Integration of Accounting into Project Management Curriculum

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ABSTRACT
This study examines the accounting course design for project management programs and a recent accounting course redesign at the University of Wisconsin-Platteville for the Project Management Masters program. The redesign examined student and business advisory feedback which was the emphasis for change. Once the redesign was complete, additional student feedback has been gathered. This study identified obstacles to proper design of accounting curriculum including traditional accounting textbooks, project management structure within businesses, and students’ lack of any accounting background. The redesign highlights critical items to include in the accounting curriculum including accounting terminology, financial statement analysis to discover project opportunities, and case studies focusing on the cost elements of projects. These elements prepare future project managers for being greater leaders within their organizations.

1.0 INTRODUCTION
A well-run organization constantly looks for improvement opportunities both internal and external. Projects tend to be a common technique to pursue these opportunities. The opportunities fall into one of several buckets:

- Align better with the marketplace and customers (current and/or future)
- Reduce inefficiencies within the organization
- Embrace acquired or newly built components of the business
- Provide a customized product or service to a customer
- Develop a new product, service or long term asset

These project types will require project management techniques to transition people from one type of thinking to another, to properly manage the execution of the project, and to acknowledge that these actions are being taken to have a positive impact on the organization’s bottom line.

A well-rounded project manager needs to embrace all of these elements to fully perform project management. Accounting comes into play in several of these elements which causes project management students to need a strong handle on accounting terminology and techniques. Yet, accounting tends to be an after-thought or a dreaded thought for students. This paper will discuss where accounting is found in project management, the hindrances to effective accounting education in project management programs, and curriculum redesign to help bridge the gaps.
2.0 ACCOUNTING IN PROJECT MANAGEMENT
Project management involves the balance of timeline, budget and risk. In addition to these elements, a project manager should also ensure the project is delivering the value expected. The value may contain many qualitative factors but typically includes quantitative factors. A project’s value typically comes down to three things: people, execution and money.

2.1 Project Discovery
The need to embrace a project is often a result of poor financial performance or an improvement of financial performance. The first step to approaching projects is driven by that financial performance. A project manager’s ability to understand what is driving the need for the project is important to delivering on the objectives of the project. This ability to understand the drivers requires an understanding of the company’s financial ratios and its overall financial statements.

2.2 Project Approval
Project discovery is just the first step to a project’s life. A convincing case for executing the project must be presented. The convincing involves describing the future state of how the organization will look and how it will be performing after the project is completed. It also has to do with sharing the financial numbers and impact of the project to the bottom line. If a project manager cannot sell the impact a project will have on the bottom line, it has little chance of moving forward.

If a project does move forward without a proper convincing case, it indicates an issue with the organization for not having more due diligence around project approval. If done well, a business case will involve the present value of funds, the expenditures to be made, the impact on working capital (short and long term), and the overall improvement to net income. These items are core accounting concepts.

2.3 Execution
The execution should be well managed which means communication plans, training sessions, and management of the resources expended to achieve the change, i.e. a budget and budget tracking. This budget and budget tracking requires project managers to know the types of costs that will be incurred, the timing of accruals and payments, and the ability to estimate and communicate the projected costs moving forward.

Scrutiny can come over a project manager during this stage if things are not on track. The ability to respond to any budget issues requires a depth of understanding in accounting to properly communicate the current results and to adjust remaining performance.
2.4 Post Evaluation
The end of a project includes satisfaction surveys, evaluations of the processes used, and identification of additional projects. When a project should have had an impact on the bottom line; however, one of the important elements of reflection on a change or project is to calculate the impact of the change or project on the bottom line, on key ratios, and on work capital. This provides the necessary accountability to everyone involved in the project. The ability to properly calculate or at least interpret the calculations provides the ability for the project manager to recap results and improve in the future.

3.0 HINDERANCES TO EDUCATION
Several factors create barriers to students embracing accounting as a fundamental part to their project management education. These barriers create some of the key focal points for redesign of the accounting curriculum.

3.1 Accounting Textbooks
Traditional accounting textbooks provide the first barrier to students. This is caused by transaction focus, limited repetition, and the overall language.

Accounting textbooks focus on a variety of company transactions. While some textbooks do not require students to understand debits and credits, they still extensively focus on transactions including those that are uncommon in a project management setting. This focus can deter students as they question the applicability of this knowledge to their current or future roles. Some transaction knowledge is useful to the project manager particularly those involving cash, short-term liabilities, expenses and revenues generated by the project.

