

IMPLEMENTATION OF THE EEPAD FRAMEWORK OF BUSINESS PROCESSES IN AN ACCOUNTING INFORMATION SYSTEMS COURSE

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ABSTRACT

Given the broad content coverage of accounting information systems (AIS) classes, many accounting instructors are faced with the challenge of producing a cohesive set of class projects that provide students with integrated and practical experience. This paper describes how a set of projects can be integrated using the EEPAD framework and simulating business processes through a computerized market. The simulation complements the theoretical concepts presented in AIS textbooks by providing practical experience. Based upon the encouraging results, comments are given related to the possible adoption and/or adaptation by other AIS instructors.

Key Words: AIS, simulation, education

INTRODUCTION

One of the main goals of the accounting information systems (AIS) course is to better acquaint students with the inputs, processes, and outputs (along with the associated technologies) of business systems. Moscové, et al. (2003) provide a distillation of recommended AIS content areas (see Table 1, Panel A) detailed in reports by the American Accounting Association (1987) and International Federation of Accountants (1996, 2003). A review of popular AIS textbooks (e.g., Gelinás & Sutton 2002; Moscové, et al. 2003) suggests these content areas are adequately addressed from a theoretical standpoint. However, in order to enhance student learning there is a need to complement the theoretical aspects with additional course materials that provide a semblance of practical experience desired by IFAC (2003) and embodied by the Association for Business Simulation and Experiential Learning (Gentry [Ed.] 1990).

Panel A: Suggested AIS course content area coverage

	Content Area
1	Database Concepts
2	Internal Control
3	Technology of Information Systems
4	Use of Systems Technology
5	AIS Applications
6	Management Use of Information
7	Management of Information Systems
8	Systems Development Work
9	Auditing

Panel B: EEPAD layers relation to AIS content area

EEPAD Layer	Content Area
Environment	2, 3, 6, 7, 9
Entities	2, 3, 4, 6, 7, 8, 9
Processes	1, 2, 4, 5, 8, 9
Accounting	1, 2, 5
Data	1, 2, 5, 8, 9

TABLE 1
ACCOUNTING INFORMATION SYSTEMS COURSE CONTENT AREA COVERAGE

These seemingly disparate content areas often result in accounting instructors (who do try to implement these recommendations) using course materials that are an ad hoc selection from various sources. The class assignments that result often comprise a set of unconnected or disjointed projects. Such a situation does little to foster an environment conducive for the student to obtain an adequate mental representation of AIS. An inadequate mental representation is thought to limit the opportunity for knowledge acquisition in students.

As I contemplated this problem I came to the realization that these seemingly diverse content areas could be embedded into a framework that would guide the accounting instructor in creating interrelated student projects. This framework can be described as layers (or views) of the same business processes (from a macro to micro perspective). The major layers of the business processes that I propose are the following: Environments (e.g., markets and industries), Entities (e.g. companies, and functional areas within companies), Processes (i.e., business processes existing in the environments and entities), Accounting (i.e., transactions of the entity), and Databases (i.e., storage mediums of the transactions); henceforth described as EEPAD. As detailed later I'll demonstrate how EEPAD can be used by AIS instructors (and students) to explore various business processes from the perspective of these five layers.

I do not believe discussing EEPAD by itself will enable students to grasp AIS material; two other requirements are needed. First there must be a mapping of AIS content areas with EEPAD. Table 1, Panel B provides an example of such a mapping. Although other mappings are possible; any discussions on the preciseness of the mappings are beyond the scope of this paper. I believe a sufficient purpose of the mapping is to provide the AIS instructor with an understanding

of the content areas covered when describing business processes from the various layers. This understanding of coverage is important to the second requirement; the creation of a set of projects appropriate for the EEPAD layers. I believe that a set of integrated projects allows students to view the same business processes from the different EEPAD layers which in turn will facilitate learning AIS concepts. The rest of this paper focuses on a set of three integrated projects and how they fit the EEPAD framework. These projects are derived from a business simulation I wrote for an AIS course.

STUDENT PROJECTS DESCRIPTION

The three integrated projects are a simulation, financial statement preparation, and database creation/query. The simulation is a real time transaction based market where students act as companies in this market and are responsible for decisions related to buying (and therefore selling) of various products. The base simulation project consists of one class session (minimum 50 minutes) in a computer lab. Students would be given brief instructions on the use of the computer simulation (see Figure 1) with a demonstration version (approximately 10 minutes). The students would then use a different URL to access the actual simulation; they may also be given additional requirements (e.g., they must make at least 28 purchases, and they must make at least 21 cash payments for their purchases). The students would spend the remainder of the class session fulfilling these requirements. Subsequent debriefings of the simulation project with students (during other class periods) are expected to provide understanding on the EEPAD levels of environment, entities, and processes.

