified judges and two alternate judges, each with at least 5 years project management experience” (Kloappenborg and Baucus, 2004, p. 626) evaluates completed projects and awards prizes to the winning team. The judges determined the criteria for each deliverable and were engaged for several semesters with new members rotating onto the panel as needed (Kloappenborg and Baucus, 2004).

At the heart of all PM curriculums is teaching in a way that will both facilitate learning and understanding PM concepts, as well as enable students to apply those concepts to complex situations as required for PM in practice (Mitchell, 2006; Reif and Mitri, 2006). Jewels and Bruce (2003) describe this process as “deep-learning.” Deep-learning in PM describes the process of students understanding ideas and then seeking meaning, which results in a deep understanding of a phenomena, the ability to integrate principles with facts, and the use of evidence to develop arguments (Jewels and Bruce, 2003). They offer the case-study approach as an effective way to achieve deep-learning when teaching PM proficiency for both hard and soft skills. They suggest the case-study approach as the next best “alternative to apprenticeship” as good cases permit a “long look over the shoulder of a practitioner at work” (Jewel and Bruce, 2003, p. 654).

The take away from the current literature is that a PM curriculum should include concepts that address (1) MIS fundamentals (e.g., systems analysis and design, and database); (2) PM tools and techniques (e.g. methodologies, processes, and tools), (3) Soft skills (e.g. critical thinking, communication skills, and leadership skills), and (4) Activities and assessments that place a strong emphasis on deep-learning and application to real world examples.

A UNIVERSITY AND LOCAL PMI CHAPTER COLLABORATION

The experience of the collaborative effort between one University MIS department and the local chapter of the PMI began with the MIS department’s advisory board encouraging the creation of the courses. One faculty member volunteered to lead the initiative given his experience teaching an undergraduate projects course 15 years prior in which he utilized real organizational projects.

A Meeting of the Minds

When asked to create a series of PM courses, the faculty member thought about potential ways to approach this. From his prior experience, he found it difficult to find viable projects to sustain the students throughout a single semester and across multiple semesters. He decided to check out the local PMI chapter, a professional organization for PM that was sizable enough to be able to support PM educational activities. He attended the local chapter meetings and introduced himself to its members, and was flooded with interested members who volunteered to help.

He created a strong connection with the VP of Education at the local PMI chapter. Together they developed plans for the PM curriculum and negotiated the level of PMI involvement which ranged from complete PMI control to complete faculty control. The faculty member recognized quickly that it would be necessary to manage the PMI chapter’s involvement. An example of negotiated items was that the VP of Education wanted PMI certification as part of the course but the faculty member was not sure that would best serve the students. He wanted PM business world education and felt no desire to do certification. After a year of working together the faculty member and the VP of Education agreed upon a collaborative course delivery plan.

One objective of the faculty member was to bring business projects into the class setting. However, he found it challenging to do in a single semester. He wanted students to experience real project issues but could not find the right projects to make it happen. He would need strong industry commitment for this to happen semester after semester. The faculty member wanted a practicum with real world work and less box checking. His goal was to educate students in a manner that allowed him to answer: ‘what do I want them to know to hire them?’

The results of discussions with PMI representatives brought about the creation of a series of two PM undergraduate courses covering basic and advanced concepts. The PMI representatives received continuing education credits for their participation, encouraging an ongoing commitment to the PM course offering. The result was a win-win situation in which buy-in, commitment, and ownership of the PM program is felt by both the MIS department at the University and by the local PMI chapter members. In its current form, the courses have been taught twice per year for five years. A PM undergraduate minor was created, with a graduate certificate in the approval process. Our MIS PM minor comprises the two PM undergraduate
courses coupled with MIS fundamental classes, with elective options for those needing greater flexibility. The outcome has been a stronger program that is beneficial to both students and industry. Together with PMI input we have extended the approach to deep-learning from a “case study” approach to a partnership with industry mentors on real life projects.

**URBAN MID-SOUTH UNIVERSITY PM MINOR PROGRAM**

Here we describe each of the two PM classes (basic and advanced), the concepts covered, and how the collaboration of the MIS department and the local PMI chapter works using a combination of traditional teaching methods combined with PMI sponsored projects, guest lecture series, and evaluation mechanisms. The two PM classes include concepts suggested by the academic literature. First, the PM classes themselves highlight MIS PM challenges and the PM minor includes MIS fundamentals. Second, both PM classes address PM tools and techniques. Third, both PM classes incorporate lectures and activities related to soft skills which will be highlighted below. Finally, in both PM classes special emphasis is placed on activities and assessments for deep-learning with real world examples. The local PMI chapter members understand the need for these concepts to be covered and bring additional support to their emphasis.