Accounting textbooks tend to only present two or three of the same problems. Accounting authors seem to prefer adding a twist to a problem to extend learning rather than a repeat of the same problem. This can be beneficial, but often misaligns with the need for students to practice. Some authors have created different sets of problems to allow for more repetition, but many of these problem sets are not directly in the book, which continues the barrier with students.

Accounting textbooks speak from an accountant’s point of view rather than a user’s point of view. This is demonstrated with the terminology of debit and credit, the use of estimates and accruals, and a lack of non-accounting scenarios to apply the textbook tools. These language barriers create another reason students do not absorb the accounting language.

3.2 Project Management Structure
Many organizations structure project management into different roles, which hinders students’ ability to realize full project management responsibilities. In addition to the different roles, organizations do not always give visibility to project managers. The primary areas tend to be the early phases of project management.
• Project Discovery – Company exploration to determine potential projects often has no project manager involvement, yet this activity can benefit from a project manager’s involvement. The project manager can provide experiences of how a potential project could be structured. This will help with the design of any potential project.

• Project Estimation – The estimation of a project’s benefits and costs can provide valuable information to a project manager. In particular, the benefits help explain the desired value from the project. When organizations fail to give the project manager visibility to this estimation, project decisions do not include the key consideration of project benefits.

• Budget Creation – Project managers comment how the project budget is given to them. They do not understand the calculations, assumptions, or other factors that went into creating the budget.

Without involvement in these roles, students are only focused on project execution and, from an accounting standpoint, only budget tracking. This will result in projects that deliver less than ideal results.

3.3 Accounting Perception
The final hindrance is the perception students have about accounting. Accounting is seen as a difficult topic and one that students prefer to ignore. The students believe that accounting is difficult because of this lack of exposure. The early chapters of accounting textbooks further this perception of difficulty because they try to teach the accounting terminology which is not familiar to the students.

4.0 ADVISORY FEEDBACK
Business advisory feedback from former program graduates and employers of current students provides a good perspective on why accounting should be offered in the course. The feedback gathered contained skills that are necessary for project managers not only in their current role but in future roles with the organization.

• Budgeting – The ability to develop reasonable estimates to complete, to capture costs, and to interpret other financial information related to the budget is critical. This is an area where there is not much of a gap between students’ perception of their role and employers.

• Cost/Benefit Analysis – A project manager should contribute to the overall assessment of project return on investment. This provides a perspective of costs and value of the project.

• Financial Terminology – One of the critical items brought up by the advisors is the ability for project managers to present the complete project, including financial information, to leaders within the organization. These conversations can happen during the initial stages of the project, during routine status
reports, and when advocating for official project changes. The ability to answer financial questions puts the project manager more in control.

- Decision Making – While accounting information is not the only basis for decisions, it should not be ignored as a component of the decision. When a scope change is desired, the impact on timeline and risk can be natural consideration for project managers. However, the impact of that scope change on the ability to achieve project value in relation to changes in cost is critical.

5.0 CURRICULUM REDESIGN
The previous factors provided the emphasis for a redesign of the accounting course in the Project Management Masters at the University of Wisconsin-Platteville. The redesign wanted to address the barriers while helping students see the value of accounting information in performing project management duties.

5.1 Accounting Connection
The largest barrier tends to be students not seeing the connection between accounting and project management. This was the part of the redesign. Each curriculum lesson had three additions to reduce this barrier.

- Lesson Overviews – the lesson overviews provide an effective connection between accounting and project management.

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<tr>
<th>Both types of information, financial and managerial accounting, are important to virtually all managers including project managers who use accounting information during:</th>
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<tr>
<td>- Project initiation</td>
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<td>- Project execution and control</td>
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During project initiation, a project manager benefits from financial and managerial accounting information. The financial statements can be the basis for project identification. An organization may determine operational improvement opportunities or the need for capital projects based on the financial statements.

When a project is identified, the managerial accounting concept of return on investment will be used to present and evaluate potential projects. A skilled project manager can calculate and present the results of return on investment calculations to properly advocate for a project.

