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Project Management Online Course – An Instructional Design Project

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Abstract

Project management is a subject that is in demand at today’s institutions of higher learning. It is a valuable skill for employees in sectors from instructional design to information technology, and in many other fields. This report summarizes a project to create an online course with content similar to the IS 405 Project Management course in the Marriott School of Business at Brigham Young University. A brief literature search is described along with a design model based on the combination of Merrill’s First Principles and Gibbon’s Layer Theory of Instructional Design. The scope of the project was adjusted to be the prototyping of the first three sections of course, in addition to the designing and outlining the balance of the course. Preliminary usability test results are described as well as an evaluation of this effort. The course’s development will be completed by the BYU Online Department in the near future.
“The demand for project management skills in industry is increasingly resulting in a higher demand for project management educational programs”  
(Poston & Richardson, 2011, p. 55).

Several BYU departments have already included or are planning to add project management instruction into their programs. The purpose of this project was to convert a popular project-management course offered by the BYU Marriott School of Business into an online format. The online course resulting from this project is expected to immediately be implemented as an offering in the Marriott School, in the Office of Information Technology (OIT), and elsewhere on campus. There is already a waiting list of interested students.

**Background, Purpose and Need**

The primary instructor has presented the content of the current face-to-face (F2F) course at Stanford University and as a seminar to numerous corporations and organizations throughout the world. There is also a need to provide this instruction on a continuous basis for new employees in the OIT. An online or blended instance of this instruction would make the course more readily available to an extended audience. The course I developed for the purpose of this project is referred to simply as, Project Management Online Course (PMOC).

The intended audience, initially, are employees of OIT and all students at BYU. These are adults ranging in age from 18 years to 65 years. Most have at least a bachelors’ degree; their education is most often in the computer science or related field. Typically, they are very computer literate and are extremely comfortable using a variety of software programs. In fact, many are programmers that design and build software solutions. However, most lack formal training in project management (PM) skills.
College-age adults with a variety of backgrounds and majors also benefit from PM expertise. It is expected that the learning modules are of general interest to a wide audience of students that are involved in projects of any kind, including a variety of majors from engineering to humanities and education. Professionals in many fields have participated in the F2F version of this course and could benefit from the online modality of the course. PMOC was designed to be useful to all who are interested in learning about proven principles of effective project management.

**Roles and Team Organization**

My roles in this project were project manager, supervisor, and producer of the course. Student employees in the Application Development department of OIT made up the development team. Ernie Nielsen, the current instructor of the MSB course, was the subject matter expert of course content. Other roles are identified below:

- **Project Sponsor** – Peter Sentz, Director of Product Management, OIT
- **Project Advisor** – Dr. Jason McDonald
- **Project Team members** – Student Employees

Beside myself, the project team members were part-time student employees working as a part of the project sponsor’s organization. They work from 10 to 20 hours per week along with the seven full-time project managers. Work on this project was a secondary priority to their other work, assigned by the full-time managers.

**Front-end Analysis**

I first performed a literature review of peer-reviewed articles dealing of project management in higher education (see Artifact A). Several key findings led to the design approach described in the following section. The literature review confirmed the need to include the following in the PMOC:
1. a consistent project management process (Alpert, 2011);

2. learning teams to develop “real-life” teamwork and team development skills (Divjak & Kukee, 2008, p. 256); and,

3. learning activities that include interactivity and hands-on practice (Mengel, 2008).

In addition, I also analyzed current project management offerings at BYU. Content areas that are most widely taught and which are included in the OIT curriculum were given priority attention during this design project; namely, project planning, work breakdown structure development, risk analysis, execution, and progress tracking. This analysis showed that PM is taught in various forms and levels of detail in several majors and programs at BYU. More than 10 courses are currently available to students. (see Artifact B). I found that a course with modular content that could be selectively included in other courses would be useful to several colleges and majors. A number of different programs might adopt a generally applicable course rather than develop and maintain their own separate courses.

Design Model

There are two foundational aspects to the design model(s) used in this course’s design. The first is Merrill’s (2002) first principles of design, as represented in Figure 1., below (see also Artifact C for a more detailed description of each).

![Figure 1](image-url)

*Figure 1.* Merrill’s five principles of instructional design.
The learning flow begins with students being asked to choose to work on one of several real-world problems. Students use an “example (hypothetical) project” as the subject of the learning activities throughout the course. Secondly, additional terminology and concepts are explained or “activated” in terms known to the students so as to form a foundation for new knowledge. Next, a demonstration of new concepts is provided; this is then followed by the students applying the new knowledge to their example projects. Finally, students are engaged in showing how what they have learned integrates with their experience and world of work around them.

The second foundational aspect of the PMOC design model is Gibbon’s (2012) seven design layers, as listed below (see also Artifact D for a more detailed description of each).

1. Content layer
2. Strategy layer
3. Message layer
4. Control layer
5. Representation layer
6. Media-logic layer
7. Data management layer

The content of the course (as shown in Artifact E) was broken down into segments which were then grouped into individual learning modules. Each of these modules was designed with the appropriate layers according to the principles outlined.

These two foundational aspects or models of instructional design were combined into a single model as shown below in Figure 2. Project Management Online Course Reference Model. There are a number of implications of this combined model for this project management course. First, following Merril’s five principles establish a foundation of new terminology related to project management for students who are initially unfamiliar with the basic definitions. Secondly, the relevancy and value of the proven project management principles are illustrated to
the students. They are thereby better able to recognize ways to apply the principles and be motivated to consider ways to incorporate them in their future practice.

Figure 2. Project Management Online Course Reference Model

Further, by considering each of the layers of instructional design, the finished product is more cohesive and effective. Software developers are very familiar with the concept of layers, as most modularity is integral to software solutions. Each of the layers in “the stack” (e.g., database, business logic, and presentation) must not only perform their individual functions well, but they must also integrate smoothly and effectively into a seamless whole. Otherwise, the
software is sluggish or has noticeable latency. It may appear to be “clunky” or inefficient as far as data resources or usability are concerned. Likewise, the instructional design quality is enhanced as each of the contributing layers is optimized for individual performance as well as overall effectiveness.

**Scope of Work / Product Description**

Originally, this design project was intended to design an entire course along with building multiple prototypes of at least two of the learning units. As described in the Design Evolution section below, the scope was changed during the course of this project, per the client needs. Ultimately, the scope was scaled to model the seminar version, which provides 24 hours of instruction of proven principles of project management. The first three of ten learning modules, comprising Unit 0.0 the “Introduction & Foundations,” were prototyped and tested. Portions of other modules were also designed, outlined, or partially developed.

A formative evaluation of the modules built was completed (see Formative Evaluation, below). A summative evaluation of the entire project is found in the Evaluation section. Documentation was developed describing the course design throughout the process. Basic usability testing was completed for the first three modules. (See the students’ testing portion of the formative evaluation, below.) The documentation and test results will facilitate building the balance of the course. The course is being completed by BYU Online, who has demonstrated interest in its continued development and deployment. It is anticipated to be piloted in the Fall Semester later this year (2018).

**Content Breakdown & Analysis**

The content of the course was developed around the Project Management Process Model (as shown in Artifact E). From this model, there are three logical sections and subsections that
constitute seven course segments or learning modules. An additional module was added based on observations from how the course has been taught and based on the reference material/text used for the course. The outline of the entire course includes the ten course segments or learning modules grouped into four major units, as shown below:

0.0 Introduction & Foundations
   0.1 Introduction
   0.2 Foundations of Project Management
   0.3 The Project Management Process Model

1.0 Establishing the Project Context
   1.1 Review Project Information
   1.2 Establish the Planning Structure

2.0 Plan the Project
   2.1 Define the Project Scope
   2.2 Create the Preliminary Schedule
   2.3 Complete the Plan

3.0 Execute the Project
   3.1 Manage the Project
   3.2 Close-Out the Project

Each of these further breaks down into between two and six steps or tasks that make up the learning module. For example, module 2.1 “Define the Project Scope” consists of four segments:

   2.1.1 Create the Definition Document,
   2.1.2 Determining the Planning and Management Approach
   2.1.3 Validate Scope and Approach
   2.1.4 Create the Work Breakdown Structure

These then, form the outline of the learning module 2.1. Learning activities were designed for each of the tasks in order to teach applicable concepts. This describes the content layer of the design.

This also forms a framework or foundation upon which the other six layers of the design model were built (see Artifact E). In addition, the five principles of instructional design can
easily be implemented for each of these instructional segments. The course was divided into four units, each having lessons that correspond to the process model segments. Every segment corresponds to one or more lessons in which the principles are exemplified as part of the instruction. This organization and structure was followed throughout the design process. The lesson objectives and lesson planning were constructed using this same framework as will be described below.

**Initial Design Description**

This course was modelled after the seminar (24 hours of instruction) version as well as the F2F version that is currently taught in the Marriott School (IS 405). A reference guide or text of the course provided the basic content. Also, the course was outlined in rough form as a series of PowerPoint presentations (Artifact F shows the mock-up of one segment of the instruction, 2.1.4 Create the Work Breakdown Structure, as a series of ten slides). Similar MS PowerPoint® prototypes were prepared for many of the other learning segments, totaling 65 slides prior to this project. Video and audio recordings were made of several sessions of the traditional class as it is now being taught (the F2F version). Examples can be found at this link: PMOC Audio and Video Assets. It is anticipated that the completed online course will include video clips, animations, audio, and exercises to illustrate and enable the students to experience the learning flow as described above in the design model section. The prototype of the first three learning modules of the course, comprising Unit 0.0, “Introduction and Foundations” can be viewed at pm.byu.edu or PMOC Unit 0.0. (It may be necessary to download the “PMOC-Lesson-Introduction-V9-1.ppsx” file in order for the animations to function properly.) This prototype includes an assessment for the students to review and recognize what they have learned (see
Artifact G. Objectively Scored Assessment). This could be used as an (interim) unit assessment in the final course.

**Budget and Timeline**

This project was managed following the Project Management Process Model (shown in Artifact E). The proposed timeline was to design the course during May and June; and, then build it during July and August. However, as discussed below in the Design Evolution section, this did not happen according to plan. Primarily due to scarcity of resources and changes in priority, the design continued throughout the summer and the construction of the instruction continued throughout Fall Semester. Based on the experience of developing the first modules, a rough order of magnitude budget was estimated to be ~1500 to 2000 hours if our inexperienced team were to complete the course. This is in contrast to the initial estimate of 250 man-hours or $25,000 estimated in the project prospectus. The development of the first three modules comprising Unit 0.0 involved at least 215 hours of my time and an additional of 505 hours of other team members’ effort.

**Design Process**

The team was limited in their experience with instructional design. This proved to be somewhat of a handicap. In early meetings there was sharp disagreement as to what steps should be taken and in what order. The lack of experience and knowledge of the project management principles being taught was also a serious limitation.

In order to overcome these obstacles, we proceeded to train the team in the project management principles as we followed them during this project. We first identified the elements of the instruction. This was fairly easy since the instruction was to follow the Project Management Process Model (as shown in Artifact E). We also brainstormed a list of steps to
develop the instruction. Combining these, we developed a matrix of tasks to be done and made assignments for team members. The resultant matrix is illustrated in Artifact H. (Initial) Task List for Instructional Modules.

I consulted with instructional designers in OIT, BYU Online, and at BYU-Idaho to better understand their processes for designing and evaluating online instruction. I also discussed our challenges specifically with a consultant from the Center for Teaching & Learning at BYU. Concurrent with this project I also took a course in Effective University Teaching; this assisted in developing more effective course and lesson objectives and plans for this course (see Artifact I. Lesson Objectives and Artifact J. Lesson Plan – Unit 0.0). The results of these consultations were incorporated into the task list/matrix (shown as Artifact K). This matrix guided the specific steps of the project used to develop the instruction.

**Design Evolution**

As mentioned earlier, the design of the course evolved from what was originally planned. Below is a description of how the scope changed as well as how the design process evolved.

**Initial Scope**

In the proposal stage the scope was to develop an entire online course, comparable to the semester long F2F course currently being taught. This would have included all ten learning modules. However, it soon became apparent that our resources were insufficient for a task of that magnitude. One of the instructional designers who worked on University of Utah’s online MBA courses shared with me the “rule-of-thumb” that an hour of instruction generally will take 40 man-hours of development time. (For this course it would mean ~1500 man-hours, or nearly 9 man-months of continuous effort.)
Our team was expected to be six or seven full-time (equivalent) employees of OIT working for four months about ½ time on this effort. Reality set in when two of the employees took leave for summer internships, one left for a time to get married, and all but one of those involved were assigned to other work of higher priority. The remaining resources were working only part-time and on different schedules so that we were not even able to assemble the entire time at one time. Rather, team meetings were held in two parts, three at a time, in order to involve the six employees working on this effort.

Further, several weeks into the design and development effort, many of the team members either graduated or discontinued employment with OIT. We lost our technical writer and gained some UI/UX testing expertise. Replacements were hired but availability to work on this project decreased significantly. At one point we were only able to spend 21 man-hours during a calendar month.

**Adjusted Scope**

We scaled back the scope of this project to be roughly equivalent to a 3-day, 8 hour/day seminar content rather than an entire semester length course. The new target audience was to be employees of the OIT. The same format and content was covered, only in less detail, and with fewer examples and learning activities. Even this could mean close to 1000 man-hours of work, using the rule-of-thumb mentioned earlier.

Instead of attempting to design and build all of the modules, we determined to build, prototype, and test at least three. The balance of the course was designed and outlined (with learning activities identified) to facilitate eventual construction when additional resources are allocated.
**Instructional Platform**

One other design decision proved to be challenging. BYU Online constructs online courses using the Canvas platform. Employee training (Y-Train) developed in OIT and by Human Resource Development at BYU use a different platform, often constructing with the Adobe Captivate toolset. Initially the team decided to build using Canvas so that the product could eventually and more easily be expanded to become a full semester course.

The adjusted scope led us to steer the development toward the Y-train tool to be consistent with its principal users, employees of OIT. However, only one of our team members had minimal experience using Adobe Captivate. And we found that a significant portion of the designed functionality of the instruction was lost as it was uploaded to the Y-train tool. Our final prototype was developed using MS Power Point to retain the desired design and pedagogy.

**Evaluation**

There were two types of evaluation during this project. A formative evaluation was conducted in two parts: (1) project team members reviewed the experience of design and development utilized during this project; and (2) the quality of the course was evaluated after the first three modules were developed. The latter was accomplished primarily as usability testing the prototype instruction with students. Both portions of the formative evaluation are described below.

Also, a summative evaluation of the entire project is presented in the Reflection & Critique section. Strengths and weakness of this project are discussed. Future recommendations are also enumerated.
Formative Evaluation

A formative evaluation was conducted after the first three modules were built. It included aspects of the instructional design and development including content, delivery, and developmental processes.

Criteria. The primary evaluators were student stakeholders who considered the content and effectiveness of the course unit. Secondarily, the team members were asked to comment on the process used to develop the instruction. Students were given a series of questions (as described below) to determine the quality and effectiveness of the instruction. Project team members brainstormed answers to three questions related to the processes used. These are also described below.

Procedures. Convenience samples were used to evaluate this instruction. Two students who were exposed to the design of the instruction but not involved in the actual PMOC development were asked to review the final product. Four other students who were not involved in either the design or the development were asked the same questions after participating in the instruction.

The latter group were asked to “think-aloud” as they reviewed the instruction. Recordings were made of their experiences in the Usability Lab of the HBL Library at BYU. The same questions were given to all students in the form of an online questionnaire after receiving the instruction (see Artifact L). Results of the testing are discussed below.

Team members were asked to consider the development of the first three modules in terms of “What success did we experience?” “What challenges did we encounter?” and “What lessons did we learn?” that could be applied to more effectively and efficiently develop subsequent modules.
Evidence – Students. The results of the user testing were generally positive. One liked the introductory “ABC” project simulation. Another thought it too long and boring. Two felt the evaluation was too easy. One stated that the evaluation “helped me see how much I had really taken away.” One would have preferred fill in the blank or short answer to multiple choice. Two felt more videos would be better. There were no major negative aspects noted (see Artifact M for the complete responses of the four students new to the PMOC instruction). Artifact N shows the responses from two students who were involved early on with the design of the course, but not with the actual prototyping.

Evidence – Team Members. Answering the question, “What success did we experience?” as a project team, we learned a lot, both about the process of instructional design and about project management. In response to “What challenges did we encounter?” the team agreed that we changed directions with respect to the platform and format of our prototypes. We also changed the task list (process) we were following to develop the course. But there appeared to be agreement that a major challenge was to transform learning activities from the F2F classroom to an online course.

