ACQUIRES
Accounting Quick Information Retrieval System

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BRIEF SYNOPSIS OF THE PROPOSAL

This project will result in a computer data-based system that simulates accounting Information in a business format. The system will provide, upon student request, information needed to solve problems presented in workbooks developed for each course. A computer will be used as a part of the system, but a major objective will be a system design that assumes no computer knowledge by students or Instructors. This system will be called ACQUIRES (Accounting Quick Information Retrieval System).

Need for ACQUIRES:

Information-seeking skills and good understanding of accounting terminology are necessary for a fully qualified accounting graduate. Regretfully, academic training, by providing students with needed information in problems, works against learning these skills.

The serious deficiency taught students under current methods is best illustrated by an example. In an operations research course, students are taught concepts such as application of linear programming to a business optimization problem. However, in most problems worked by the students, all the information needed to formulate the solution is given in the problem statement. Most experts will agree that, in practice, most operations research consists *of* actually formulating a problem from the multitude of data available. A person competent in linear programming is one who can discriminate between relevant and irrelevant data as well as apply the techniques. Most students miss this important aspect of learning and, consequently, are less effective than they might be in a professional role.

This same problem also exists with accounting problems that use business information. In practice, relevant information is not given to the accountant for analysis.

To become fully competent, the student must overcome the bias resulting from information provision in textbook problems. Accordingly, a graduate must be re-educated in accounting terminology and in information seeking and utilization on his first job in a real business.

What Would ACQUIRES Do:

The total ACQUIRES package will include a retrieval system and workbooks designed for different classes. The retrieval system will include Information typically found in business accounting systems. The workbooks would contain problems to be solved but which do not provide necessary data. The student must formulate inquiries using proper accounting terminology and then retrieve the information needed from the data base. The major benefit *of* this system is that students must take positive steps at learning the information-seeking process as well as the information-using process.

ACQUIRES Will Include:

1. Computer software - sophisticated programs necessary to store and quickly retrieve the large amount of information typical of a business.

2. Computer manual - information for technicians who will operate and maintain the system.

3. Instructor reference manual - information for changing the data base and suggestions to obtain maximum benefit from the system.

4. Student reference manual - information about the simulated firm and about how to use the system.

5. Problem booklets - workbooks of problems, one booklet for each course in the curriculum using ACQUIRES.

Which Courses Could Use ACQUIRES:

1. Introduction to Financial Accounting
2. Introduction to Managerial Accounting
3. Intermediate Accounting
4. Cost Accounting
5. Advanced Accounting
6. Auditing
7. Operations Research
8. Statistics
9. Business Policy
10. Production

Availability of Similar Instructional Materials

There is no package on the market at the present time (nor is any anticipated to my knowledge) which attempts to attack this problem. There are computer packages which perform accounting functions and, thus, attempt to acquaint the student with computerized accounting. There are also computer packages

which act as simulated firms in order that students can make managerial decisions and see the results of those decisions.

Many accounting educators have become disillusioned with these computer applications because the first type becomes an exercise in keypunching with little accounting benefit. The second type of application, on the other hand, is more oriented to managerial decision-making rather than accounting. However, both of these concepts are directed at problems different from that problem attacked by ACQUIRES.

A package such as ACQUIRES (which could resolve the information- provision bias) would be unique in the field. In addition, the package would be adaptable to most computers and to many classes which are taught in all colleges of business. The system is designed to be used in all levels of accounting courses and to be used with any textbooks that are adopted (the problems are topic-oriented rather than text-oriented).

ACQUIRES - A DETAILED PROPOSAL

Statement of the Problem

Accounting is an art of collecting, classifying, summarizing, and communicating financial data. Implicit in this definition is the process of information-seeking and measuring as well as the process of manipulating and reporting that information. Regretfully, most accounting educational programs concentrate on the latter processes with little, if any, emphasis on information-seeking.

An academic accounting education is characterized by discussions of measurement and problem solutions using accepted information manipulation methodology. The process of collecting the information from input sources should be equally as important since the other processes presuppose the presence of such information. A thoroughly prepared accounting graduate should be able to apply the accounting concepts in actual situations, implying that the graduate must be able to collect the information required by the concepts. He cannot rely upon the fact that information will be given in a statement of the problem since he has to identify both the problem and the needed information.