During project planning, a project manager benefits from managerial accounting information. The budgeting process allows a project to be properly planned with resources and costs. A project manager who thoroughly understands the project budget is better prepared to manage a project to the established budget.

Figure 5.1 Accounting Lesson Overview Excerpt (Not the Full Text)
The lesson overview provides the initial bridge between any misconceptions about accounting in project management. It also encourages the conversation with students.

- Lesson Discussions – each lesson has a discussion to encourage the students to further explore how they and their fellow students see accounting information at play in company project management.

**Lesson 8 Discussion**

Examine how projects generate revenues, expenses and uses of cash. Discuss how an income statement and cash flow statement can be used within managing a project. Describe any current reports used in your projects that are comparable to either financial statement. As part of this discussion, examine other students’ posts to locate project reports that may assist your projects. Comment on how you feel this reporting could be a benefit.

**Figure 5.2 Example Accounting Discussion Prompt**

- Exam Essays – each exam contains one to three questions requiring the students to reflect on how accounting connects to project management. This is the final step to encouraging students take the connection seriously as part of their education. Students are aware that the exam will contain these types of essays.

**5.2 Case Studies**

The right case study can provide students the opportunity to apply accounting in familiar project management environments. The previous accounting course for project managers contained no case studies and no application of the skills to the project environment. The redesign selected a case from the Institute of Management Accountants. The redesign used the case to provide three distinct learning opportunities.

- Project Discovery – the case provides a manufacturing company that is losing money. The case requires students to apply financial ratios and other accounting observations to the company data. This case identifies poor utilization of assets, excessive rework, and inappropriate labor mix that is proving too costly. This exposes the students to the project discovery phase.

- Project Approval – the same case data is used and requires the students to select a project from their discoveries in the first project. This provides a connection for the students from company issues to actual proposal of a project to address those issues. It requires students to think about how a
project should be selected and promoted amongst many different options and problems.

- **Project Budgets** – the final use of the case data is to move from the approval stage to building more details in an official project budget. This case requires the students to apply some accounting calculations to develop the budgets. It helps the students to understand cost behaviors such as variable, fixed, and mixed. These behaviors also help the manager see how to control these costs during the project or in pre-execution steps such as contract negotiation.

These three cases provide the student exposure to the pre-execution stages of a project. This provides a deep learning experience that can propel current and future project managers beyond managing a project budget given to them to driving the project and fully understanding the project’s purpose. Even if the students do not find themselves performing these pre-execution stages, the knowledge will help them ask better questions as they manage projects.

### 5.3 Accounting Textbook

The textbook was the most difficult part of the redesign. The 3.0 Hinderances to Education section detailed the limitations to accounting textbooks and despite many searches, the same issues arose – either the textbook was too focused on core accounting from an accountant’s perspective or the textbook dealt more with project management budgets but little other application of accounting.

Two textbooks were selected to blend these concepts.


The main accounting textbook was selected because it provided enough accounting information to expand students understanding of accounting while not expecting too in depth calculations or terminology. The project management textbook furthered the connection between accounting and project management in project management terminology.

### 6.0 CONTINUED EFFORTS

Student feedback has indicated fewer concerns about the connection between project management and accounting. These concerns still exist, but there has been a marked decrease in these comments. This does not mean the redesign efforts are done. The accounting textbook still does not provide the problem repetition or the hands on application to project management that most students desire and need.

The next efforts of redesign are already underway. The major components of this redesign will include:
• Mini Case Studies – The case studies have been received well. Instead of using the textbook problems, a series of mini-case studies are being discussed to help convert the textbook learning to project management. This will also provide repetition to the students.

• Exam Removal – Accounting is the last course within the Project Masters program at the University of Wisconsin-Platteville that uses full exams. This builds an extreme anxiety with students who prefer to demonstrate knowledge through case studies, papers, and other research. No exams in an accounting course would break from a long tradition, but it is an element being considered if students can still demonstrate learning the skills in other assessment tools.

• Article and Other White Paper Readings – The textbook continues to be a large barrier to students. The addition of articles and other papers rather than a strong focus on the textbook will continue to change the terminology from an accountant’s perspective to a manager’s perspective. This will help students understand the material and see more connection with their current and future roles.

Similar to any project and company, there should always be an embrace of continuous improvement. While the changes to the accounting curriculum has been positive, it can still be improved, so the students continue to learn the value of accounting information in project management.