The team members gave detailed responses to “What lessons did we learn?” determining how to improve the process, mainly the task list/matrix (see Artifact K). The team suggested a simple iteration of “write, obtain feedback, and edit” (as shown in Artifact O) during our formative evaluation meeting.

Outcomes. Going forward, for the next modules to be developed, the team adjusted our development process to be more iterative than sequential (as before). Their recommendations can be illustrated as in Figure 3 below.
Secondly, they synthesized the application of our design model to simply be:

- Describe/explain each concept;
- Illustrate it with real life example;
- Provide a learning activity where they practice the concept; and,
- Administer an assessment to see if they got it or not.

We intend on following this pattern in the design and development of subsequent modules.

In response to the challenge of transforming learning activities from the F2F classroom to an online course, I created a rubric and observed the F2F course (MBA 693R) taught during the Fall 2017 semester. I noted 40 pages of observations during the semester and distilled the key take-aways into ten pages of learning activities with descriptions of how they might be included in the online course (shown in Artifact P).

**Reflection & Critique**

My first reflection is that the instructional design effort was much more complicated, multi-faceted, time consuming, and difficult than I expected. I did not anticipate the challenges of the many moving parts and details involved. This included everything from scarce and changing resources and the wide variety of technologies required, to overcoming complications translating between softwares and platforms. Pedagogical translation, strengths, and weaknesses will be discussed in retrospect. Finally, recommendations will be offered as a result of this experience.
Face-To-Face (F2F) ➔ Online

A specific challenge encountered was the design process. This involved the differences between face-to-face instruction and online instruction. It became clear to me that although the material in terms of printed, MS PowerPoint, and lecture video was abundant for the F2F version, many changes were required to make effective online instruction. The introductory project simulation exercise and description to the project management process model are two examples.

Project Simulation Exercise. The F2F course and simulation begins with an “ABC Exercise” in which class members take on roles of a project team and work together to solve a problem interacting much like a typical project functions. However, this presents a considerable challenge in the online course. We were able to utilize video clips of the exercise with individual exercises and virtual classroom discussion to replicate this for the online course. This may need further testing and adjustment based on the reactions of our student testers. (See results of the beta testing for the first three modules described in the Evaluation section of this report.)

Describing the Project Management Process Model. Central to the course is the PM Process Model (see Artifact E). It is foundational to the course and is referenced throughout. Therefore, understanding its elements and construction are very important to this instruction. In the process of determining an effective way to teach about the model, we actually improved the F2F course.

The model consists of three different sections and three different levels with a total of 38 elements. In order to present this effectively to students, we came up with the idea of a puzzle exercise. After describing the model in words and pictures for students, they were given un-numbered elements of the model and asked to assemble the entire model as they would a puzzle.
This learning activity was tested with success in two sections of the F2F version of the class (held concurrent to this project). Student response to this approach was favorable and their suggestions were incorporated into the online version of the “model puzzle” learning activity that is included in the first three modules (see Artifact Q, Model Puzzle Learning Activity). This emphasized the value of testing ideas and then refining the successful ones prior to incorporating them into instruction.

**Major Strengths and Weaknesses**

Throughout this project, I was exposed to new aspects of instructional design. There were numerous “aha’s” and “that’s what my professors were talking about” and “now I understand more clearly” experiences. Only a few of the most significant strengths of this effort, weaknesses, and lessons learned are enumerated below.

**Strengths.** Instructional resources were abundant (based on the F2F classes) in terms of “raw” material from which to draw from in creating the course. The 527 page reference guide/text was available in both electronic and hard-copy formats. Video excerpts from three previous sessions of the ground class, as were several audio excerpts. PowerPoint slide decks outlining the course, as well as various other learning aids were also available.

Personally, I am very familiar with the content, having taught portions of it in a seminar format, as an occasional substitute in the IS 405 course, as well as informally taught and practiced the principles for the past ten years. This enabled me to guide the development of the course content due to my understanding of the content. (However, this was not the case with the team as a whole, as is described in the next section.)

The F2F instructor, Ernie Nielsen, was extremely supportive and accommodating. He also was a great resource in his role as subject matter expert. This enabled frequent consultations
on all aspects of the course development, including video recordings and even rearrangement of the syllabus to facilitate project progress.

**Weaknesses.** Probably the greatest weakness was a severe shortage of necessary resources. The availability of manpower and required skill sets turned out to be in very short supply. As mentioned earlier, the student employees’ time available for this project ended up in very short supply. There was also unexpected turnover in student employees as well as skill sets.

By the end of the summer, we hired other student employees and began to train the “new” team. We replaced our graphic designer with another student with Adobe Captivate and video editing experience. A new student assisted in the construction and transitions between Canvas and Y-Train platforms. Another new student employee provided some basic HTML/CSS expertise. However, these new team members had no project management education and required extensive training to become familiar with the content.

We also did not anticipate the magnitude of the effort required for transition between learning platforms and to combine different media. The complexity of technologies involved was much more than expected. We discovered that animations built in MS PowerPoint did not work in Adobe Captivate and had to be re-built. Integration of video and graphic animations exceeded storage capacity and let us to consider web-based storage alternatives. Finally, we settled on a basic MS PowerPoint prototype to be finalized and integrated into a larger whole in the future. This was determined to be the most versatile platform for our development resources.

Inexperience translating F2F pedagogy to online was another weakness or challenge experienced. Learning activities described earlier such as the ABC simulation video segments with individual anticipatory and post-viewing written exercises were employed with a measure of success, as noted in the formative evaluation. A number of in-class demonstrations were
simply videotaped for inclusion; however, student reaction in terms of learning effectiveness were mixed, and not necessarily well received (see student comments detailed in Artifact M, and Artifact N, for their specific reactions).

**Recommended Improvements.** Finally, several recommendations can be offered for similar efforts as well as for further development of this course. Well-defined steps to develop the instruction, including milestones and checkpoints, will help organize the work. Our inexperience as a team with this type of project led to us spending several hours of discussion before defining a task list acceptable to the entire team. Ultimately, we worked through a series of developmental steps which we later determined were over-complicated. A detailed format or design framework determined in advance would have expedited our progress.

The media logic layer of the instructional design was a challenge. A clear definition of platform and technologies to be used would also have facilitated the project. We spent a great deal of time and energy trying out multiple approaches, before selecting one that matched our limited resources. It would have been helpful to determine the tool for prototyping and the platform to build the course earlier in the process. This could have streamlined the development. In hindsight, this decision was based on a desire to prototype directly in the same tool as the final build, in an effort to save time and resources. Actually, we probably spent more.

More consistent and dedicated resources would also have helped us accomplish more sooner. As described above, we lost momentum as we trained new team members and replaced skill sets. Unpredictable work schedules and priorities made it extremely difficult to plan and estimate progress for both the timeline and budget.

Lastly, additional testing is recommended. This is best for both individual learning activities and entire instructional modules. As the agile method encourages, more frequent
design/build/evaluate iterations can effectively guide development. To do it again, each module could be story-boarded and evaluated with a small set of students to ensure that the online concepts translated well from the F2F modality of instruction. Other technical aspects would also benefit from smaller, and more frequent iterations.

**Conclusions**

Using the design model described above, we prototyped three modules of the course comprising Unit 0.0. These are ready to be moved into the Canvas LMS platform (as other BYU Online courses) and utilized across campus. In addition, we outlined the other three units in terms of course objectives and learning activities following the established framework for the course. (See this link for details: [PMOC Course Objectives and Learning Activities Outline](#).)

We also organized the raw video footage and audio recordings for later inclusion. These constitute a clear blueprint for construction of the balance of the course. As we began working with BYU Online and shared the results of this project with them, so the balance of the course can be built, the Assistant Director of Instructional Development commented that they had never received so well prepared content and material from which to develop an online course.

Additionally, I gained a practical education in the work of instructional design during this project. I experienced all phases of planning, designing, prototyping, building, and testing. We overcame challenges of limited resources, changes in personnel, technological issues, and unexpected delays. We were able to learn from and contribute to the existing F2F course, especially as we transformed hands-on learning into online learning activities.

Further, I was able to extend my project management skills beyond developing software. I experienced for myself differences between working with s/w and instructional developers. Both are creative in similar ways. Both resist the formalities and discipline of project
management processes to some extent. All in all, this has been a truly inspiring learning experience for me that will benefit me for the rest of my career.
References


List of Artifacts


Artifact B. Needs Analysis & BYU Project Management Course Listing – [3 pages]

Artifact C. Merrill’s Five Principles of Instructional Design

Artifact D. Gibbon’s Seven Instructional Design Layers

Artifact E. The Project Management Process Model

Artifact F. Example Mock-Up of the WBS (2.1.4) Segment of Instruction – [5 pages]

Artifact G. Objectively Scored Assessment - [8 pages]

Artifact H. (Initial) Task List for Instructional Modules

Artifact I. Lesson Objectives – [8 pages]

Artifact J. Lesson Plan – Unit 0.0 – [20 pages]

Artifact K. (Final) Task List for Instructional Modules

Artifact L. Feedback Questionnaire – [2 pages]

Artifact M. Usability Test Results – Four Students (New to PMOC) – [4 pages]

Artifact N. Usability Test Results – Two Students (Part of PMOC team) – [2 pages]

Artifact O. Formative Evaluation – Team Meeting – 7 Dec 2017

Artifact P. Key Take-Aways from Class Observations – [13 Pages]

Artifact Q. Model Puzzle Learning Activity

**Literature Review**

Initially the review targeted peer-reviewed articles dealing with teaching software developers new skills. It was hypothesized that the best way to teach a peripheral skill to developers, like project management, would be to mirror proven practices of instruction for their core competency, software coding. Only a few case studies were located of project-management instruction directed at software developers.

However, searching databases of professional journals for terms such as “learning strategies” or “learning styles” and “software developers” or programmers and andragogy provided unsatisfactory results. It was not until looking specifically for “project management” learning or teaching that sufficient numbers of articles were identified. It started with finding an article (specifically a doctoral dissertation) entitled, “Project Management in Higher Education,” located while using terms “project management”, “instructional design theories” and “project management.”

This led to one article published in the International Journal of Project Management. That led to the 3rd Conference for Excellence in Teaching and Learning PM. From there the search expanded widely through a series of searches of citations and articles which cite these articles. Nevertheless, a relatively small number of articles were found that included project management course design principles. None were found that specifically focused on design principles for online or blended learning courses in the project management domain.

The most useful articles are the small number that described variations in design of the project management courses and the relative benefits in terms of student performance or
preference. For example, Alam (et. al., 2008) identified helpful suggestions in the findings of their study. “In the area of behavioural competence, improvements were noted in relation to levels of confidence in ability and skills. Improved confidence was seen to lead to improved on-the-job performance and as was mentioned previously, experience cannot be taught (p 233).”

[The excerpts from the annotated bibliography that follow show a portion of the articles found and surveyed as part of an independent directed study (IP&T 693R).]

Annotated Bibliography – IP&T 693 Directed Study – Fred Hyatt

“Effective Strategies for Instructing Software Developers in Project Management (PM)”

This study began focusing on teaching skills to software developers that go beyond their core competency of programming to include such things as project management, teamwork/collaboration, or creativity. It was hypothesized that in order to best teach these peripheral skills that one could model the techniques described for teaching and learning the core competency.

However, searching databases of professional journals for terms such as “learning strategies” or “learning styles” and “software developers” or programmers and andragogy provided unsatisfactory results. It was not until looking specifically for “project management” learning or teaching that sufficient numbers of articles were identified. The path that was taken in this research of literature on this topic followed the path shown in Figure 1. It started with finding an article (specifically a doctoral dissertation) entitled, “Project Management in Higher Education,” found while using terms “project management”, “instructional design theories” and “project management.”
This led to one article published in the International Journal of Project Management. That led to the 3rd Conference for Excellence in Teaching and Learning PM. From there the search expanded widely through a series of searches of citations and articles which cite these articles. Thus, the format for the bibliography follows for the first six articles which appear to include research that will inform the enumeration of effective strategies for instructing software developers in project management (PM).

The articles included in the annotated bibliography that follows are identified by Roman Numerals and are the ones that were first identified by reviewing the 3rd Conference for Excellence in Teaching and Learning PM.

Figure 1

The articles included in the annotated bibliography that follows are identified by Roman Numerals and are the ones that were first identified by reviewing the 3rd Conference for Excellence in Teaching and Learning PM.
I. Reference:


Research Question(s):

“This study identified factors that influenced the use of project management in higher education research projects.”

Specifically, the focus of this article was how PM processes and tools were being used by assistant professors of Education at doctoral-granting universities. Also, factors which “enabled, motivated, and/or inhibited” this use studied using a “qualitative grounded theory approach.”

1. What project management processes and tools, if any, do professors use to manage research projects?
2. How do professors use project management processes and tools in research projects?
3. What factors enable and motivate professors’ use of project management processes and tools in research projects?
4. What factors inhibit professors’ use of project management processes and tools in research projects?

Methods:

“A total of 22 participants (12 women, 10 men) from 21 different universities across 13 states took part in the study”; limitation: purposive and convenience sampling. In-depth
interviews were conducted; instrument used was primarily a semi-structured interview (see Appendix D).

“Data analysis included three key data analysis techniques: line-by-line coding, memo-writing, and axial coding”

Findings:
Data was analyzed by research question; “the researcher defined 11 major categories from nearly 200 codes and developed a grounded theory appropriate for participants of this study. (The 20 most used codes are included in Appendix H.)”

1. PM processes & tools: “Many participants commented on the importance of following a consistent project management process”

- General Process: Initiate / Plan / Execute / Monitor & Control / Close = PMBOK®
- Tools (types of, benefits of, & awareness of): A list of the most frequently-mentioned project management tools is included in Appendix I.

2. Alignment w/standard PM:
- collaborating – individual (w/ & w/o colleagues), in partnership, and as research group
- involvement – stakeholders, students,
- receiving research support – sometimes frustrated
- interpersonal characteristics – attitude & belief, focus & prioritization, communication, approach, relationship & conflict, alignment, issue management, and leadership

3. Enabling and Motivating Factors:
- Mentoring – both positive and negative
Accountability – to partners, research groups, and/or themselves
Efficiency – increased output (more and better publications) for given input of effort

4. Inhibiting Factors:
Restrictive and Complex – perception of PM processes and tools
Project Size – some too many (small), some few (large)
Awareness and Time – lacking to adopt new methods

Key Quotes:

“Cycle of Mentoring

An additional significant finding was related to participants' experiences with project management as graduate students. These experiences, both positive and negative, had a profound effect on how participants managed their projects. Participants also recognized that they had both an opportunity and a responsibility to model project management processes and tools for their own students.” (p. 84)
“The majority of participants indicated that they had not received any formal training on project management although many expressed an interest in learning more.” (p. 88)

“Enhancing the project management preparation that professors receive, broadening the research support systems available to professors, and providing opportunities for professors to develop relationships that are critical to their research will lead to better project outcomes.” (p. 91)

Citations (of this work): 0

References (to be considered further):
II. Reference:

Research Question(s):

“Discussions and conclusions focus on lessons learnt and suggestions on the development and delivery of the programme and its effectiveness.”

Evaluate the effectiveness of a PM masters program (PMPDP) consisting of “8 module _ 12 topic matrix was developed to describe the purpose and content of the taught modules.”(p. 227) at the University of Manchester (UoM) in England. “It is run as a web-enabled distance learning programme (p. 228). “Pennsylvania State University began running a common sister masters programme in 2001 with the same learning outcomes.” (p. 229)

Methods:
“A 360-degree feedback approach is widely used for measuring project management competence [21, p.1100].” (p. 230)

This research is comprised of 3 different studies. “The first used qualitative techniques to ascertain the effectiveness of the case study programme mentioned above (PMPDP) [in terms of employee competence]. The other two studies used quantitative techniques.” (p. 231) Qualitative (survey 1) and Quantitative data (surveys 2 & 3) were gathered.
Sampling: “The first five cohorts comprising 83 delegates were chosen as a working population because they had significant experience of the programme (response rate 25 per cent). In the second survey, 358 completed RR-KEQs were available, of which 55 had been completed by delegates on the PMPDP, leaving 303 questionnaires to act as a control group. The working population for the third project comprised 181 employees who completed the RR-KEQ in 2005. Among them, 65 were delegates who had studied PMPDP modules.” (p. 231)

“Data in the form of RR [Rolls-Royce Knowledge and Experience questionnaire] computed knowledge and experience grades were taken from the RRKEQ to compare the competence of delegates at different stages of the programme with a control group which had not undertaken any comparable professional development in project management.” (p. 231)

Findings:

“In the area of behavioural competence, improvements were noted in relation to levels of confidence in ability and skills. Improved confidence was seen to lead to improved on-the-job performance and as was mentioned previously, experience can not be taught” (p. 233).