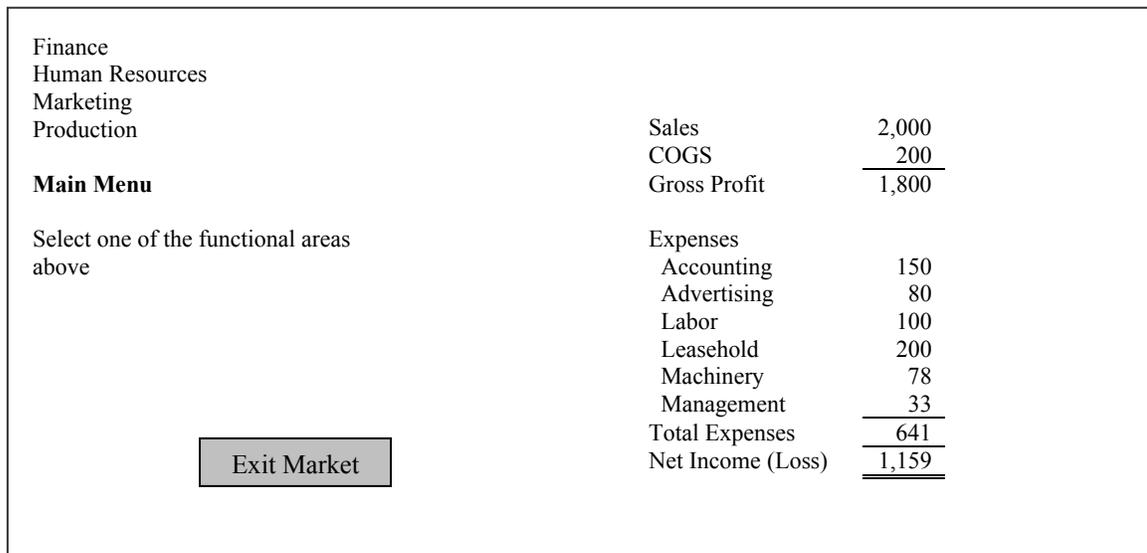


FIGURE 1. SCREENSHOT OF SIMULATION MAIN MENU.

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For example one class period could be devoted to providing an understanding of the environment, or the market context, of the simulation. Discussions could focus on the similarities and differences between the simulation and “real” world. Another class period could focus on the entities (other companies and functional areas within companies) and their desired and actual interactions during the simulation. An example discussion could focus on problems and solutions to generating sales and cash receipts between companies in the simulation and the world at large. Finally another class period could focus on processes evident in the simulation and how these processes compare and contrast to business processes depicted in AIS text and with actual companies.

The ability of the simulation to capture transactional data entered by the students into the system allows for later dissemination of that same data back to the students for the purpose of financial statement production (the accounting level of EEPAD). Sales, purchases (see Figure 2) and inventory journals would be provided to students, along with additional information, with which they would then create a full set of financial statements (including the appropriate audit trail, see Figure 3). It is expected that students would have a better understanding of the data because they had invested time and effort in the initial generation of the data. The use of a computerized accounting package could be mandated with the assignment.

<i>Purchases</i>				
<i>buyerID</i>	<i>105</i>	<i>timeChange</i>	<i>sellerID</i>	<i>Price</i>
		1048618253517	106	100.00
		1048618283971	100	95.00
		1048618294176	101	100.00
		1048618658309	117	75.00
		1048618908119	118	65.00

FIGURE 2. EXCERPT OF PURCHASES REPORT GIVEN TO STUDENT.

<p>Your PPE has a useful life of 4 years and a salvage value of \$200.</p> <p>Purchases related to L/H imp and Mach are items being rented and not capital assets.</p> <p>A count of ending inventory shows a balance equal to 15% of all raw materials purchased.</p> <p>PREPARE THE FOLLOWING DOCUMENTS:</p> <ol style="list-style-type: none">1. A sales invoice for one of your sales.2. A purchase order for one of your purchases.3. A monthly billing statement for one of your customers.4. A check for payment to one of your suppliers.