The basic PM course is now an undergraduate MIS major requirement, and we offer a PM minor for any university undergraduate student. The PM minor comprises four courses shown in the table below.

<table>
<thead>
<tr>
<th>Minor</th>
<th>Business majors</th>
<th>Non-business majors</th>
</tr>
</thead>
</table>

**Strategic IT Project Management (Basic Class)**

The basic class format includes faculty lectures, faculty created exams, faculty moderation PMI activities. The faculty lectures includes a daily quiz that encourages students to think critically about the material presented in class followed immediately by a discussion of their answers. The PMI activities include PMI Project Management Professional (PMP) certified members who volunteer and receive continuing education credits for participating in the guest lecture series, project team mentoring, and the project contest panel. At the end of each semester there is a PMI chapter meeting which is hosted at the University and where PMI members hold an awards ceremony giving all students from both the basic and advanced classes certificates of accomplishment and the winning project team from the basic class receives a special award. The Department of MIS also provides the PMI volunteers for both classes a certificate of being an ‘MIS Teaching Fellow’.

**Guest Lecture Series**

The course topics cover the best practices included in the PMI Project Management Body of Knowledge (PMBOK). Four lectures are covered by PMI volunteers who select faculty-approved topics of their own choice usually based on their own personal experiences. These topics include: communication skills, managing risks and rewards, war stories in PM, and PM and the global marketplace. The guest lecturer series augments faculty textbook-based lectures by providing experience-based materials synchronized with the course lecture schedule. With this approach, students gain insight into PM challenges and best practices, and an appreciation of the diversity of roles and organizational settings in which project managers perform.
Student Team Mentoring

A semester long project is required for student teams of 5-7 people to address a fictional RFP. The topic of the RFP changes annually, with the latest one requiring the teams to propose a new application for a personal digital assistant (PDA) on the platform of their choice (i.e., iPhone, Blackberry, Windows, etc.). Teams are selected based on the results of a Myers-Briggs personality assessment which is due the second week of class. We initially required the assessments to be completed the first week of class, but too many students dropping and adding the class during the first week required too many changes to the team memberships. The ‘team lead’ is designated based on a couple additional questions we ask about PM related experiences. The now ex-VP of Education oversees the assignment of teams.

Recognizing that in industry companies frequently maintain templates for internal projects, once student teams are assigned they are provided templates based on actual industry examples but scrubbed of company names to use to run their projects in the class (i.e., See Table of Contents provided below of what the template document contains). To complete the templates and answer the RFP requires teamwork as a class project with the goal of providing an authentic project experience and with one mentor from the local PMI chapter assigned to each team.

Table of Contents

| Course Project RFP | ………………………………1 |
| Online Resources | …………………………………3 |
| Project Requirements Checklist | ……………………………4 |
| Project Charter | …………………………………5 |
| Scope Statement | ………………………………7 |
| Work Breakdown Structure | ………………………………9 |
| Responsibility Assignment Matrix | …………………………….10 |
| Project Schedule | …………………………………11 |
| Project Budget | …………………………...13 |
| Change Management Plan | ………………………………15 |
| Change Request Entry Form | ………………………………16 |
| Change Request Table | ……………………………17 |
| Risk / Issue Management Plan | ………………………………18 |
| Risk / Issue Assessment Form | ………………………………20 |
| Risk / Issue Table | ………………………………22 |
| Communication Management Plan | ………………………………24 |
| Meeting Agenda / Minutes | ……………………………….25 |
| Project Status Report | ………………………………..26 |
| Final Project Report | ………………………………27 |
| Product Acceptance / Project Closeout | ………………………………29 |
| Lessons Learned | ………………………………..30 |
| Marketing Plan | ………………………………..32 |

PMI mentors assist the student teams in their project planning, execution, and closeout activities. Mentors typically interface with their teams either face-to-face or via phone calls once every other week. However, the teams are responsible for their own progress and are told to use the mentor as a sounding board and to batch their questions and concerns before presenting them to the mentor. The goal is for mentors to support team completion of assigned project work successfully and on schedule, while giving each student hands-on experience with key project processes and deliverables. As an added benefit students are provided opportunities to network with PMI industry experts one-on-one.