“Generally, it appears from the results that we can hypothesise that there may have been a general improvement in competence throughout the organisation due to delegates studying the PMPDP” (p. 234).

“The general trend in all the three surveys indicates that PMPDP is contributing positively in increasing the knowledge of delegates. It appears from the analysis that the PM knowledge of employees participating in the PMPDP has gradually increased as they study more PMPDP modules” (p. 235).

Key Quotes:
“Crawford [5] identifies twenty four success factors as primary for successful projects. The majority of these factors are directly related to project management competence and demonstrates that the competence, knowledge, skills and attributes of project managers, are critical to project success [5].” (p. 224)

“Therefore, providing project management education and professional development for project managers demonstrating appropriate behaviours should result in improved competence.” (p. 225)

“A competence based approach enables the identification of appropriate people to train and educate [28,29].” (p. 229)

“It appears from the results of all the three surveys that professional development programmes like the PMPDP can contribute to the development of competence and competencies in individuals, leading to benefits for the organisation as a whole” (p. 235).

Citations (of this work): 38

References (to be considered further):


III. Reference:

Research Question(s):

“1. How can project management education be designed to respond to the challenges of the Mode 2 society?

2. How is the idea of knowledge co-production brought into project management training and education programs?” (p. 287)

[In Mode 2 multidisciplinary teams are brought together for short periods of time to work on specific problems in the real world for knowledge production.” Wikipedia, 13 Dec 2016]

Methods:

“This paper builds on the experience from two Swedish based educational programs, the PMEX program (Project Management Executive Master Program) and the APM program (Advanced Project Management), both launched in the mid 1990s at Linkoping University” (p. 288).

Outline: “…describe six modes of learning that are particularly important in a Mode 2 society and analyze the six illustrations presented in further detail” (p. 288). One for each of these “boxes” found under the “three primary loci, or learning spaces: Individual, Group and Organization” (p. 290):
Findings:

1. Reflection reports – “After each residential week in the PMEX program, participants are to write a weekly report” (p. 291). These reflection reports are culminate the weeks’ lectures and roundtable examination and focuses on the individual “lessons learned” during the week; in addition, these reports include long-term implications of application of these lessons in his/her organizations. “The reports are discussed with a faculty member, normally a professor acting as the participant’s tutor during the entire program.” Emphasis is on applying the learnings to the actual working circumstances of the participant.

2. Learning contracts – “The articulation of personal learning goals is an important assignment in the first part of the PMEX program” (p. 292); and are included in the first reflection report as determined by each participant. Such as: “What do I want to learn? How will I learn this? Who can give support? When can I start? How will I know that I have learned? How will others realize that I have learned?”
3. Roundtable examination – “The roundtable exam is not only a test of course participants’ proficiency and efforts in reading and summarizing complex theories and literature, but also a means to articulate new knowledge, relate to experience and share this knowledge and ideas with other participants” (p. 292). This weekly discussion is held (classes divided) in smaller teams after each has submitted 4 essay questions based on 2 books and 10 journal articles. Participants are encouraged to reinforce this learning in each participant’s reflection report and discussed with their tutor.

4. Live cases – each week actual examples of challenges encountered in one of the participating companies; there is are no “correct” answers; however, there are “several alternatives”. Background information is provided in advance of the discussion, with additional details being provided on the day of the case session. Company project managers participate during the discussion and comment on the proposed solutions.

5. Thesis work – each program involves a master’s level thesis requirement. The challenge is to combine academic rigor with practical utility/relevance. (See key quote, below.)

6. Knowledge theaters – “The knowledge theater is a vehicle for linking on the one hand personal and organizational, with individual and social action on the other hand” (p. 294). It is a presentation of theses by 12-20 student/participants and sponsoring management to a large audience of managers from the same company in what has been described as “The Day of Projects.” It is the culminating event of the instruction/course.

Key Quotes:
“Experiential learning theory emphasizes the role of action and experimentation. This pragmatic approach to education draws particularly on the ideas of John Dewey. From our experience, action plays a critical role in turning reflection and articulated knowledge into heedful management practice. Action and reflection are closely nested and dialectically associated, action provides the testing ground for reflection, articulated reflection opens the way for new perspectives and fosters the generation of new knowledge” (p. 290).

“The key in management education programs, however, is to integrate academic standards with organizational usefulness and what might be called “in vivo implementation”, i.e. that lessons learned also are relevant and that they contribute to corporate efficiencies” (p. 294).

“In sum, the practices illustrated contribute to expanding the loci of learning, of turning individual learning into collective learning processes and experience sharing” (p. 295).

Citations (of this work): 82

References (to be considered further):


IVA. Reference:


**DEFINITIONS**: rethinking project management (RPM)

classical project management (CPM)

Research Question(s):

(1) How can we conceptualize RPM and how has it developed over time?

(2) How can future research expand the RPM research area?

**Methods**:

“This review consists of 74 contributions, which we classified and analyzed” (p. 279).

A: “provide an overview of the existing RPM body of knowledge by focusing on the basic principles behind the RPM literature and

B. how it is differentiated from the classical view” (Ibid.).

C. Two parts:

[1.] “the first part was an explorative and less structured literature search for alternatives to classical project management;

[2.] this was followed by the second part, which was a rigid structured literature review consisting of four phases, starting with the

a) definition of the review scope,
b) the conceptualization of RPM,

c) literature searches with key words and

d) finally the literature analysis” (Ibid.)

D. “A critical discussion about the brave new world follows the analysis” (Ibid.).

See Appendix A for the “the iterative development of the search string” (p. 288).

“We divided the literature analysis into two coding processes.
[1.] First, we conducted an inductive analysis (Patton, 2002, pp. 453–454), with the goal of identifying overarching topics and then categorizing each contribution within one of the associated categories” (p. 282).

_results:_ 6 categories (as shown below, in “Findings”)

[2.] “carried out a deductive coding process to classify the contributions into yearly distributions and their paradigmatic stance (inspired by Chen and Hirschheim, 2004)” (Ibid.).

**Findings:**

<table>
<thead>
<tr>
<th>Author</th>
<th>Classical Project Management</th>
<th>Rethinking Project Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packendorff (1995, p. 328)</td>
<td>Project metaphor: the project as a tool</td>
<td>Project metaphor: the project as a temporary organization</td>
</tr>
<tr>
<td></td>
<td>Process: linear, with the phases plan, control and evaluate</td>
<td>Process: iterative, with the phases expectation setting, actions and learning</td>
</tr>
<tr>
<td>Jugdev et al. (2001, p. 36)</td>
<td>Project management: as a set of tools and techniques used to achieve project efficiencies</td>
<td>Project management: as a holistic discipline used to achieve project/program/organizational efficiency, effectiveness and innovation</td>
</tr>
<tr>
<td></td>
<td>Success: measured by efficiency performance metrics</td>
<td>Success: a multidimensional construct measured by efficiency, effectiveness and innovation</td>
</tr>
<tr>
<td>Practice project management: focus on the project details at the operational level and tactically</td>
<td>Project management: be an advocate and champion of project management by aligning its value with the firm’s strategic business priorities</td>
<td></td>
</tr>
<tr>
<td>Winter et al. (2006c, p. 642, original emphasis)</td>
<td>Simple life-cycle-based models of projects, as the dominant model of project and project management with the (often unexamined) assumption that the life-cycle model is (assumed to be) the actual terrain</td>
<td>New models and theories that recognize and illuminate the complexity of projects and project management, at all levels. The new models and theories are explicitly presented as only partial theories of the complex terrain</td>
</tr>
<tr>
<td>Shenhar and Dvir (2007, p. 11, original emphasis)</td>
<td>Approach: traditional project management</td>
<td>Approach: adaptive project management</td>
</tr>
<tr>
<td></td>
<td>Project goal: completing the job on time, on budget and within the requirements</td>
<td>Project goal: achieving multiple business results and meeting multiple criteria</td>
</tr>
<tr>
<td></td>
<td>Management style: one size fits all</td>
<td>Management style: adaptive approach, one size does not fit all</td>
</tr>
<tr>
<td></td>
<td>Perspective: task perspective</td>
<td>Perspective: organizational perspective</td>
</tr>
<tr>
<td>Andersen (2008, p. 5, 10, 49)</td>
<td>Project definition: a project is a temporary endeavor undertaken to create a unique product, service or result (Project Management Institute, 2004, p. 5)</td>
<td>Project definition: a project is a temporary organization established by its base organization to carry out an assignment on its behalf</td>
</tr>
<tr>
<td></td>
<td>Main focus: execute the defined task</td>
<td>Main focus: value creation. Create a desirable development in another organization</td>
</tr>
<tr>
<td>Lentle and Loch (2010, p. 45)</td>
<td>Project type and target: routine execution, target given and defined from above</td>
<td>Project type and target: novel strategic project with a general vision and direction, but detailed goals not known and partially emergent</td>
</tr>
<tr>
<td></td>
<td>Examples of domain of relevance:</td>
<td>Examples of domain of relevance:</td>
</tr>
<tr>
<td></td>
<td>• Known markets and customer reactions</td>
<td>• New markets and unknown customer reactions</td>
</tr>
<tr>
<td></td>
<td>• Known performance drivers of developed systems</td>
<td>• Unknown technology</td>
</tr>
<tr>
<td></td>
<td>• Known environmental parameters</td>
<td>• Complexity with unforeseeable interactions among drivers and variables</td>
</tr>
</tbody>
</table>
“...a total of 6 overarching categories emerged:
1. contextualization,
2. social and political aspects,
3. rethinking practice,
4. complexity and uncertainty,
5. actuality of projects
6. broader conceptualization”

(p. 278)
Key Quotes:
“The relationship between the classical and the rethinking view should not be interpreted as dichotomic but on the contrary as dualistic, combining ‘old truths and new insights’ (Jugdev et al., 2001)” (p. 280)

“…we identified a total of 6 papers as objectivistic and 62 as subjectivistic, while 6 papers from the literature review was not classified as either objectivistic or subjectivistic. This seems to relate to the changing nature of project management from a hard paradigm to a soft paradigm (Pollack, 2007)” (p. 285).

“…a real driver of “RPM in practice” could be that it outperforms classical project management” (p. 287).

Citations (of this work): 49

References (to be considered further):
(references from within the article)

See Reference III, above.


(those that cited this article)


IV. d) Pasian, B., Feldbrugge, K., & Sankaran, S. Coverage of ‘human factors’ in project management literature: a systematic journal review.
V. Reference:


**DEFINITIONS:**
- student-centred learning model (SCL)
- virtual learning environment (VLE)
- information and communication technology (ICT)

The modified (new) version of Bloom taxonomy is shown in the Fig. 1 taken from [4]

![Fig. 1. New version of Bloom taxonomy.](image)

Here are the learning outcomes:

- Comprehension of the role and techniques of project approach in science and development, and the understanding of the characteristics of scientific research (risks involved in scientific project, importance of researchers’
inventiveness, international character)

- Understanding and application of project management methods for application and management of R&D (research and development) projects
- Analysis and identification of project success criteria in each phase of the project cycle
- Synthesis, design and presentation of main components in an international R&D project application and the mastery of required terminology (mostly in English)
- Development of team work skills, but also development of leadership skills and partially skills essential for project documentation management
- Evaluation of R&D projects in respect to the application of project management methods and, in a reasonably reduced range, in respect to scientific relevance of the proposed research.

Research Question(s):

“A case study of teaching project management in Croatia in two different learning environments”: professionals studying in life long learning programs and students at postgraduate studies.” (p. 251)

Adjust goals of the training workshop for lifelong learners on the spot. For PhD students the learning outcomes are set in advance.

“Student workload has been verified through the diary of activities that each student has to keep in the Moodle throughout the course duration and examination period” (p. 253)

“There is also a constant follow up on the satisfaction of students through anonymous questionnaires and informal
interviews, publication of evaluation results and specific steps taken towards course improvement” (Ibid.)

“At the beginning of the course groups are formed according to research niche defined by each student” (Ibid.)

“Additionally, playing different roles in the project life cycle and learning to cross disciplinary borders enables students to gain self-assurance in project management” (p. 254)

“Several team work activities which are hands on... resemble the following:

_ find your own niche in strategic objectives of different R&D programmes,
_ define your project idea and analyze it with an appropriate tool (for example SWOT analysis, problem tree, needs analysis, etc.),
_ define objectives, deliverables, activities, indicators, risks, etc. by using Logical Framework Matrix (LFM),
_ design the major work packages and provide planning (PERT, Gantt, etc.) for them,
_ construct the overall budget and distribute resources according to objectives and deliverables,
_ complete the project application form and foresee the management of the project,
_ evaluate the project according to the actual evaluation rules and procedures and negotiate an evaluation report with other evaluators, etc.” (Ibid.)
Besides describing the two versions of the training, this case study “assesses students’ satisfaction level and personal development” (p. 251) throughout. The two paradigms used as a basis for this instruction were:

1. Most effective learning is working in real-life situations

2. Teach them what you promised and students will respond with effort

<table>
<thead>
<tr>
<th>Activity</th>
<th>Student workload in hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>30</td>
</tr>
<tr>
<td>Scientific paper analysis, essay</td>
<td>30</td>
</tr>
<tr>
<td>Design of a project application</td>
<td>60</td>
</tr>
<tr>
<td>Research of information sources and previous project applications, writing the application, team work</td>
<td>30</td>
</tr>
<tr>
<td>Evaluation of projects/On-line course design</td>
<td>30</td>
</tr>
<tr>
<td>Research/analysis/synthesis Presentation, literature for the oral exam</td>
<td>90</td>
</tr>
<tr>
<td>Total: 9 ECTS</td>
<td>240</td>
</tr>
</tbody>
</table>

Table 3
E-learning alternatives adopted according to [10]

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Description</th>
<th>Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face to face teaching</td>
<td>Teaching (mostly lectures) in classroom</td>
<td>• Not used, except for example text processor (Word) for the preparation of teaching</td>
</tr>
<tr>
<td>ICT supported teaching and learning</td>
<td>Technology is used mostly to improve traditional teaching methods</td>
<td>• Presentations (PowerPoint)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Multimedia CD-ROM-s</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Web portal for courses with hypermedia (courseware)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Testing programmes (self-evaluation quizzes and knowledge tests)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• E-mail and mailing lists</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Forum</td>
</tr>
<tr>
<td>Blended, (mixed, hybrid) learning</td>
<td>Combination of traditional teaching in classrooms and technology enhanced teaching</td>
<td>• LMS-Learning Management Systems</td>
</tr>
<tr>
<td>Fully online learning</td>
<td>Teaching and learning is entirely technology enhanced; there is no face to face teaching (lectures)</td>
<td>• CBT/WBT-Computer/Web Based Training</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Videoconference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Course (programmes, workshops, tutorials) are presented through Internet (as Web portal or LMS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Videoconference</td>
</tr>
</tbody>
</table>
Findings:

Table 4
Summary of the implementation of e-learning in different learning environments

<table>
<thead>
<tr>
<th>Level/type of training</th>
<th>Alternative of e-learning applied</th>
<th>Evaluation from students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshop</td>
<td>ICT supported</td>
<td>Very positive</td>
</tr>
<tr>
<td>Postgraduate doctoral study</td>
<td>Blended</td>
<td>Very positive</td>
</tr>
<tr>
<td>Self training</td>
<td>Fully on-line</td>
<td>Positive</td>
</tr>
</tbody>
</table>

“We found out that students in both environments specially appreciate interactivity and hands on activities, even if their motivation for completing set tasks is quite different” (p. 256).

Key Quotes:

“Quality culture in the whole process of teaching and learning proclaims that the assessment must be proven to measure the set learning outcomes and we devoted considerable time and effort to prepare, discuss and evaluate that” (p. 253)

“Generally speaking, e-learning or computer enhanced learning can be defined as a learning process enhanced by ICT” (p. 254).

Citations (of this work): 28

References (to be considered further):


V. g) BARTEZZAGHI, E., BUGANZA, T., & KALCHSCHMIDT, M. Measuring the knowledge transfer for an educational program on Project Management.

VI. Reference:


DEFINITION: “The definition used in this paper for ‘wisdom’ is based on the application of knowledge and experience” (p.261)

Research Question(s):

This study “look[s] at the three traits that distinguish the best project managers from the rest”

And then identify the intuitive mind skills that are required to develop and master these traits. (p. 258)

Methods:

“In order to understand the working of the mind we can compare the brain to a computer”(p. 259)

1. The physical brain or “gray matter” which is analogous to the hardware.

2. Our DNA which leads to how the brain forms and which gives us particular interests and skills which is analogous to the operating system.