FIGURE 3. EXCERPT OF FINANCIAL STATEMENT PROJECT INSTRUCTIONS GIVEN TO STUDENTS.

The third project would require students to use a text-based SQL interface (see Figure 4) to query the database generated during the simulation (the database level of EEPAD). The students would be given meta-tables (see Figure 5) of the database and instructions on the SQL select command. Using this knowledge they would perform queries on the database to

answer pre-specified questions (see Figure 6). Because students had previously invested time in the creation of the data it is expected that they would be able to compare the actual results of their SQL query with their representation of their expected results and possibly with results previously generated through the financial statement preparation project.

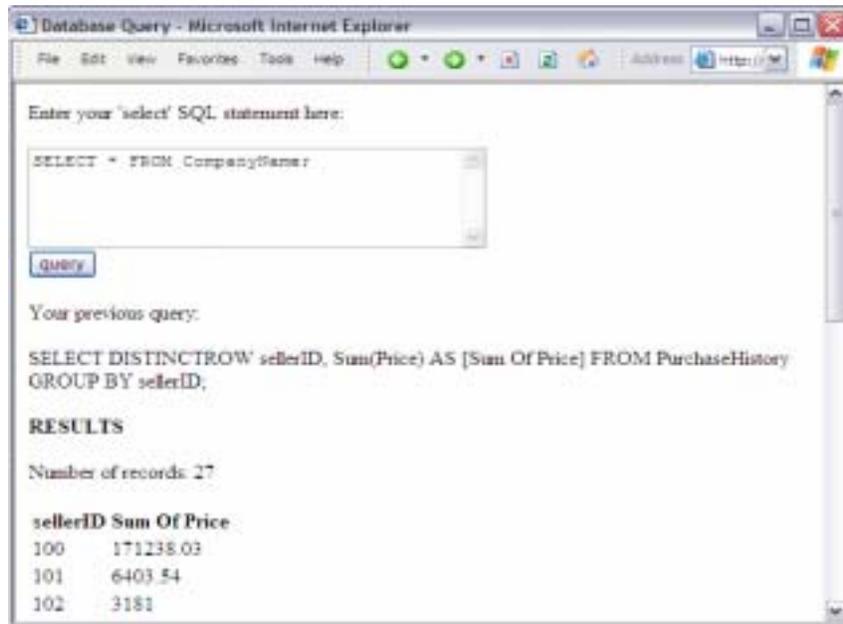


FIGURE 4. SQL INTERFACE.

Database Table: Purchase History

Name	Type	Description
Index	AutoNumber	Primary key
buyerID	Number	Numeric value associated with buyer
sellerID	Number	Numeric value associated with seller
Price	Number	Price purchased (also sold) at
timeChange	Number	Time when item purchased (sold)

FIGURE 5. EXCERPT OF META-TABLE.

1. How many records have revenue greater than \$50?
2. List revenue greater than \$50 sorted by dollar.
3. List only records with revenue greater than \$50 sorted by time.

FIGURE 6. EXCERPT OF SQL QUERY EXERCISE.

In addition to the above projects, discussions relating back to the simulation could be useful in presenting software and hardware issues, internal controls and system design and analysis. For example a program flowchart and program code related to the simulation could be used to enhance understanding of software design issues.

Because of the repetitive nature of the use of the simulation

and its derivative data, students should begin to understand that the various content areas in AIS are in essence different layers of the business process. It is expected that students would be able to integrate their understanding of the various topics in AIS gained from these projects into the EEPAD framework resulting in a fuller understanding of business processes and periphery topics related to these business processes.

CONCLUSIONS

In summary, this paper demonstrates that an integrated set of projects combined with the EEPAD framework provides a basis for students to view and experience seemingly disparate topic areas of AIS in a cohesive approach. This understanding is thought to be useful for students to enhance their representation of AIS. Testing of the projects and the EEPAD framework are ongoing; preliminary results appear to indicate some support for the expectations previously discussed.

In terms of adoption I believe that the projects described would be appropriate for a one course AIS curriculum, or the first AIS course in a multiple AIS course curriculum. Adoption and usage of the projects and simulation in any AIS course does require various resources including access to this simulation (current distribution alternatives are being pondered), a web server supporting active server pages (ASP) and database extensions, and computer lab time during class to run the simulation. Furthermore, an understanding of ASP, DHTML, Jscript, MS Access, and data handling in a web environment is needed to prepare and process the financial statement and database projects, as well as use the simulation as a basis to discuss related AIS topics.

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