Project Management Contest

A group of qualified ‘judges’ or PMI volunteers sit through final presentations of the teams RFP response and review their completed template materials. The materials are forwarded to the contest panel or ‘judges’ a week before the presentation. A series of presentations are held in front of the contest panel with a 10 minute question and answer period at the end of each one. The purpose of this question and answer period is to ask students to answer question that involve critically assessing the project tasks they have performed. The contest panel submits these questions to the professor in advance of the presentations and after the professor evaluates the questions, he/she provides them to the students to prepare their answers. The contest panel members ask questions to better understand the groups work and push students to understand project management
better, think critically about their experience, and pursue new ideas for project management success. This increases the professionalism of the environment for student presentations, exposes students to an industry level critical thinking exercise by answering questions, and offers another level of networking between the PMI industry folks and the students. To better prepare students for the final presentations, the contest panel holds a mid-semester ‘bidder’s conference’ where they explain their expectations and provide a series of typical questions they might ask at the final presentations.

The idea is to recognize the student team that best manages its course project in compliance with course guidelines and the PMI best practice processes and knowledge areas. It is the contest panel that decides which team did the best job managing their project which is heavily influenced by the use of the PM templates provided to the students.

**Project Management Tools and Leadership (Advanced Class)**

The advanced PM class builds on the concepts of the basic class. Consistency between courses was a primary goal of the faculty. The advanced class includes faculty lectures, faculty created exams, and faculty moderation of PMI activities. The class exams are essay format and require that the students analyze a project management scenario, think critically about how to apply the concepts from class in order to identify problems in the project and develop a solution plan. The PMI activities remain consistent as PMP certified professionals volunteer and receive continuing education credits for serving as project team members, participating in the guest lecture series, and being on an executive level project evaluation and feedback panel.

**Guest Lecture Series**

Topics for the advanced course include: PM leadership and team building, conflict management, risk management, and project management tools (MS Project 2007). The guest lecture series format is consistent with the basic class. Four lectures are delivered by PMI volunteers who select from a list of faculty approved topics, these include; Leadership, risk management, managing distributed project teams, team dynamics and conflict, adapting to project changes, and common PM mistakes and pitfalls.

**Student Team Mentoring**

A semester long project is required for student teams of 5-7. Team assignments are based on Myers-Briggs personality assessment, as well as the team structures from the basic class. The teams decide on the team lead based on some experience related questions then they must describe how and why they elected their team leader.

The advanced project departs from the basic class as students are working with a PMI mentor to evaluate an actual project that the mentor has managed in the organization where he/she works. The goal is to find projects with large scale strategic information technology topics. Using the skills gained from the basic class, the students conduct a post-mortem analysis of the project. The goal of the analysis, and the primary deliverable of the class project, is to compile a “lessons learned” report for the organization that describes recommendations for improvement as well as insights into PM practices that were effective. This is a critical thinking exercise in which the students must (1) develop an approach to the analysis (project structure) of the organizational project, (2) define the project scope, (3) identify relevant information required and how to obtain it from the organization, (4) analyze the information gathered and identify effective and non-effective PM practices within the organization’s project, and (6) decide how best to present the analysis. The goal is to have the students think critically and develop judgments regarding which PM tools are needed to meet project-specific needs and how best to implement them. The students must also manage their own class project using the PM tools that they learned in the basic class, and create the relevant documents (i.e. work breakdown structures, schedules, etc.) in MS Project 2007.

Students are provided access to organizational project information (i.e., goals, work breakdown structures, schedules, budgets, etc.) as well as access to individuals within the organization for interviews. The student teams make several site visits to the organization to walk through the information system that was the outcome of the project, gather relevant information, and interview individuals within the organization. Student teams work closely with the PMI mentor throughout the project, typically meeting once a week, and communicating frequently through email and online discussion venues.

**Executive Panel Presentation**

In the advanced PM class, there are 2-3 project teams per semester and it was decided that the students would benefit from individual feedback from a panel of experts instead of a project management contest. At the end of the semester the project
teams present their work to a panel of 5-8 executives who participate from a variety of organizations. Executives from the mentoring organizations are not included on the panel in order to facilitate objective student-based feedback. The panel members are at the Director, VP, or CIO level and may not be PMP certified. One week before the panel presentation the project team’s post-mortem analysis report are submitted to the panel members. The panel members evaluate the projects, from both the perspective of the post-mortem analysis, and the management of the class project teams, and prepare specific individual and team recommendations. The teams and individual students receive personalized evaluations and recommendations from the executives.