3. Our mind and how we think which is analogous to programs.

4. Information and knowledge which are analogous to data and processed data, respectively.

A prototype approach
The three levels of learning proposed are

_ A solid grounding in basic project management and relevant business, technical and social skills and knowledge.

_ Appropriate levels of governance, trust, communication and expectations management.

_ Maximize the wisdom that any person might be capable of developing.

**Findings:**

“The best project managers as determined by [two methods] A. being “regarded highly by peers” over a period of 15 years … “showed the following pattern or common set of attributes:”

1. All were able to identify problems and their impact either instantly, could predict issues and challenges, and be ready to deal with them effectively. Resulting decisions were generally considered sound.

2. All demonstrated exceptional skills in building and maintaining relationships. This was underpinned by good communication skills.

3. There was a high level of trust between the project manager and other stakeholders.
B. The second view of exceptional project managers was based on a study of ‘best’ project managers by Krahn [13].

<table>
<thead>
<tr>
<th>Krahn’s attributes of good project managers</th>
<th>Hartman’s observed traits of exceptional project managers</th>
</tr>
</thead>
<tbody>
<tr>
<td>People skills</td>
<td>Pattern recognition and decision-making</td>
</tr>
<tr>
<td>Leadership</td>
<td>Relationship building and communication</td>
</tr>
<tr>
<td>Listening</td>
<td>Integrity and trust</td>
</tr>
<tr>
<td>Strong at building teams</td>
<td></td>
</tr>
<tr>
<td>Verbal communication</td>
<td></td>
</tr>
</tbody>
</table>

While these relationships are unproven, consider your reaction to this table. You will either agree or disagree with its content. The basis of your agreement or otherwise is likely an intuitive response which, in turn, is based on your knowledge and experience.

**Key Quotes:**

“A growing number of organizations are trying to actively address the change in demographics and available experience as baby-boomers retire. This is perceived as a problem despite the fact that a recent review [29] of “lessons learned” over a 30 year period has identified 10 basic “lessons” that recur on a frequent basis in published or available documentation that records such lessons.

“… an exercise has been developed and tried on eleven separate occasions with over 1000 project management professionals. The exercise was conducted with eight groups in Canada, two in the United States and one in Europe – with startlingly similar results that were also independent of which industry participants worked in. In this exercise there are four distinct steps. These are illustrated in Fig. 1. below.” (p. 260)
"In this paper the hypothesis is that the missing ingredient is "Wisdom" or intuition" (p.261)

"In this paper the hypothesis is presented that these structural and rational components of the thinking process are simply not enough to achieve excellence in project management or leadership in corporate management and management of operations [4-6 and 9]"(p. 261).

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Thinking skills (adapted from Pink [19])</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element</td>
<td>Project management context</td>
</tr>
<tr>
<td>Design</td>
<td>Front and loading</td>
</tr>
<tr>
<td>Story</td>
<td>History, experience and context</td>
</tr>
<tr>
<td>Symphony</td>
<td>Integration, understanding and business case(&quot;Syneithis&quot; – a blend of synergy and synthesis)</td>
</tr>
<tr>
<td>Empathy</td>
<td>Working with people and high performance teams</td>
</tr>
<tr>
<td>Play</td>
<td>Fun in the workplace</td>
</tr>
<tr>
<td>Meaning</td>
<td>Sense-making and values</td>
</tr>
</tbody>
</table>

"Three tiers and their building blocks (p. 256)

Tier 1: a foundation in competence
Tier 2: a framework for Integrity
Tier 3: intuition

Citations (of this work): 30

References (to be considered further):


VI. c) HANIF, T., & HANIF, S. PEOPLE, POLITICS & PROJECT MANAGEMENT: STRIKING THE RIGHT BALANCE TO ENSURE EFFECTIVE DELIVERY. Abstract: Project Management is now a recognized profession, which is bound by a variety of different methods, tools and techniques. It has become the means by which organizations deliver a product or result, which just cannot be achieved by any other management.

VI. d) Narh, N. (2013). Competencies of An Effective Project Manager. Literature review revealed competencies of an effective project manager to include leadership competencies and technical competencies. There are five leadership styles (Muller & Turner, 2010) and fifteen dimensions of leadership (Muller & Turner, 2010). Leadership competency

VI. e) BARTEZZAGHI, E., BUGANZA, T., & KALCHSCHMIDT, M. Measuring the knowledge transfer for an educational program on Project Management. (See also Reference V.g, above.)
VII. Reference:


“In summary, our major arguments and assumptions in this paper are that

- PM and basic PM skills are important for emerging leaders;
- emerging leaders can and will best learn these skills by
  - being given a respective framework, by
  - having to apply this to a leadership project that they are interested in, by
  - writing a project plan and a project report within this framework; and
- PM related outcomes and a respective process of assessment
- need to be clearly defined” (p. 276)

**Research Question(s):**

What is the “effectiveness of the design and delivery of this course” (p. 280)?

**Methods:**

Comparison of three different sessions of the instruction were the basis of comparison and study, starting in the Fall 2005 with these objectives:
Winter 2006 –

“Based on the student feedback from the previous term, the number of abilities for the PM objectives has been reduced by 50%” (p. 278)

<table>
<thead>
<tr>
<th>PM abilities Fall 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abilities to initiate and plan a leadership project</strong></td>
</tr>
<tr>
<td>1. Identify and document various project ideas</td>
</tr>
<tr>
<td>2. Identify and document criteria for project selection</td>
</tr>
<tr>
<td>3. Negotiate project selection and initiation with stakeholders</td>
</tr>
<tr>
<td>4. Select and initiate reasonable project based on selection criteria</td>
</tr>
<tr>
<td>5. Create and document reasonable project scope</td>
</tr>
<tr>
<td>6. Create and document reasonable project outcomes</td>
</tr>
<tr>
<td>7. Create and document reasonable schedule</td>
</tr>
<tr>
<td>8. Summarize, evaluate and document project initiation and planning process</td>
</tr>
<tr>
<td><strong>Abilities to execute, control and close a leadership project</strong></td>
</tr>
<tr>
<td>1. Control project execution and document control</td>
</tr>
<tr>
<td>2. Manage changes to the project plan</td>
</tr>
<tr>
<td>3. Communicate with stakeholders</td>
</tr>
<tr>
<td>4. Deliver project outcomes</td>
</tr>
<tr>
<td>5. Analyze project outcomes</td>
</tr>
<tr>
<td>6. Identify areas of growth and improvement</td>
</tr>
</tbody>
</table>

Fall term 2006 –

“Based on the feedback and respective discussion in the previous term, in this run the various course outcomes have been clearly associated with program outcomes”(p. 279)
Findings:

From Fall 2005, lessons learned as expressed by the students included these three:

1. “The importance of early and detailed planning including clear goals and a detailed schedule.
2. The significance of executing according to plan and consciously managing change.
3. The need to accommodate for the complexities within the project environment” (p. 278)

From Winter 2006 –

“...students found worth mentioning about their lessons learned were

1. the significance of being able to contribute to some meaningful project results;

2. the importance of teamwork and team development; and
3. the complexity that comes with larger projects and that creates the need to orchestrate the timely contributions of others” (p. 279)

Conclusions/Recommendations:

“1. Increase the amount of class time used to teach project management modules along the phased approach; particularly
provide more learning opportunities regarding scheduling, execution, control, and closures (see attachment 4).

2. Increase the role of project check-ins for case-in-point teaching and possibly make project presentations during project execution an additional assignment and course requirement.

3. Continue to engage in the scholarship of teaching and learning focusing on research of the impact of early project management learning and teaching for emerging leaders on their performance in projects or project environments after graduation” (p. 281)

Key Quotes:

“PM education programs need to be designed and delivered clearly stating the intended outcomes and the assessment of the respective abilities. The same obviously holds true for leadership education programs that do include PM modules or outcomes” (p. 277)

“…leaders and master project managers alike must be prepared to:

- Reflect and think creatively (non-linear).
- Feel comfortable in uncertain environments while being able to make decisions based on vague knowledge in these environments.
- Engage in and facilitate double-loop learning.
- Move from know-how to know-why.
‘Meeting these objectives will require mastery of new material in new ways’ [36, p. 4] which can only be achieved in real-life and project environments. At least since the Greek philosopher Sophocles (Trachiniae, written in 430 BCE) we know that we truly learn only by doing. Hence, when teaching PM skills we need to expose the learner to actually working on projects [4] and clearly frame both the intended outcomes and the respective ways of assessment” (p. 277)

Citations (of this work): 44

References (to be considered further):


VII. g) Narh, N. (2013). Competencies of An Effective Project Manager.

VII. i) BARTEZZAGHI, E., BUGANZA, T., & KALCHSCHMIDT, M. Measuring the knowledge transfer for an educational program on Project Management. (See other references for this same article.)

VII. j) Williams, C. L., & Loucks, J. S. USING SIMULATED PROJECTS TO TEACH PROJECT MANAGEMENT SKILLS.

VII. k) Nijhuis, S. [S Nijhuis - onderzoek.hu.nl] Higher education for several professions, such as Information and Communication Technology (ICT), Engineering, and Construction teach their students PM for various reasons (Car, Pripuzic and Belani, 2010; Divjak and Kukec, 2008; Fernández, Cabal,

Besides the specific needs identified above, the first step of the project was to perform a thorough needs analysis beyond the obvious needs of OIT. This survey included other departments that have project management courses (e.g., IP&T, Department of Continuing Education, and Information Technology Department). The list below shows the project management courses identified that are currently available at BYU.

More than 10 courses are currently available to students on campus that specifically include project management topics. (See the list below.) Besides credit courses, there are seminars and workshops offered through the Division of Continuing Education as Human Resource Development for professional development and preparation for formal certifications. The course descriptions vary, as might be expected; nevertheless, there are numerous overlaps in the content. Most involve the three major aspects of a project: scope, schedule, and resources.

While all modules of the designed course may not apply to all the courses currently offered, several of the content modules could definitely be useful to students and instructors of other related courses. Content areas that are most widely taught and which are included in the OIT curriculum were given priority attention during this design project; namely, project planning, work breakdown structure development, risk analysis, execution, and progress tracking.
Courses Related to Project Management at BYU

Division of Continuing Education (DCE)

**Project Management Professional (PMP)**

The PMP is the gold standard of project management certification. Recognized and demanded by organizations worldwide, the PMP validates your competence to perform in the role of a project manager, leading and directing projects and teams.

**Certified Associate in Project Management (CAPM)**

The CAPM demonstrates your understanding of the fundamental knowledge, terminology and processes of effective project management.

**Agile Certified Practitioner (ACP-PMI)**

The ACP-PMI was created for those who believe in and apply agile principles and practices on projects, covering agile approaches such as SCRUM, SP, LEAN, and Kanban.

**Professional in Business Analysis (PBA-PMI)**

The PBA-PMI highlights your expertise in business analysis. It spotlights your ability to work effectively with stakeholders to define their business requirements, shape the output of projects and drive successful business outcomes.

**Scheduling Professional (SP-PMI)**

The SP-PMI will increase your ability and skill to management project schedules; better managing activities, resources, timeframes, and project outcomes.

**Risk Management Professional (RMP-PMI)**

The PMI-RMP will expand and improve upon your ability to identify and assess project risks, mitigate threats and capitalize on opportunities.

College of Education

**IP&T 682, Project & Instructional Resource Management - 3 Credits**

Managing research, development, and evaluation projects in public schools, corporate, and higher education settings: planning, budgeting, supervising, managing personnel, and scheduling.
Marriott School of Management – Information Systems

IS 405 - Information Systems Project Management – 3 Credits

Principles and skills of project management in an information systems context, including management of risk, schedule, scope, cost, quality control, communications, human resources, and procurement.

Construction and Facilities Management (CFM)

CFM 412: Construction Scheduling and Cost Control – 3 Credits

Planning, scheduling, and monitoring construction projects, including development of critical path networks (CPM and PERT), Gantt bar charts, construction cost control, and reporting practices.

CFM 415: Construction Project Management and Control – 3 Credits

Managing and controlling construction projects. Planning, startup procedures, inspections, progress measurements, field reports, change order and submittal processing, equipment management, and project closeout.

Human Resources Development

Project Management Essentials: For the Unofficial Project Manager (Workshop)

FranklinCovey's Project Management Essentials: For the Unofficial Project Manager will help participants consistently complete projects successfully by teaching them to implement a disciplined process to execute projects and to master informal authority. (This workshop is recommended for any BYU employee who would like to have a better plan for managing the numerous projects on their plate. It is designed for people who have no formal project management experience, but can benefit those who may already be project managers.)

Other: "Business Career Essentials" Courses

Sample Course Link

- There are several "Business Career Essentials" courses at the 500 level for colleges. These courses are designed to help students apply their field to the business world. Ex: Science and math, Geology, Chemistry, etc.
- These courses offer a unit on project management within their field.
- There is not a syllabus posted for any of these classes. The link above will take you to the information available through BYU's course catalog.
These five first principles stated in their most concise form are as follows:

1. Learning is promoted when learners are engaged in solving real-world problems.

2. Learning is promoted when existing knowledge is activated as a foundation for new knowledge.

3. Learning is promoted when new knowledge is demonstrated to the learner.

4. Learning is promoted when new knowledge is applied by the learner.

5. Learning is promoted when new knowledge is integrated into the learner's world.
Artifact D. Gibbon’s Seven Instructional Design Layers (2012, p 315)  

Content layer
A design must specify the structures of the abstract subject-matter to be taught, must identify the units into which the subject-matter will be divided, and must describe how elements of subject-matter will be made available to instructional functions performed by other layers.

Strategy layer
A design must specify the physical organization of the learning space, social organizations of participants, their roles and responsibilities, instructional goals, allocation of goals to timed event structures, and strategic patterns of interaction between the learner and the instructional experience.

Message layer
A design must specify the tactical language of message structures through which the instructional experience can communicate content-derived information to the learner in conversational form.

Control layer
A design must specify the language of control structures through which the learner expresses messages and actions to the source of the learning experience.

Representation layer
A design must specify the representations that make message elements visible, bearable, and otherwise sense-able: the media representation channels to be used, the rule for assigning message elements to media channels, the form and composition of the representation, the synchronization of messages delivered through the multiple channels, and the representations of content.

Media-logic layer
A design must specify the mechanism by which representations are caused to occur in their designed or computed sequence.

Data management layer
A design must specify data to be captured, archived, analyzed, interpreted, and reported.
Artifact E. The Project Management Process Model
2.1.4 Create the Work Breakdown Structure
Work Breakdown Structure (WBS)

Mad Hand Gesture

- Raised Arm
- Fist
- Fist Shaking
- Fold Thumb
- Fold Middle Finger
- Fold Ring Finger
- Fold Index Finger
- Fold Pinky Finger
- Bend 1st Knuckle
- Fold 1st Knuckle
- Fold 2nd Knuckle
- Fold 3rd Knuckle

Every Task

- Code
- Own
- Complete
WBS Codes

Mad Hand Gesture

1.0 Raised Arm

2.0 Fist

3.0 Fist Shaking

2.1 Fold Thumb

2.2 Fold Middle Finger

2.3 Fold Ring Finger

2.4 Fold Index Finger

2.5 Fold Pinky Finger

2.4.1 Bend 1st Knuckle

2.4.2 Bend 2nd Knuckle

2.4.3 Bend 3rd Knuckle

Preliminary Schedule

PS = LR + TDE

- Preliminary Schedule
- Logical Relationships
- Task Duration Estimates
Logical Relationships  \( A \rightarrow B \)

<table>
<thead>
<tr>
<th>Predecessor</th>
<th>Successor</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>( A^s )</td>
<td>( B^s )</td>
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<tr>
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<td>( +3d )</td>
</tr>
</tbody>
</table>

The Quiz: A Perfect Dependency Diagram
A Perfected Dependency Diagram

Types of Estimates

- Effort
- Duration
- Calendar
What have you learned in Module 0.0, “Introduction & Foundations”?  

A Review

*Instructions*: choose the best answer to each question below. Each question is worth 2 points.

1. Which of the following is true about project management and product management?
   
   A. Projects typically have shorter lifecycles that do products.  
   B. Products can be enhanced through projects.  
   C. Projects are managed with specific processes and have a defined budget.  
   D. Products are often managed to maximize return on investment.  
   E. All of the above.

2. Which of the following is not a one of the main categories of processes found in most businesses (according to the Business Process Map/”6-box Model”)?
   
