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Teaching and educational notes

# Using concept maps to provide an integrative framework for teaching the cost or managerial accounting course



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#### ARTICLE INFO

Article history:
Available online 21 January 2015

Keywords: Concept maps Product cost Cost systems Assimilation learning theory

#### ABSTRACT

Accounting students often perceive their beginning cost or managerial course as lacking a framework with which they can organize the material. They have usually completed a beginning Financial Accounting course recently where the accounting equation provides such a framework. This makes the lack of a framework in their next course even more problematical. This paper provides a framework for integrating topics in the cost/managerial course to enhance learning. The framework uses hierarchical concept maps as the integrating mechanism. Concept maps provide a visual presentation method based on the theories of learning and knowledge. Assimilation learning theory posits that the difference between meaningful learning and rote learning depends upon whether or not the new information is integrated with, and connected to, existing knowledge. Meaningful learning takes place most easily when broader concepts are presented first and detailed ones that provide support are furnished later. Hierarchical concept maps are organized in such a fashion, with the more general, inclusive concepts at the top of the map, and progressively more specific concepts arranged below them. Concept maps are a way to develop logical thinking and study skills by revealing connections and helping students see how individual ideas form a larger whole. The paper provides a detailed discussion of how to proceed with the concept maps as building blocks in the course. This can help the instructor organize their

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presentation in a logical manner aimed at enhancing student learning. We also provide a comprehensive numerical example to reinforce the process over the course of the semester.

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#### 1. Introduction

Business students at most universities take their financial principles course before the managerial course in both undergraduate and MBA programs. Accounting majors then take their first intermediate course before or concurrently with cost accounting. A common complaint which we have heard repeatedly over a combined fifty plus years of teaching is the lack of a framework in the managerial and cost courses.

The financial course can be organized around the accounting equation and the effects of transactions on the financial statements. The course systematically discusses balance sheet accounts starting with current assets and ending with equity and demonstrates how transactions affect the major statements. For example, a discussion about accounts receivable will help determine the amount reported as a current asset on the balance sheet, bad debt expense on the income statement, and cash from operating activities on the statement of cash flows.

The managerial and cost courses are often seen as a set of disparate chapters and subjects which seem independent due to the lack of an organizing framework. The lack of a framework causes many students to view the cost or managerial accounting course as a blur of equations or procedural rules to be memorized. Instructors can emphasize that there are four main themes in the course – costing, planning, control, and decision making – but the students still have difficulty making connections between them.

Product costing, which is usually introduced at the beginning of the semester and taught throughout, is the common thread uniting most topics in a managerial or cost course. It, however, is precisely the topic which leaves students without the ability to see the forest for the trees.

A critical business function in the value-chain of a manufacturing company is production. Managers track the costs in this value-chain category through product costing. The students fail to see that product cost can be defined in many different ways, depending on the purpose of the cost (internal usage or external reporting), and on the specific combination of several cost systems. This confusion, which starts early in the semester, makes it difficult for students to understand how costing relates to other accounting issues such as planning, control, and decision making. Students also miss the fact that the amount charged to production affects the financial statements. This amount will be used to determine the cost of work-in-process and finished goods inventory on the balance sheet, and the amount charged to cost of goods sold on the income statement.

This paper offers a framework to link the product costing topics to each other, and then suggests how it can be extended to discuss these other issues. The paper covers a large percentage of the topics in a typical managerial or cost accounting class. Creative instructors may find other uses for the framework which they would hopefully share.

The framework we use to link the costing topics consists of a series of four hierarchical concept maps. A concept map is a visual diagram which shows the relationships among concepts. We interchangeably refer to the concept maps as "layers" or "maps." Each layer progressively builds upon the prior layer, with the final map encompassing all combinations of costing approaches taught. The layers are sequentially presented throughout the semester at the appropriate point. The maps are colorcoded to clearly show what has been previously discussed and what is new as each cost system is sequentially presented.

The maps provide at least two distinct benefits for *both* the instructor and the students. The first benefit is the fact that the maps build upon each other to integrate concepts throughout the

<sup>&</sup>lt;sup>1</sup> Although our paper focuses on a manufacturing company, the same principles can be applied to a service company.

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