LESSONS LEARNED

A number of lessons learned emerged during the execution of both the basic and advanced classes including:

**PMI Take Over**—faculty must be wary of losing control of the content of the class to the PMI volunteers. PMI project managers are used to leading projects and may see the class as another venue for taking charge. While PMI folks have the best intentions, they do not live in the classroom world, and for example, may opt for installing major changes in projects or mixing team members mid-semester. This may be a good idea for increasing the realism of the PM experience, but students are being exposed to PM concepts for the first time and struggle to comprehend basic ideas. These changes may be too much for the students and ultimately it is university faculty who need to make those decisions.

**PMI Leads for Each Area of Involvement**—we found it works best to have one person from PMI as a contact person for engaging those involved in the guest lecture series, student team mentoring, and project management contest panel, respectively. Establishing one point person for the faculty member to contact for each area helped effectively coordinate the collaboration of so many PMI volunteers including the relatively few times new volunteers had to be found.

**Insufficient Guest Lecturers**—some industry volunteers were unable to communicate with a student audience. A survey feedback system was initiated so students could provide input to which guest lecturers, mentors, or contest panelists would be invited back each semester and which needed to be replaced.

**Varying Quality of Student Team Mentoring**—some mentors are better than others. Faculty must monitor how teams are doing and whether the mentor is responding to team requests for help adequately. The faculty member must communicate with the PMI lead for student team mentoring to quickly respond to issues. Some mentors may not have been totally committed or found they did not have the time needed to devote to the class and they needed to be replaced with other PMI volunteers as soon as this is uncovered and early in the semester.

**Time Commitment**—given the steps involved, the initial arrangement of the collaboration took considerable time involving introductory meetings, idea sharing, and level-of-involvement negotiations with PMI professionals. Once the general framework is established, the first semester of running the class using this collaboration can take considerable faculty time as expectations must be set and met on both sides. However, once the class has been repeated several times (i.e., our courses have been taught twice per year for five years now), returning volunteers know what to expect and what their role is. New volunteers learn from the veterans, and faculty commitment is much less. At this point, a faculty member may need to send an occasion email to share the upcoming course schedule and update that schedule based on the needs of volunteers (e.g., guest speakers may prefer an alternative day than originally planned). Overall, flexibility is important as industry professionals have other priorities and may need alternative timing (e.g., with a 2-day notice a guest speaker is called away to an important meeting out of town and cannot make the original presentation date).

**One Winner of PM Contest (basic class)**—students must be made aware that their course grade is determined by the faculty member. The contest can get competitive with PMI team mentors pushing their teams to succeed. While this is not an entirely negative scenario, students need to be reassured that those who complete the class and learn about the important facets of PM are still ‘winners’. When only one team can win this may lead to a negative course experience with one team winning the PMI award and other teams feeling this is unfair.

**Developing a Plan and Mentor Involvement (advanced class)**—creating a structure to approach the analysis of the project, and developing a plan of attack is the most difficult activity for the students. It requires them to take concepts learned in the basic class, make decisions about the relevant meaning of those concepts in their current project context, and then develop an approach for their current class project. The mentors are typically excited to get the analysis started and they need to allow time for the team to “flounder”, reflect, and develop a plan. Once the plan is developed the mentor can assist with revisions, and move the project forward.
Feedback from Executive Panel (advanced class) – the executive panel comprises high level, influential members. While this motivates high quality of project deliverables, it can be intimidating for the students, especially given the individual nature of the feedback. The students need to be made aware that the comments from the panel are in the spirit of being constructive and they should value both positive comments and those related to areas of potential improvement.

CONCLUSION

We set out to address the question how can MIS Departments provide industry connected PM courses and programs for its students? We presented the experiences of the collaboration of one University with a local PMI chapter. We described several years of planning and implementation activities that resulted in two PM classes with an ongoing relationship with PM professionals that have resulted in a sustainable PM minor program with consistency with both projects and mentors. Through our efforts we have created a sustainable program that facilitates “real world” project experiences for PM students, with a connection with industry experts, embedded in a traditional classroom curriculum. We propose that these partnerships can prove effective in other contexts, and advance deep-learning beyond the case study approach by providing real world experience, mentored by PM professionals facilitating activities that require the application of class concepts to PM issues.

REFERENCES