   A. Strategize  
   B. Implement  
   C. Operate  
   D. Invest  
   E. None of the above
3. The steps of the Project Management Process Model are best accomplished

A. in any order within each phase, as long as the three phases are completed in order.
B. without repeating any steps or changing what has been done (if done correctly and completely the first time). Otherwise, repeat as often as is necessary until each is accomplished correctly and completely.
C. in sequence; if change requires going back to a previous step, then each in between step should be revisited to determine impact of the change.
D. in sequence; if change requires going back to a previous step, then after repeating the step, resume at the point the change was recognized.
E. in sequence; without deviation or change. (That’s why it is a proven process model!)

4. Which of the following is not among the five characteristics of a project?

A. Unique Deliverables
B. Defined End
C. Completion Criteria
D. Defined Beginning
E. Specific Budget

5. The Project Management Process Model consists of which of the following major phases?

A. Plan the Project, Manage the Project, and Complete the Project
B. Validate the Project, Plan the Project, and Manage the Project
C. Establish the Project Context, Plan the Project, and Execute the Project
D. Confirm the Project Scope, Organize the Work, Close out the Project
E. Plan the Project, Execute the Project, and Document the Work of the Project
6. The three project constraints are:
   A. Scope, Schedule, and Resources
   B. Work, Time, and Money
   C. Skill, Scope, and Time
   D. Teamwork, Communication, and Resources
   E. Effort, Time, and Expertise

7. The Project Management Process Model
   A. was developed exclusively for IT projects done here at BYU; but now appears to work in for other projects, too.

   B. applies primarily to small complicated projects and large simple projects.

   C. was developed, in theory, by organizational behavior researchers here at BYU, and is now being tested for validity in business.

   D. has proven effective for numerous types of projects, both large and small.

   E. All of the above.

8. Which is not a typical challenge encountered by project managers?
   A. Unclear objectives
   B. Changing priorities
   C. Poor communication
   D. Unrealistic schedules
   E. Reliable estimates
9. The relationship of the three constraints of a project are best described as:

A. Connected in series; that is, one impacts the next, and that impacts the other (described as a “domino effect”)
B. Independent; that is, changes in one do not impact any of the others.
C. Connected in parallel; that is, all operate together from beginning to end (described as “alignment effect”)
D. Interdependent; that is, changes in one impact one or both of the others.
E. None of the above

10. A “Stargate” portion of the Project Management Process Model is defined as:

A. The milestone when the project sponsor indicates that the project should start.
B. The target milestone indicated by the project team when they expect the project to end.
C. The milestone at which the project is half way between the start date and completion date.
D. A point of validation when aspects of the project are validated by the project manager and the project sponsor.
E. The point(s) of time when the project team must decide whether the project will fail or succeed.
Answer Key:

1. Which of the following is true about project management and product management?

   A. Projects typically have shorter lifecycles than products.
   B. Products can be enhanced through projects.
   C. Projects are managed with specific processes and have a defined budget.
   D. Products are often managed to maximize return on investment.
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   B. Implement
   C. Operate
   D. Invest
   E. None of the above
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D. in sequence; if change requires going back to a previous step, then after repeating the step, resume at the point the change was recognized.

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A. Unique Deliverables
B. Defined End
C. Completion Criteria
D. Defined Beginning
E. Specific Budget

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B. Independent; that is, changes in one do not impact any of the others.

C. Connected in parallel; that is, all operate together from beginning to end (described as “alignment effect”)

D. Interdependent; that is, changes in one impact one or both of the others.

E. None of the above

10. A “Stargate” portion of the Project Management Process Model is defined as:

A. The milestone when the project sponsor indicates that the project should start.

B. The target milestone indicated by the project team when they expect the project to end.

C. The milestone at which the project is half way between the start date and completion date.

D. A point of validation when aspects of the project are validated by the project manager and the project sponsor.

E. The point(s) of time when the project team must decide whether the project will fail or succeed.
Artifact H. (Initial) Task List for Instructional Modules – as of 20 July 2017

<table>
<thead>
<tr>
<th>Task</th>
<th>Assigned To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Update PDD</td>
<td>Mat</td>
</tr>
<tr>
<td>Create Logo</td>
<td>Kate</td>
</tr>
<tr>
<td>Brainstorm Samples</td>
<td>Kate</td>
</tr>
<tr>
<td>Find/ Create Sample Docs</td>
<td>Fred</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intro</th>
<th>1.0</th>
<th>1.1</th>
<th>1.1.1</th>
<th>1.1.2</th>
<th>1.2</th>
<th>1.2.1</th>
<th>1.2.2</th>
<th>2.0</th>
<th>2.1</th>
<th>2.1.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Outline content for this portion</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Emily</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
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</tr>
<tr>
<td>b. Determine what material should be presented in video, quiz, activity, etc format. (5 Layers Model)</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Emily</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
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<tr>
<td>c. Present draft to project team for edits/ feedback</td>
<td>Emily</td>
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<td>d. Create/ Schedule Videos</td>
<td>(Communication): Brenna</td>
<td>(Triangle): Mat</td>
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<td>e. Create Vocabulary Quizzes</td>
<td>Brenna</td>
<td>Brenna</td>
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<td>f. Create Other Quizzes</td>
<td>Brenna</td>
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<td>g. Present Module for feedback (Record feedback)</td>
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<td>f. Improve / enhance (according to test feedback) module</td>
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<td>g. Build and polish.</td>
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<td>h. Formatively evaluate (this design &amp; portion)</td>
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# Overall Course Objective: Project Management Online Course (PMOC)

Students will understand the Project Management Process Model (PMPM) enough to establish a project's context, plan the project, and execute the project within the agreed to scope, schedule and resources.

<table>
<thead>
<tr>
<th>Date</th>
<th>Outcome/Purpose</th>
<th>Assessments</th>
<th>Learning Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Module 0.0 Introduction &amp; Foundations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>0.0 Objective:</strong> Understand the structure and goal of this course. Understand that the definitions of a project and the role of a project manager are foundational to the Project Management Process Model. Distinguish between the model’s three main parts, Establish the Project Context, Planning the Project, and Executing the Project along with their constituent elements including the &quot;Stargate&quot; validation points.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td><strong>1st Session</strong></td>
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</tr>
<tr>
<td></td>
<td>0.1 Introduction to the course: Understand the goal of this course, be introduced to the outline and structure of the course, and become familiar with the reference text, “Project Management Process Guide (PMPG).&quot;</td>
<td>Review the organization of the &quot;Project Management Process Guide (PMPG)&quot; text/reference and course syllabus.</td>
<td>Ask if there are any questions; provide clarifications. Ask each student to describe their desired take-aways from this course, why are they taking it? Review the course goals, outline, syllabus and reference guide.</td>
</tr>
<tr>
<td></td>
<td>Encourage class members to ask questions via the course blog or discussion board. Each class period or online session begin by asking what questions they may have about their reading, material covered in earlier sessions, and in their (real-world) application of principles taught. Respond w/in 24 hours on the course blog or discussion board.</td>
<td></td>
<td>Prepare for next class session; review the online modules 0.1 and 0.2 found at the Project Management Training link on the pm.byu.edu site.</td>
</tr>
<tr>
<td></td>
<td><strong>2nd Session</strong></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>0.2 Foundations of Project Management: Understand the definition of project management, a project (and its three interdependent constraints), as well as some of the common challenges that project managers face.</td>
<td>Read two articles, &quot;7 Deadly Sins&quot; and &quot;Silence Falls&quot;</td>
<td>1. Show class members the vocabulary &quot;hover&quot; feature in the online course materials. Point out that these terms will be included on the multiple choice portion of the mid-term exam. 2. <strong>Participate vicariously in the ABC (Project Simulation) Exercise;</strong> view 4 videos and respond to questions after each one.</td>
</tr>
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<td></td>
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<td>Respond to &quot;Debrief&quot; questions prior to watching the 5th video segment; submit them to the class discussion board. After watching the debrief video, add to your earlier comments and respond to at least two other class members’ contributions to the discussion.</td>
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Artifact I. Lesson Objectives [Page 2 of 8]

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<th>Date</th>
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<tr>
<td>3rd</td>
<td>Review responses to the debrief questions on the discussion board. Provide credit for this learning activity as long as contributions are thoughtful and credible.</td>
<td>Review section 0.2.2.1 of the online course; prepare to discuss the typical challenges that project managers face.</td>
<td>List on the whiteboard the challenges identified by the class members. (Add tick marks to those mentioned more than once.) Ask for examples of each of the top 5-6 challenges; provide illustrative examples if the class members do not have their own. Contribute to the class discussion board responding to the questions: What are the project manager's most important responsibilities? And, why? What qualities should a project manager exemplify? And, why?</td>
</tr>
<tr>
<td>4th</td>
<td>Review responses to the questions on the class discussion board. Give credit for those that provided contributions that reflect understanding.</td>
<td>Read and study pgs. 1-10 through 1-19 in the text. Form into teams of 4-5 members each.</td>
<td>Step through the presentation “Managing Projects in a Fast-Paced Often-Changing Environment Winter 2017.pptx” focusing on the business process map. Inform the class that they will be given a blank form and asked to reconstruct the business process map (i.e., fill in the blanks and add arrows) as part of the mid-term exam.</td>
</tr>
<tr>
<td>5th</td>
<td>Present a &quot;practice&quot; quiz (for extra credit), giving the participants a blank form and ask them to reconstruct the business process map.</td>
<td>Review section 0.2.3, &quot;Understanding a Project's Characteristics and Constraints.&quot; Submit your tea</td>
<td>Describe the five distinct characteristics of a project: 1. Defined deliverables 2. Unique output 3. Defined beginning 4. Defined end 5. Specified budget And, the three constraints (triangle). Study section 0.2.3.3 in the online course, &quot;Interrelationship of the three constraints&quot;</td>
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Artifact I. Lesson Objectives [Page 3 of 8]

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<tbody>
<tr>
<td>6th Session</td>
<td>Present a 10 point quiz on a project's characteristics and constraints at the beginning of class.</td>
<td>Learn vocabulary highlighted in the 0.0 section of the online course.</td>
<td>1. Vocab quiz; exchange papers and grade in class.</td>
</tr>
<tr>
<td>7th Session</td>
<td>0.3 The Project Management Process Model: Understand the structure and purpose of the “Project Management Process Model” along with its three phases, and three levels. In addition, recognize how this model relates to the outline of the “Project Management Process Guide” (PMPG).</td>
<td>Present a quiz, giving the class members a blank form and ask them to reconstruct the business process map.</td>
<td>2. Review the interrelationship of the three constraints.</td>
</tr>
<tr>
<td>8th Session</td>
<td>Provide participants with a blank PMPModel diagram (on the screen). Have them fill in the top 10 &quot;blocks&quot; and give them one point for each correctly identified step in the model. And for each correctly identified lowest level step, give them one point of extra credit. Total possible (including 38 of 10 possible).</td>
<td>Review the format and organization of the text/reference guide, &quot;Project Management Process Guide.&quot; Especially note pages P-1 through P-8, the Table of Contents (outline of the text and course) as well as the structure and headings of each section (e.g., pp. 1-10 through 1-20).</td>
<td>Illustrate how the organization of the text/reference follows the same numbering system as the PMPModel.</td>
</tr>
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</table>
## Module 1.0 Establish the Project Context

### 1.0 Objective: Understand how the context of a project is foundational (and a precursor) to the subsequent step to Planning the Project. Appreciate the value and steps of Reviewing the Project Documentation, Confirming the Project Context with the Sponsor and involving the sponsor in Establishing the Project Planning Structure. Be able to apply this understanding to the student’s projects (hypothetical and real).

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<tr>
<td>9th Session</td>
<td>Present the culminating assessment for Module 1.0,</td>
<td>Participants should compare their responses with the answer key (posted after the due date/time) and respond with any questions on the class blog or discussion board.</td>
<td></td>
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<tr>
<td></td>
<td><strong>What have you learned in Module 0.0, “Introduction &amp; Foundations”?</strong></td>
<td>A Review/Quiz (See Appendix A)</td>
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### 1.1 Review Project Information

<table>
<thead>
<tr>
<th>1.1.1 Review the Project Documentation</th>
<th>PMPG pgs. 1-10 thru 1-19</th>
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<tbody>
<tr>
<td>1.1.2 Confirm Project Context</td>
<td>PMPG pgs. 1-24 thru 1-31</td>
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### 1.2 Establish the Planning Structure

<table>
<thead>
<tr>
<th>1.2.1 Create the Planning Team: Demonstrate how to formulate and organize project teams.</th>
<th><strong>Midterm Assessment:</strong> Multiple-choice test covering the concepts (Exam)</th>
<th>Form Teams of 3-4 class members; Describe formation of project teams: Brainstorm answers to 2 questions. Illustrate this process and provide examples.</th>
<th>Meet with your team members and go through the steps of developing a team roster for your (hypothetical) projects</th>
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<tr>
<td>Review each team's Roster Assignment for completeness</td>
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### Governance Framework
Module 2.0 Plan the Project

2.0 Objective: Understand how the proven steps of planning a project are essential (and a precursor) to the subsequent step of Executing the Project. Appreciate the value and steps of Defining the Project Scope, Creating the Preliminary Resourced Schedule; and, Completing the Plan. Be able to apply this understanding to the student’s projects (hypothetical and real).

### 2.1 Define the Project Scope

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<td></td>
<td>2.1.1 Write effective Project Definition Documents (PDD), including all five elements.</td>
<td>POS and Constraint Matrix for each team’s projects</td>
<td>Illustrate each of the five elements that constitute a PDD. Meet with your team members and go through the steps of creating a Project Definition Document for your project, including all five elements (POS, Constraint Matrix, Team Roster, Is/Is Not list of Major Deliverables, and Governance Framework.)</td>
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<tr>
<td></td>
<td>Other 3 elements of PDD for each team's projects</td>
<td>Is/Is Not and Brainstorming requirements exercises</td>
<td></td>
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2.1.2 Determine the Project Planning & Management Approach

2.1.3 Validate Scope & Approach

2.1.4 Develop the Work Breakdown Structure (WBS)

Breakdown the work (scope) of a project into recognizable portions within a structure of major deliverables.

Show example project and how it the work breaks down into tasks that can be estimated. (Performance)
## 2.2 Create the Preliminary Resourced Schedule

### 2.2.1 Create the Preliminary Schedule

- **Objective:** Create a Preliminary Schedule including potential responses to changes in Scope, Schedules and Resources.
- **Assessments:** Present to the class a project plan (developed in MS Project) that has been reconciled to meet project objectives (Performance).

### 2.2.2 Identify Associated Resources

### 2.2.3 Integrate the Schedules

## 2.3 Complete the Plan

### 2.3.1 Reconcile the Plan and Project Objectives

- **Objective:** Execute a project plan and describe ways the scope, schedule and resources might change during the course of the project.
- **Assessments:** Present to the class a project plan (developed in MS Project) that has been reconciled to meet project objectives (Performance).

### 2.3.2 Obtain Confirmation & Support of Proposed Changes

### 2.3.3 Create the Risk Management Plan

- **Objective:** Perform complete risk analyses for projects.
- **Assessments:** Turn in a written risk analysis with assessment matrix and contingency plans for at least 3 of the highest risks (Project/papers).
Module 3.0 Execute the Project

3.0 Objective: Understand how the proven steps of executing a project are essentially the natural extension of planning a project. Appreciate the value and steps of Managing the Project and Closing Out the Project. Be able to apply this understanding to the student’s projects (hypothetical and real).

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<td>Before Class / Items Due</td>
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<td></td>
<td></td>
<td></td>
<td>3.1 Manage the Project</td>
</tr>
<tr>
<td></td>
<td>3.1.1 Baseline the Project</td>
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<td></td>
<td>3.1.2 Monitor, Investigate, Tack action, &amp; Report (MITAR) on Project Performance</td>
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<td>3.1.3 Manage the Project Scope</td>
<td>Prepare a written proposal (to the Sponsor) with a recommendation of how to respond to either a 10% cost increase, budget cut, or other significant issue. (Project/papers)</td>
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<td>3.1.4 Manage the Project Team</td>
<td>Present a role-play with class members demonstrating the Conflict Resolution methods discussed in class (Performance)</td>
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<td>3.1.5 Manage the Resourced Schedule</td>
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<td>3.1.6 Manage the Communications</td>
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<td></td>
<td>3.1.7 Validate Deliverable Completion</td>
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3.0 Objective: Understand how the proven steps of executing a project are essentially the natural extension of planning a project. Appreciate the value and steps of Managing the Project and Closing Out the Project. Be able to apply this understanding to the student’s projects (hypothetical and real).
### Articfact I. Lesson Objectives [Page 8 of 8]

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<td>Before Class / Items Due</td>
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<tr>
<td></td>
<td>Describe the steps of transferring stewardship and closing out a project</td>
<td>Write up the steps necessary for transferring the stewardship and closing out the (hypothetical) project used throughout the course (Project/papers)</td>
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**Note:** If the Learning Activity (LA) involves the students' producing something; then, the Assessment is most likely an evaluation of the result (i.e., per rubric).

### Culminating Assessment

You will demonstrate that you have achieved the course purpose (with a hypothetical project) by showing how to:

- Establish the project context by reviewing the project documentation, confirming the project context (with the sponsor), create the planning team, and establishing the project governance framework.
- Defining the project scope, creating a preliminary resources schedule (using MS Project or similar tool), and completing
- Manage the project’s scope, project team, resourced schedule, communications; and, close out the project by transferring stewardship as well as document the project.
Introduction and Foundations of Project Management

(consists of 10 lessons – 10 to 15 minutes each)

Welcome to Project Management Online Course (PMOC)

0.1 Introduction

Objective: Understand the goal of this course, be introduced to the outline and structure of the course, and become familiar with the reference text, “Project Management Process Guide (PMPG).

This course was originally developed by Ernie Nielsen and his team in the Project Management Office (PMO) at Brigham Young University in the Office of Information Technology (OIT). in the Project Management Office (PMO) at Brigham Young University in the Office of Information Technology (OIT).

Information throughout this training is based on the textbook/reference "Project Management Process Guide" produced by Brigham Young University Enterprise Project Management (version 1 was completed in 2005).

Goal of this course: Help project management become organizational behavior

1. Project management affects everybody
   a. Project managers (obviously)
   b. But also non-project managers
      i. Project managers create cross-functional teams
      ii. "Therefore, Project Management can, and probably will, touch everyone at some time as a team member, as a customer or user of the output, as a Sponsor, as a Functional Manager of a team member, or as an administrative support person for the Project Team."
      iii. "Consequently, everyone should have an understanding of the basic skills of Project Management and their responsibilities on a project, based on their role in the organization and on the Project Team."

2. We don't want there to be just one person who's really good at project management. (Because what happens when he leaves?) We want everyone to be project-management minded.
Course Outline

This course was originally developed by experienced project managers and is designed to articulate proven processes for project management. These processes have been successfully implemented in both large and small organizations throughout the world in various industries. This model of project management provides step-by-step guidelines and is entirely scalable in its application, meaning that it can be applied to all projects, regardless of their size.

This course is divided into three major sections:

1.0 Establish the Project Context

2.0 Plan the Project

3.0 Execute the Project

And, it is intended that the instruction be concurrent with reading and referencing the “Project Management Process Guide.” This reference guide is published and copyrighted Brigham Young University. Its core principles and process model exemplify practices that have been proven to lead to more effective organizational and individual project management. (See Module 0.3 “The Project Management Process Model” for a more complete description of the process model around which this course is shaped.)

Reference Guide

As mentioned above, the Project Management reference guide is more than a text book. There are wide margins and “intentionally left blank” pages provided to enable notes throughout. In order to obtain the maximum benefit from this course, notations should be made so that in the future quick references to this guide will enable application of these proven principles on an “as needed” basis. Also, pay attention to the hints (identified by the “idea” icon: 🎉). Definitions of key terms are also noted in the left margins
to assist in understanding and recall. In addition, the "walking exclamation mark" icon provides additional clarification to concepts and applications of what is covered in adjacent text.

0.2 Foundations of Project Management

Objective: Understand the definition of project management, a project (and its three interdependent constraints), as well as some of the common challenges that project managers face.

0.2.1 Understanding the World of Project Management – the ABC Exercise

Project management is more than charts, task lists, and status reports. It is an entire system of implementation that converts the needs and strategies of an organization into tangible operating results. To understand the need for project management in every industry, begin by vicariously participating in a simulation called the “ABC Exercise”. Pay close attention to the instructions as Ernie explains how this is to be conducted.

A-B-C Project Management Exercise

This learning exercise consists of five parts, shown as five separate video clips. The first is an introduction and explanation of how it works. The second, third, and fourth clips represent three working periods of time for the teams to work on their assigned projects. The fifth, and last, clip is a debrief and discussion by the participants as to what they experienced.
Part 1: Explanation

< insert video clip Intro to Project Management A-B-C Learning Exercise.mp4 >

Part 2: Focus on Team Member A

Initially, consider yourself as Project Team member “A” and notice that the video will concentrate on the workings of the team in the middle of the room, designated at Team 4. The instruction sheet given to team member A of Team 4 is as follows:
In this project, you are A. The project reporting structure is as follows: B reports to you; C, D, and E report to B.

Each of you has been given five symbols, each of which is one of six familiar symbols. Your job is to find out which one of the six symbols is held in common. You must finish this job in 15 minutes. You may communicate with B only through the exchange of written notes. B may exchange notes with you and C, D, and E. C, D, and E may exchange notes with B only. No other communication is permitted.

To elaborate:

There are six unique symbols.
Each person has five of these six possible symbols.
There are four copies of five of the symbols.
There are five copies of one of the symbols.
You are to determine which one symbol is held by all five persons.
Your symbols are as follows:
When you finish watching the video clip, “First Working Period” you will be invited to answer these questions:

1. What did you observe about the interactions of team member A and the other team members? Was it more or less than the others? How was it different?

2. What would you do if you were acting in the role of team member A?

While watching the video, consider how you will answer these questions.

< insert video clip Project Management A-B-C Learning Exercise - First Working Period.mp4 >

Now, respond to the following questions (5 – 7 minutes): *(in a blog format – for future discussion and comment with other class members)*

1. What did you observe about the interactions of team member A and the other team members? Was it more or less than the others? How was it different?

2. What would you do if you were acting in the role of team member A?

**Part 3: Focus on Team Member B**

Next, consider yourself as Project Team member “B” and, again, remember that the video will concentrate on the workings of the team in the middle of the room, designated at Team 4. The instruction sheet given to team member B of Team 4, is as follows:
PERSON B

In this project, you are B.
A and B may exchange notes.
C, D, and E may exchange notes with B only.
No other communication is permitted.
You will find five symbols below. You may not show them to any other person.
When you finish watching the video clip, “Project Management A-B-C Learning Exercise — Second Working Period” you will be invited to answer these questions:

1. What did you observe about the interactions of team member B and the other team members? Was it more or less than the others? How was it different from team member A?

2. What would you do if you were acting in the role of team member B?

< insert video clip Project Management A-B-C Learning Exercise - Second Working Period.mp4 >

Now, respond to the following questions (5 – 7 minutes): (in a blog format – for future discussion and comment with other class members)

1. What did you observe about the interactions of team member B and the other team members? Was it more or less than the others? How was it different from team member A?

2. What would you do if you were acting in the role of team member B?

**Part 4: Focus on Team Members C & D**

Next, consider yourself as Project Team member “C” or “D”; and, remember that the video will focus only on the workings of the team in the middle of the room, designated at Team 4. The instruction sheet given to team member C and D of Team 4, is as follows:
PERSON C

In this project, you are C.

C, D, and E may exchange notes with B only.

A and B may exchange notes.

No other communication is permitted.

You will find five symbols below. You may not show them to any other person.

\[ \Omega \div = \]

♀ ♂
PERSON D

In this project, you are D.

C, D, and E may exchange notes with B only.

A and B may exchange notes.

No other communication is permitted.

You will find five symbols below. You may not show them to any other person.

Ω  ?  ÷

♀  ♂
When you finish watching the video clip, “Project Management A-B-C Learning Exercise – Third Working Period” you will be invited to answer these questions:

1. What did you observe about the interactions of team member C & D and the other team members? Was it more or less than the others? How was it different from team members A & B?

2. What would you do if you were acting in the role of team members C or D?

< insert video clip Project Management A-B-C Learning Exercise - Third Working Period.mp4 >

Now, respond to the following questions (5 – 7 minutes): (in a blog format – for future discussion and comment with other class members)

1. What did you observe about the interactions of team members C & D and the other team members? Was it more or less than the others? How was it different from team members A & B?

2. What would you do if you were acting in the role of team member C or D?

Part 5: Debrief and Discussion

Finally, prior to watching the last video clip respond to the following questions (5-7 minutes): (in a blog format – for future discussion and comment with other class members)

1. What role in project did team member A represent? Why do you think so?

2. What role in project did team member B represent? Why do you think so?

2. What role in project did team member C & D represent? Why do you think so?

Then, and as you watch the clip, compare your answers to the questions with the points made by the participants in the video during the discussion.
<insert video clip Project Management A-B-C Learning Exercise - Debrief.mp4>

Reference will be made to this learning exercise throughout the course. Reflect on and remember what you saw and learned!

0.2.2 Understanding the Role of a Project Manager

As you saw in the A-B-C Exercise (0.2.1, above), an effective project manager is essential in the success of a project. By the end of this module, you should understand the following:
1. Some of the top challenges that Project Managers face.
2. The responsibilities and qualities of an effective project manager
3. The difference between project management and product management
4. The role of project management in the bigger picture of an entire organization

0.2.2.1 Challenges Faced by Project Managers

Reflect on your experience working in project teams. What are some of the typical challenges that project managers face? List 3-5 challenges that you have observed. (If you have not had this type of experience, or want to broaden your perspective, search the Internet for "top challenges facing project managers". You may also review the Appendix, “Top PM Challenges – 171009.xlsx”.

Write your list of Top Challenges in a blog format – for future discussion and comment with other class members.

- Unclear Objectives
- Unrealistic Schedules
- Over-committed resources
- Unclear or changing priorities
- Poor communication
- Unclear Organizational relationships
0.2.2.2 Responsibilities and Qualities of an Effective Project Manager

What are the project manager’s responsibilities?

During the A-B-C Exercise, you watched a series of videos showing the chaos that occurs without an effective project manager. In the activity, the project manager was given the objective of figuring out which symbol every member of his team had in common. He did not choose the objective, but he was responsible for getting it done. In the industry, just as in the video, a project manager is responsible for getting the job done. This means that they don’t necessarily need to like or agree with the project’s objectives, they just have to make it work!

That being said, there are plenty of challenges to "making it work" for any project manager. They often face unclear objectives, unrealistic schedules, over-committed resources, unclear and/or changing priorities, poor communication, and unclear organizational relationships. These challenges are the reason that every project manager should clearly understand both their responsibilities and necessary personal attributes.

The first responsibility of an effective project manager is to understand the requirements of the project. This includes understanding the needs of the customer, the strategic intent of their organization, and the purpose of the project.

Once the project manager understands the requirements of the project, they implement the solution by assembling a cross-functional team. This means that as the project continues, the project manager organizes tasks, manages resources (including people and money), balances constraints, and reports progress to the appropriate people.

What qualities should a project manager exemplify?

A project manager should be flexible. Almost all projects will change at least once, and many will change frequently. An effective project manager recognizes, adapts to, and embraces change.

A project manager should be organized. They are responsible for overseeing the processes, people, and tools that are used in the completion of a project. Thus, a successful project manager has the right people doing the right things at the right times.

A project manager should be logical. Project management can become emotional, but it is the project manager’s job to set aside emotion and make fact-based decisions. In order to do this, they must synthesize a lot of information and justify their decisions to everyone involved in the project. Good project managers also know that they can learn more from listening than from speaking.

0.2.2.3 Project Management vs. Product Management

One of the fundamentals of project management is understanding the difference between project management and product management. The figure below shows the relationship between projects and products.
Products are created, changed, and retired through projects. A product is first implemented with a project. Different features of the product are enhanced, revised, and modified through projects through the product’s lifetime. Then, when the product is no longer wanted, it is retired with a project.

A product typically has a much longer lifecycle than do projects, as a product’s lifecycle usually spans a few years and a project’s lifecycle is generally limited to a few months or a single year.

0.2.2.4 How does Project Management relate to other functions within an organization?

{See also Ernie’s PPT, “Managing Projects in a Fast-Paced Often-Changing Environment Winter 2017.pptx” found in the Miscellaneous section of the PMOC wiki, in the “Additional (Raw) Material” folder.}  

Suggestion: use slides # 4, 5, 8, 10, and 22 with animation shown. Some additional animation may be necessary to introduce arrow flows.  

Consider also adding audio and/or transcription from 12 Sept 2017 class, “Ernie – 170912 PM in an Organization.m4a”. It begins with, “…positioning PM in the organization...When I get called into a new company to help them with their PM....” (Also found in the miscellaneous section of the PMOC wiki, “Additional (Raw Material)” folder.)

Projects are integral to the work of many, if not most, business organizations. The following diagram show how project management fits into the three main categories of processes that go on while running a business; strategize, Implement, and operate. Project management an implementation process.
The business process map (shown above) shows the processes that exist in business. Every organization will utilize these processes, from the largest corporations to the smallest businesses. The processes are split into three categories: Strategize (Red), Implement (Blue), and Operate (Green). The dotted line labeled PMO (short for Project Management Office) are the processes, inputs, and outputs that we will focus on for this class.

The strategical processes determine how and when to implement business decisions. These processes define and maintain priorities and practices for and of the business. The implementation processes then change the products and services based on the strategical decisions. Finally, the operation processes deal with the day-to-day maintenance.

0.2.3 Understanding a Project’s Characteristics and Constraints

It is useful to understand how we define a project. First, we look at what constitutes a project; that is, what differentiates it from other types of work. Next, we look at the constraints within which projects operate.
0.2.3.1 *Project definition – five characteristics*

A project is different from individual work. Typically, it consists of five distinct characteristics:

1. Defined deliverables
2. Unique output
3. Defined beginning
4. Defined end
5. Specified budget

Hover over each of the above characteristics for a definition and example of each.

**Defined deliverables:** the itemized list of items provided to the sponsor at the end of a project.

*Example:* when the new version of software was released to the public, the customers were able to take advantage of the latest functionality and features provided in the new release.

**Unique Output:** the result of the project is the delivery of goods or services. It may be very similar to prior projects; but, each instance has some individual characteristic(s) that make it different that prior efforts. *Example:* A retailer began a project to open another store across town. (Even if the new store is identical to another one, its location is unique.)

**Defined beginning:** the start of the timeline (schedule) of a project, when the sponsor authorizes work to begin. *Example:* The first (kick-off) meeting of the project team signaled the start (beginning) of the planning for the construction project.

**Defined end:** when the sponsor accepts delivery of the finished product of the project. *Example:* The final meeting of the project team, when they formally closed the project, signaled the end of work on that project.

**Budget** = the total value of the resources (for labor and materials associated with the work of the project). *Example:* The sponsor authorizes the amount of $10,000 to fund a software development project; all costs of the effort are to be included in this amount.
0.2.3.2 *Project Constraints*

In addition to the five characteristics of a project, the three constraints of a project are:

1. Scope
2. Schedule
3. Resources

There is a finite limit to each of these three. Typically, the sponsor determines how much work will be done, when it is to be done, and the amount of resources to be consumed in order to accomplish the desired outcome.

0.2.3.3 *Interrelationship of the three constraints*

One important consideration is that these three constraints are interdependent; that is, one cannot be changed without impacting one or both of the others.

[Whiteboard animation of the geometry changes of the project constraint triangle]
0.3 The Project Management Process Model

Objective: Understand the structure and purpose of the “Project Management Process Model” along with its three phases, and three levels. In addition, recognize how this model relates to the outline of the “Project Management Process Guide” (PMPG).

The proven practice of project management described in this course is represented by a process model for effectively performing as a project manager and project team. Study the description below and then reconstruct the model by completing the learning exercise that follows.

0.3.1 Introduction to the Project Management Process Model (PMPM)

The following chart is known as the Project Management Process Model (referred hereafter as PMPM):
The PMPM is designed to be read from left to right, spelling out essential steps that should be followed sequentially for any project. Each step will be covered in this course. As you look over this chart, remember that it is okay to go back and repeat a step at any point in the project management process. However, if there is a need (usually due to changes in various aspects of the project) to go back and revisit earlier steps, each subsequent step should be revisited, if only briefly, to consider the impact of change on each succeeding step of the process.

It is also important to remember that each step should be completed for every project (regardless of size) in order to ensure success. However, to apply this process to a project of any size, the project team decides how much rigor should be appropriately applied to each step.

In addition to moving from left to right, the chart is also divided into three sections from top to bottom with differing levels of detail. The orange-colored top row (1.0) references the major sections of the project. The yellow-colored middle row (1.1 - 1.2) goes into more detail and references steps needed to be taken. The green-colored bottom row (1.1.1 - 1.2.2) references individual actions that need to be done.

The green and yellow stars, called "Stargates" in this course, indicate when a project manager needs to formally meet with someone outside of the core project team to validate the project direction. You will learn more about the stargates later in the course. (Also, note that the numbering of the elements of the process model correspond to the section numbering in the Project Management Process Guide.)

[Hover over each of the above characteristics for a definition and example of each.]

**Definition: Stargate (1.1.2)**

i. The diamonds on the Project Management Process Model represent stargate events.

ii. A Stargate is a point in time during the project planning and managing process set aside to review the organizational context and validity by (1) obtaining confirmation and support from the project sponsor, or (2) integrating the project into a program or other interdependent projects.

iii. The PM Process (reference) Guide states that a "stargate" is a metaphor. It represents a “mind-meld” between the project manager and sponsor which ensures that they are both aligned, in sync, and "on the same page" as far as the purposes, processes, plans, and progress of the project.

"This carefully selected imagery represents an explicit transition, however brief, from one sphere of influence to another. Typically, the Stargate experience in a project represents the transition of thought and attention of the project manager [with the sponsor, first; and, then with the] project team from the work of the project itself to the organizational influences on the project or the influences of the project on the organization."
0.3.2 PMPM Model – Learning Exercise

Begin with a “Tetris™- like” exercise assembling the model; (hint) there are three colors or layers and numerical order, from top to bottom and left to right.

0.5.1 Three levels (orange, yellow, and green)
0.5.2 Three phases (1.0, 2.0, and 3.0)
0.5.3 Stargates (diamonds)

QUIZ ???
**Artifact K. (Final) Task List for Instructional Modules [as of 31 October 2018]**

<table>
<thead>
<tr>
<th>Tasks \ Modules</th>
<th>0.0 Intro</th>
<th>Foundations</th>
<th>1.0</th>
<th>1.1</th>
<th>1.1.1</th>
<th>1.2</th>
<th>1.2.1</th>
<th>1.2.2</th>
<th>2.0</th>
<th>2.1</th>
<th>2.1.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>x.1 Outline content for this portion</td>
<td>Elizabeth</td>
<td>Emily</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
</tr>
<tr>
<td>x.2 Determine what material should be presented in video, quiz, activity, etc format. (5)</td>
<td>Elizabeth</td>
<td>Emily</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
<td>Elizabeth</td>
</tr>
<tr>
<td>x.3 Refine Content/Rough Out Lesson Plan (Low Fidelity)</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
</tr>
<tr>
<td>x.4 Provide feedback/edit lesson plans</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td>x.5 Write Content</td>
<td>Mat/Brenna</td>
<td>Mat/Brenna</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
</tr>
<tr>
<td>x.6 Edit Content</td>
<td>Megan</td>
<td>Megan</td>
<td>Megan</td>
<td>Megan</td>
<td>Megan</td>
<td>Megan</td>
<td>Megan</td>
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<td>Megan</td>
<td>Megan</td>
<td>Megan</td>
</tr>
<tr>
<td>x.7 Present content to project team for edits/feedback</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td>x.8 Schedule Filming of Videos</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
</tr>
<tr>
<td>x.9 Edit and Create Videos</td>
<td>Samantha</td>
<td>Samantha</td>
<td>Samantha</td>
<td>Samantha</td>
<td>Samantha</td>
<td>Samantha</td>
<td>Samantha</td>
<td>Samantha</td>
<td>Samantha</td>
<td>Samantha</td>
<td>Samantha</td>
</tr>
<tr>
<td>x.10 Design/Build &quot;other&quot; Learning Activities</td>
<td>Andre</td>
<td>Andre</td>
<td>Andre</td>
<td>Andre</td>
<td>Andre</td>
<td>Andre</td>
<td>Andre</td>
<td>Andre</td>
<td>Andre</td>
<td>Andre</td>
<td>Andre</td>
</tr>
<tr>
<td>x.11 Create Vocabulary Quizzes</td>
<td>Fred</td>
<td>Fred</td>
<td>Brenna</td>
<td>Brenna</td>
<td>Brenna</td>
<td>Brenna</td>
<td>Brenna</td>
<td>Brenna</td>
<td>Brenna</td>
<td>Brenna</td>
<td>Brenna</td>
</tr>
<tr>
<td>x.12 Create Other Quizzes</td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>x.13 Rough Move to Canvas &amp;/or Y-Train</td>
<td>Andre</td>
<td>Andre</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x.14 Feedback and Edits to Ernie</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>x.15 Make changes suggested by Ernie</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>x.16 Move to Canvas</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>x.17 User Testing</td>
<td>Sarah</td>
<td>Sarah</td>
<td>Sarah</td>
<td>Sarah</td>
<td>Sarah</td>
<td>Sarah</td>
<td>Sarah</td>
<td>Sarah</td>
<td>Sarah</td>
<td>Sarah</td>
<td>Sarah</td>
</tr>
<tr>
<td>x.18 Improve / enhance (according to test feedback)</td>
<td>Josh/Ryan</td>
<td>Josh/Ryan</td>
<td>Josh/Ryan</td>
<td>Josh/Ryan</td>
<td>Josh/Ryan</td>
<td>Josh/Ryan</td>
<td>Josh/Ryan</td>
<td>Josh/Ryan</td>
<td>Josh/Ryan</td>
<td>Josh/Ryan</td>
<td>Josh/Ryan</td>
</tr>
<tr>
<td>x.19 Formatively evaluate (this design &amp; portion)</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
<td>Fred</td>
</tr>
</tbody>
</table>

**Legend:**
- Complete
- Complete (since last report)
- WIP
- Assigned
Lesson 0.0 Feedback

Take lesson 0.0 and fill out this form with your impressions.

* Required

Email address *

Approximately how long did you spend on this learning/training module? *

( ) 30 minutes
( ) 45 minutes
( ) 60 minutes
( ) 90 minutes
( ) 2 hours or more

Evaluating the Learning Experience

1. Which portions did you enjoy most? Why? *

2. Which portions did you enjoy least? Why? *

3. Do you feel the way the content was presented matched your learning style? Why/why not? *

4. What type of media formats would you prefer to see MORE of? *

5. Were there any portions that you feel were redundant (information)? That is, did any portions seem over-explained? *
6. Did any portions feel tedious? *

7. If at all, when in the course did you feel confused or lost? *

8. Do you have any remaining questions that were unanswered or under-explained in this module? *

9. What are the 3 things you feel you remember most from the content taught to you in this lesson? *

10. Did you feel the evaluation methods (activities, written portions, etc.) were an effective way to measure your learning? Why or why not? *

11. If you answered 'Not effective' to the previous question, what suggestions do you have of better learning evaluation methods? *

12. What did you think about the flow of the course? Did the succession of topics make logical sense? What would you change? *

13. If you could change anything about the course, what would you change? *

14. What additional feedback to you have about the course experience? *
## Artifact M. Usability Test Results – Four Students (New to PMOC) – 4 pages

<table>
<thead>
<tr>
<th>Name</th>
<th>Student 1</th>
<th>Student 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Which portions did you enjoy most? Why?</strong></td>
<td>I enjoyed the ABC Exercise the most! It was interesting to see other people go through the exercise and how terrible/well they did.</td>
<td>I liked the reading, and I liked the debriefing of the learning exercise.</td>
</tr>
<tr>
<td><strong>2. Which portions did you enjoy least? Why?</strong></td>
<td>I thought the very beginning was really boring. It was just a lot of reading about the intro of the class. I would enjoy a small video maybe of diagraming what the course means or something.</td>
<td>I didn't like the video exercise as a whole. It felt long and was difficult to pay attention. I think that the same points can be carried across without being so long.</td>
</tr>
<tr>
<td><strong>3. Do you feel the way the content was presented matched your learning style? Why/why not?</strong></td>
<td>Yea, for the most part. I do wish that it had more videos explaining things instead of me needing to read most of it.</td>
<td>Not really. I like to learn through a lot of examples. I thought the video example helped me to learn a lot more than the reading did.</td>
</tr>
<tr>
<td><strong>4. What type of media formats would you prefer to see MORE of?</strong></td>
<td>More video, but not of Ernie teaching, instead of someone explaining what the reading says.</td>
<td>more videos that have content. Even if they are just Ernie reading the text information out loud to the students, I think it would help me. In my Accounting course right now, we have the option to either read the text or watch the video of the professor talking about the text and I usually watch the videos.</td>
</tr>
<tr>
<td><strong>5. Were there any portions that you feel were redundant (information)? That is, did any portions seem over-explained?</strong></td>
<td>I don't remember honestly. I don't think so though, except for the ABC exercise felt like the beginning of each video was relatively the same.</td>
<td>I didn't think any portions were overexplained.</td>
</tr>
<tr>
<td><strong>6. Did any portions feel tedious?</strong></td>
<td>Not really. It felt more or less like every other class.</td>
<td>Video exercise</td>
</tr>
<tr>
<td><strong>7. If at all, when in the course did you feel confused or lost?</strong></td>
<td>I can't list them here, but I specifically said them in the recording.</td>
<td>the learning exercise towards the end of the course with the puzzle piece</td>
</tr>
<tr>
<td><strong>8. Do you have any remaining questions that were unanswered or under-explained in this module?</strong></td>
<td>Nope, not that I can think of.</td>
<td>none</td>
</tr>
<tr>
<td>Name</td>
<td>Student 1</td>
<td>Student 2</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
</tbody>
</table>
| 9. What are the 3 things you feel you remember most from the content taught to you in this lesson? | I remember the triangle. I remember the ABCs exercise. I remember that there are projects that change to products and back to projects and so on. That chart that the presentation showed. | 1) the role of a product manager (video exercise)  
2) interrelationship of the 3 constraints  
3) PMPM |
<p>| 10. Did you feel the evaluation methods (activities, written portions, etc.) were an effective way to measure your learning? Why or why not? | I don't know, not-effective. It felt like it was just asking nit-picky questions. I wish they were more broad, or written answers that someone would grade. | I felt that the evaluations after the videos and reading were great. I thought that the questions after the entire module was relatively easy. The answer was sometimes really obvious. |
| 11. If you answered 'Not effective' to the previous question, what suggestions do you have of better learning evaluation methods? | Make it written answers that someone would grade, or make the questions a little less nit-picky. | none |
| 12. What did you think about the flow of the course? Did the succession of topics make logical sense? What would you change? | I thought it just jumped into the teaching from the about section and I didn't expect it. | I didn't have any problems with the flow of the course. I didn't think it connected together but it didn't really not make sense either. |
| 13. If you could change anything about the course, what would you change? | I would change the about the course section. I would make it a video explaining what the course with diagrams and pictures or something. | If I had to change something about the course, I would make the videos shorter in the exercise. |
| 14. What additional feedback to you have about the course experience? | Overall I thought it was good actually, and I would be happy to take a class like that. I think there were somethings I would change, and whine about if I was taking the course, as mentioned in the video, but nothing terribly bad. | I thought that it was very good. I enjoyed it overall. I think some more examples about the things that are being taught would be nice. |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Student 3</th>
<th>Student 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Which portions did you enjoy least? Why?</td>
<td>The charts</td>
<td>puzzle. Confusing and didn't know if helped.</td>
</tr>
<tr>
<td>3. Do you feel the way the content was presented matched your learning style? Why/why not?</td>
<td>Yes, my learning style is very visual and detailed.</td>
<td>Not really. Although it was somewhat interactive, I thought MCQ was not a very good way to test knowledge.</td>
</tr>
<tr>
<td>5. Were there any portions that you feel were redundant (information)? That is, did any portions seem over-explained?</td>
<td>No, all portions have its important part.</td>
<td>Not really.</td>
</tr>
<tr>
<td>6. Did any portions feel tedious?</td>
<td>No, but the reference guide did not help much.</td>
<td>Yes.</td>
</tr>
<tr>
<td>7. If at all, when in the course did you feel confused or lost?</td>
<td>Just before the videos, I didn’t know what was about to come.</td>
<td>Video was somewhat confusing but I understood towards the end.</td>
</tr>
<tr>
<td>8. Do you have any remaining questions that were unanswered or under-explained in this module?</td>
<td>No.</td>
<td>NA</td>
</tr>
<tr>
<td>Name</td>
<td>Student 3</td>
<td>Student 4</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td>9. What are the 3 things you feel you remember most from the content taught to you in this lesson?</td>
<td>The foundations of Project Management, how it is applied to a business, and the process model.</td>
<td>ABC example, difference between product management and project management, and the common problems project managers face.</td>
</tr>
<tr>
<td>10. Did you feel the evaluation methods (activities, written portions, etc.) were an effective way to measure your learning? Why or why not?</td>
<td>Yes, because it measured how much I retained from the training.</td>
<td>No. MCQ is not a good measure of learning.</td>
</tr>
<tr>
<td>11. If you answered 'Not effective' to the previous question, what suggestions do you have of better learning evaluation methods?</td>
<td>Tagging answer from column one to column two.</td>
<td>Maybe less MCQ and more matching?</td>
</tr>
<tr>
<td>12. What did you think about the flow of the course? Did the succession of topics make logical sense? What would you change?</td>
<td>It did.</td>
<td>Had good flow.</td>
</tr>
<tr>
<td>13. If you could change anything about the course, what would you change?</td>
<td>Make it more interactive in the middle of the training. Or applying the activity done in the video with the assistants.</td>
<td>More videos</td>
</tr>
<tr>
<td>14. What additional feedback to you have about the course experience?</td>
<td>Great training, great done and simple to understand and to learn the basics.</td>
<td>NA</td>
</tr>
<tr>
<td>Name</td>
<td>PMOC Student 1</td>
<td>PMOC Student 2</td>
</tr>
<tr>
<td>------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>1. Which portions did you enjoy most? Why?</td>
<td>I enjoyed the way that the ABC videos were presented. It felt much more interactive and allowed me to make sense of the material.</td>
<td>Interactive portions–this appeals to me and my style of learning</td>
</tr>
<tr>
<td>2. Which portions did you enjoy least? Why?</td>
<td>Slides 36 and 37 were confusing. They presented a lot of information, but I didn’t understand what it had to do with project management or what I was supposed to take away from the slides.</td>
<td>Portions with a lot of reading made me want to skip ahead. It’s one thing to do a lot of reading in a textbook, but in this format smaller amounts of text are better.</td>
</tr>
<tr>
<td>3. Do you feel the way the content was presented matched your learning style? Why/why not?</td>
<td>For the most part, yes. The videos helped me a lot to understand the concepts in simple terms and not feel like I was reading everything just because it was an online course.</td>
<td>Yes and no. I enjoyed aspects of the course, but I think that the text was too long at times and it was easy to get lost reading. The most effective things for me are interactive activities, small amounts of text (preferably with graphics), and short videos (the ABC videos were good in a way but were too long and since we didn't know what people were writing didn't seem that effective to have the whole thing recorded).</td>
</tr>
<tr>
<td>4. What type of media formats would you prefer to see MORE of?</td>
<td>I thought there was a good balance of media formats.</td>
<td>Interactive activities and short videos.</td>
</tr>
<tr>
<td>5. Were there any portions that you feel were redundant (information)? That is, did any portions seem over-explained?</td>
<td>No – the repetition was helpful.</td>
<td>the pop-up explaining the project manager’s responsibilities seemed too long, the information was relevant, but i think it would be better not to have it all in one place</td>
</tr>
<tr>
<td>6. Did any portions feel tedious?</td>
<td>While I understand the purpose behind so much writing (short answer questions), it did feel tedious after a while.</td>
<td>Videos too long--couldn't tell what people were writing, too long to just sit and watch people pass paper, I don't know the best way to do this but sitting through all the videos didn't seem beneficial to me</td>
</tr>
<tr>
<td>7. If at all, when in the course did you feel confused or lost?</td>
<td>Slides 36 and 37 (as explained above).</td>
<td>You explain that there are multiple clips for the ABC project but most of them aren't until a few slides later which confused me because I was worried I had missed something.</td>
</tr>
<tr>
<td>Name</td>
<td>PMOC Student 1</td>
<td>PMOC Student 2</td>
</tr>
<tr>
<td>------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>8. Do you have any remaining questions that were unanswered or under-explained in this module?</td>
<td>Slides 36 and 37.</td>
<td>No.</td>
</tr>
<tr>
<td>9. What are the 3 things you feel you remember most from the content taught to you in this lesson?</td>
<td>Project Managers face several challenges, they must be effective communicators and be clear about the objectives they are working to achieve, and it is important to know the difference between project and product management.</td>
<td>The triangle with scope, resources and schedule. The ABC activity. The chart explaining the steps of project management (not all the details but the general format).</td>
</tr>
<tr>
<td>10. Did you feel the evaluation methods (activities, written portions, etc.) were an effective way to measure your learning? Why or why not?</td>
<td>The quiz at the end of the module helped me see how much I had really taken away. The activities were helpful because they were interactive. I did feel like there was a lot of writing, but I especially liked Slide 25. Writing down my thoughts before watching the video helped me to be more engaged in the debriefing and helped me to retain more information.</td>
<td>I couldn't write in the written portion, I don't know if that's an error. I thought the quiz was good, but I think it would be good to quickly review why a certain answer is correct so people can really learn it if they got it wrong initially. I think interactive activities are a great way to learn.</td>
</tr>
<tr>
<td>11. If you answered 'Not effective' to the previous question, what suggestions do you have of better learning evaluation methods?</td>
<td>N/A</td>
<td>I think it would be good to quickly review why a certain answer is correct in the quizzes so people can really learn it if they got it wrong initially.</td>
</tr>
<tr>
<td>12. What did you think about the flow of the course? Did the succession of topics make logical sense? What would you change?</td>
<td>There was some wording in the beginning of the module that was confusing. Some of the slides need grammar/wording edits.</td>
<td>I think that the flow of the course made sense</td>
</tr>
<tr>
<td>13. If you could change anything about the course, what would you change?</td>
<td>Have a tech writer look over the course to make needed grammar and wording changes.</td>
<td>There were a lot of links within the module that lead to in-depth explanations of concepts. I really liked this, but none of those links ever felt &quot;mandatory.&quot; Phrases like &quot;if you want to learn more click here&quot; felt prevalent, and if I hadn't been reviewing the module I might have skipped over important information because I didn't think that the links were necessary.</td>
</tr>
<tr>
<td>14. What additional feedback do you have about the course experience?</td>
<td>{none}</td>
<td>In the slide where it talks about working as team member A it says &quot;designated at&quot; instead of &quot;designated as&quot;</td>
</tr>
</tbody>
</table>
Write / Feedback / Edit Iterations

Write (rough draft) ➔ Gather Feedback ➔ Edit/Write (Final draft) ➔ Gather Feedback ➔ (Final) Approval ➔ Create PowerPoint (prototype) ➔ Usability Testing ➔ Final Edit
Instructional Model/Rubric: the following observations were noted on a form that is essentially the combination of two different learning theories. A brief summary of these two is presented below, followed by the key take-aways distilled from 40 pages of observations.

One BYU professor, Andrew Gibbons, popularized the following model of seven “Layers” approach to instructional design. They are summarized as follows:

1. **Content layer**
   A design must specify the structures of the abstract subject-matter to be taught, must identify the units into which the subject-matter will be divided, and must describe how elements of subject-matter will be made available to instructional functions performed by other layers.

2. **Strategy layer**
   A design must specify the physical organization of the learning space, social organizations of participants, their roles and responsibilities, instructional goals, allocation of goals to timed event structures, and strategic patterns of interaction between the learner and the instructional experience.

3. **Message layer**
   A design must specify the tactical language of message structures through which the instructional experience can communicate content-derived information to the learner in conversational form.

4. **Control layer**
   A design must specify the language of control structures through which the learner expresses messages and actions to the source of the learning experience.

5. **Representation layer**
   A design must specify the representations that make message elements visible, bearable, and otherwise sense-able: the media representation channels to be used, the rule for assigning message elements to media channels, the form and composition of the representation, the synchronization of messages delivered through the multiple channels, and the representations of content.

6. **Media-logic layer**
   A design must specify the mechanism by which representations are caused to occur in their designed or computed sequence.

7. **Data management layer**
   A design must specify data to be captured, archived, analyzed, interpreted, and reported
Another former BYU professor, M. David Merrill, developed and published what he called the First Principles of Instructional Design. They are summarized below:

These five first principles stated in their most concise form are as follows:

1. Learning is promoted when learners are engaged in solving **real-world problems**.  
   *Illustrate with actual examples as theory or concepts are introduced.*

2. Learning is promoted when **existing knowledge** is activated as a foundation for new knowledge.  
   *Relate to and request students to identify actual relationships to their own understanding and experience.*

3. Learning is promoted when new knowledge is **demonstrated** to the learner.  
   *Show the students what is expected of them as they “practice” the principles being taught.*

4. Learning is promoted when new knowledge is **applied** [practiced] by the learner.  
   *What practice exercises and activities can be provided to allow them to more readily practice the principles being taught?*

5. Learning is promoted when new knowledge is **integrated** into the learner's world.
Project Management Online Course Reference Model

The reference model for the online course (shown below) is a combination of the models proposed by both Dr.’s David Merrill and Andrew Gibbon.
<table>
<thead>
<tr>
<th>Date(s) and Syllabus Topic(s)</th>
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<tbody>
<tr>
<td><strong>12 Sept</strong></td>
<td>Start class with quiz from assigned reading. ID 2: take-away learnings from last class period.</td>
<td>Content: Activation and/or Strategy; reinforce learnings from recent period &amp; readings.</td>
</tr>
<tr>
<td><strong>14 Sept</strong></td>
<td>Corporate Culture discussion; Whiteboard diagram of four quadrants (x-y axes); see notes on following two pages</td>
<td>The most important aspect of this discussion was the examples used to illustrate the types of corporate culture: 1. Nordstrom’s 2. Walmart 3. Google/Tesla 4. John Deere</td>
</tr>
<tr>
<td><strong>19 Sept</strong> The Project Management Process Model</td>
<td>(I substitute taught this class period for Ernie Nielsen.) We experimented with a new approach to describing this model diagram. I prepared a “puzzle” dividing the model into its 38 component parts. After a brief review of the composite model, the class was divided into teams of 3 which worked together to assemble the entire model.</td>
<td>There were a couple of reactions from the class (the following period) when they reacted to the usefulness of the puzzle exercise. They thought that we should remove the numbering of the pieces (according to the three categories or phases of the model). It was probably too easy. Secondarily, they expressed the idea that it would have been better to have teams of two instead of three. (I suspect that as easy as it was, at least one of the team sat back and watched as the others did it.)</td>
</tr>
</tbody>
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This suggests that it might be a useful exercise as part of the online course. We ought to test it both ways, with and without numbering and determine which is most effective.
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<td><strong>19 Sept – (continued)</strong></td>
<td>This type of exercise helps the students apply the principles learned thus far and begin to put various concepts together. It may be useful to repeat the exercise a little later in the class and perhaps even at the end to determine intermediate and overall comprehension of the three phases of the model.</td>
<td></td>
</tr>
<tr>
<td><strong>21 Sept</strong></td>
<td>Whiteboard instruction of how to conduct music (Ictus = focus). Story of his participation with MTC on tour in U.S. and Europe</td>
<td>Portfolio Management directs the priority of projects.</td>
</tr>
<tr>
<td><strong>Initiating a Project</strong></td>
<td>Rule in Pjt Mgt and Portfolio Mgt: “you (as Pjt Mgr) may not like it; you just (must) make it successful.”</td>
<td>Relating to experiences of the class members or case studies helps students to apply principles in their work.</td>
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<tr>
<td></td>
<td>The piece “Noise” was very successful in Europe (although not well received in U.S.)</td>
<td></td>
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<td></td>
<td>Power Point Presentation (that covers the following):</td>
<td>The presentation ought to assist the students in integrating the new ideas into their accumulated prior learning and experience.</td>
</tr>
<tr>
<td></td>
<td>- Projects -</td>
<td></td>
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<td></td>
<td>- Programs – three or more related projects</td>
<td></td>
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<tr>
<td></td>
<td>- Porkfolio – a group of projects that can be prioritized amongst themselves using the same prioritization criteria. (each has Process People &amp; Tools) Levels of maturity are 0 – 5.</td>
<td></td>
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<tr>
<td>3 Oct</td>
<td>Challenge students to ask themselves throughout the discussion today, “What would my project be like if I did not follow the process we are learning about today?”</td>
<td>This will help the students apply the theory to their work. One often repeated statement by the instructor is, “You ought to leave class each day with additional insight and practical skills that can be applied immediately in your work (as a project manager).”</td>
</tr>
</tbody>
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**Agenda for Kick-Off (first team) meeting:**

**Project Definition Document (PDD)**

- a) POS = ccc (clear, concise, complete) Refer to Man on the Moon Project
- b) Constraint Matrix
- c) Governance Framework ("I am thinking of Two Cities")
  - Decide how decisions are to be made (the process) Consensus = concede to the process
  - How will you manage change?
  - How will you communicate? Email is not communication (it is a one-way sharing of data.) Knowledge is developed after conceptualizing data, practicing it and making it into knowledge.

This is readily “demonstrable” to students (even one-on-one in the online course). This will be essential for them to grasp this new material. And, as they practice it in their teams, it will be more easily integrated with prior learning. However, this is a real challenge for the independent learner in self-directed learning. With a cohort of online students it will be possible as a “virtual learning team” collaborative activity.

(See text for more types of GFwrk depending upon rigor.)
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| 5 October Project Definition Document (PDD) | Review key points from yesterday:  
Draw Sponsorship model  
1) Explain how the core team members are chosen  
2) Describe the project Kick-off meeting agenda -  
- POS  
- Constraint Matrix  
- Governance Framework  
Student Q: How do you motivate team members to do as they have committed?  
And/or: How do u establish consequences for not doing as they have committed? | Learning is promoted as students (apply or) practice what they have learned. [Principle 4]; and, the representation layer (which describes the interaction of concepts taught) is explained by the students. [To be explained later; this will be further practice and begin to facilitate the integration of this knowledge into the students' lives.] |
| | Teams present their POS and Constraint Matrices to another team (acting as “Sponsor”). | Practicing the concepts taught promotes learning. [Principle 4] Splitting the class/cohort into teams reveals the chosen strategy of the instruction. [May be difficult to do in a self-directed, independent online course.] |
| | Next agenda items:  
- List of Deliverables (i.e., a tangible outputs of the project – there should be as many as necessary) – example of project to have General Conference speakers talk in their native languages: there were 11 deliverables.  
- Brainstorm “Is/Is Not” T-charts using Post-it® Notes | - Demonstrated on whiteboard with Post-it® Notes |
<p>| | | |
| | | |</p>
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<td>10 Oct 2017 Work Breakdown Structure (WBS)</td>
<td>Review of the Kick-Off Meeting Agenda and past items: You are assigned as a Pjt Mgr; the first thing you should do is - Review Pjt Information DEF: Sponsor = different from customer; they validate the project and provide permission to proceed (at critical points during the project); they own the constraint matrix; Reference to the PMPModel – find Project Definition Document (PDD) = 2.1.1</td>
<td>Today’s discussion was mostly a review. There was some elaboration and were additional examples given which might be helpful to reinforce the learning. Repetition and review may be more difficult in an independent study course. However, a set of quizzes could be used.</td>
</tr>
<tr>
<td>17 October Estimating &amp; What the Pjt Mgr Manages</td>
<td>Review what was covered last session. 1. Identify major components 2. Brainstorm tasks (noun+verb); if it will “take time” put it on a (task) Post-it note. 3. “Code” each task; assign (only) one “owner” to each; and, enumerate completion criteria (best if written by the owner). PS = LR+TDE 3 Silver Bullets to more accurate estimates: 1) Estimate in context (of dependency diagram; not as part of the WBS). 2) Obtain the estimate from the individual who will do the work. 3) Break down until recognizable size of task is readily estimated.</td>
<td>Use a “quiz” to reinforce past learning; and prepare for next lesson. “These items will be on the mid-term; take note!”</td>
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<tr>
<td>17 October (continued)</td>
<td>Demo of project paths (including “critical path”)</td>
<td>Demo of 8 class members; one row of 6 one row of 2. Show this as video? Or, as some sort of animation.</td>
</tr>
<tr>
<td>19 October</td>
<td>MS Project (software) Demonstration and training.</td>
<td>Since this most likely is new material For the online course, this will be best transferred in segments to a video training course with a list of “guidelines” for using this tool in conjunction with the PMPModel. The instructor recommends strongly that only certain features of MS Project be used to ensure that the module principles are followed. These recommendations are described in detail in the training and summarized in the MS Project “Guidelines” document (to be written from the training videos for the online course).</td>
</tr>
<tr>
<td>Project Management Software</td>
<td></td>
<td></td>
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<tr>
<td>26 October</td>
<td>Review of homework assignments (project plans for 4 projects, including finish date and cost/budget for each) using MS Project s/w projected on screen</td>
<td>As noted earlier, a video demo/training on how to use the MS Project tool would be most useful in teaching these concepts. A written step-by-step guide would also be useful, along with an answer key so students could compare their work with the key.</td>
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| **26 October (continued)**    | Pres. Gordon B. Hinckley’s approach to reconciliation. (pg. 2-124):  
1. Identify the issue (be very SPECIFIC!). Make sure all involved agree on the issue.  
2. ID tactics or options (at least three)  
   a.  
   b.  
   c.  
3. Identify the impacts (+ & -) of each.  
4. Make a recommendation.  
   [Analysis (by Sponsor) will likely flow in the reverse order, 4., 3., 2., and to 1.](#) | See audio for case study that Ernie experiences w/MTC and Elder G. B. Hinckley RE: delivery of cards distribution during European Tour.  
Example from project with Mexico for pay-per-view.  
AT&T shipped the wrong equipment. |
| **7 Nov 2017**                | Risk Mgt (process):  
1. ID Risks (via Brainstorming); throughout the project ask, “Are there any NEW risks?” -- if so, then follow the steps below:  
   < Hospital Fund Raising – Sonoma, CA >  
2. Assess the Risks: (High, Med, and Low for the following - Likelihood, Impact, Lack of forewarning  
3. Manage the risk  
   a) ID preventive actions;  
      Address cause / reduce likelihood  
      Each becomes a task added to the project.  
   b) Contingency Plans;  
      Address effects mitigate effects  
   c) Triggers (FAT) – Functional Appropriate Timely | (see audio recording)  
Hospital Fund Raising – Sonoma, CA (video tape this session) – case study of Risk Management  
Story of (not timely)  
Trigger: birth of Ernie’s first son in a gas station rest room. |
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| 14 Nov                        | Review the Risk Management process steps:  
1. ID Risks  
2. Assess the Risks  
3. Manage the Risks  
   , including the  
   a) ID preventive actions;  
   b) Contingency Plans;  
   c) Triggers (FAT) – 
   Functional  
   Appropriate  
   Timely                                                  | How do we best accomplish reviews in an online course?  
Is a video tape of this lecture/learning activity the best way to model risk analysis?  
Then, how is it best assessed when each student attempts to do it? This is probably best done as a virtual learning team assignment. |
| 16 Nov Interpersonal Problem Solving | Elisabeth Best Case Study – send in the examples of each of the four types of “Influence” And determine (and justify why which you think is predominant).  
Interpersonal problem solving (two companies resulted)  
Interact – short term model  
VitalSmarts – long term model                    | How can case studies be best used as a learning activity in a self-paced or online course environment?  
Would a case-study or real-life example (perhaps a transcription) of this problem solving method be an effective way to present it? |
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| **16 Nov** *(continued)*    | 1. Problem Statement *(what was expected and what was observed)*; make no reference to consequences of the problem. Needs to be direct, specific, and not-threatening.  
   a) sandwiching *(say something good, say something corrective/negative, then say something good/compliment)* is a bad behavior.  
   b) Not a proven practice *(do not do it)* try to problem solve in public; only in private, in a safe environment, one-on-one negotiating or problem solving.  
   c) "gunny sacking" – unloading all the bad in one major unload/dump. Not good behavior! Rather, solve one problem at a time.  
   2. Diagnose the problem/ shut up; *do not say anything; be quiet!*  
   The response from the other individual will lead to determine either one of two different resolution strategies:  
   a) Ability *(can’t)* – easier to accomplish | An alternative might be to have each student pick a situation that they have encountered or might encounter in their work where such a method might be utilized. Either practice it and report on the outcome; or, write the script of how the dialog might realistically turn out. This could be a useful preparation for such an exercise or application in real-life. |
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<td>30 Nov</td>
<td>Project Team Meetings - Update MPP and display at each meeting.</td>
<td>Learning activities should include how to manage team meetings. Project management includes many meetings.</td>
</tr>
<tr>
<td>Managing a Project - Team Meetings</td>
<td>a) What is the first step to managing the project? Baseline the MPP.</td>
<td>Keys to successful meetings:</td>
</tr>
</tbody>
</table>
Artifact Q. Model Puzzle Learning Activity