Current accounting education practices do a great disservice to accounting students. Unless a student supplements his formal education with an accounting job, he receives his accounting training primarily through textbook problem-solving approach. Consequently, while the student is being taught accounting techniques and theories, he is also being taught a subconscious bias concerning problem solving. Most educators would agree that the

quickest way to confuse an accounting student on a test is to introduce irrelevant information into a statement of the problem. Students who have relied upon the information given to them in textbook problems do not know how to proceed using all the information to arrive at a correct solution. Such a bias can be partially counteracted by introducing irrelevant data into all problems, but this does not get at the root of the student's problem.

Perhaps an illustration would be beneficial for clear presentation of this type of student problem. In accounting courses that this author has taught, an attempt has been made to introduce irrelevant data into each test question. For example, one question concerning the computation of ending inventory under a LIFO method included a figure for administrative salaries. Approximately 25% of the students incorporated the figure into their answers, thus indicating gross misunderstanding of the accounting concept, and illustrating the information provision bias. It is true that if a student truly understood the accounting concept he could easily identify and eliminate irrelevant items. However, the point being made in this proposal is that the current methods do not reinforce student learning of the concepts, but rather instill a bias against learning the total concept.

The presence of information in a problem statement implies that there should probably be a use for that information. Most students learn to rely upon the information as a crutch. However, such reliance impedes actual understanding of the underlying accounting concepts. The present method of presenting problems to the student does not instill confidence so desperately needed to truly learn accounting problem-solving.

Educators are often confronted with criticism which illustrates the fact that students are taught an information-seeking bias. Much of the criticism directed at accounting education programs by accounting practitioners concerns the problem that although graduates are prepared to pass the CPA examination, they must undergo an extensive training program before they know how to apply their knowledge to actual business situations. The bridge between concepts and applications is a difficult and neglected one.

Although most accounting courses discuss business forms, manuals, and other accounting devices actually used in business systems, students do not adequately relate this terminology to accounting concepts. If required to use the terminology more, they would learn the meanings more thoroughly than by simply learning definitions. However, students know that classroom problems will give them the necessary information, and that the context of the problem will probably identify the relevant terminology.

For example, in a classroom situation the student is never required to request a cash receipts journal as

he would in an actual situation. Thus, although the student can give a definition of the information source, he usually cannot adequately relate the accounting concept to the information sources. When confronted with the plethora of information that makes up an actual accounting system, many graduate do not know how to proceed with a problem solution primarily because they do not know where to get the relevant information.

ACQUIRES - The Proposed Solution

The purpose of this proposal is to outline a new teaching tool structured to eliminate the information provision bias in accounting education. This would be accomplished through the development and utilization of ACQUIRES (Accounting Quick Information Retrieval system).

ACQUIRES would be a computerized information system, the major purpose of which would be to provide problem-solving information to students at the request of the students. The concept underlying ACQUIRES is basically that all of the necessary input information for a simulated firm would be available to the student upon request. The information would be structured in a manner similar to the storage formats of actual business input information rather than being structured for any specific problems. The availability of this simulated firm would allow educators in accounting classes (from the introductory course through advanced accounting and auditing) to present problems to students and require them to retrieve the necessary information for a solution.

Usage of this system as a teaching aid would provide the following advantages to the student:

1.   The "information provision bias" would not be taught.

2.   Business terminology would be learned better because students would <u>use</u> the terminology to obtain need information.

3.   Different levels of accounting courses would use similar input information thus allowing students to draw parallels among levels of accounting classes.

Who Would Use the ACQUIRES Package?

Usage of ACQUIRES would mean that a large data base of information would be available for all courses in business. Information is stored in a manner that would simulate actual input information for a business. Thus many non-accounting courses could draw information from the data for usage in problem solutions. Such courses would include:

1.   Business Statistics - a large amount of information would be available which could be used to illustrate statistical techniques and problems.

2.   Marketing Research - information would be available for surveys of current marketing trends for the simulated firm.

3.   Systems Analysis - information would be available for a system evaluation *of* several components of the simulated firm.

4.   Capital Budgeting - information would be available for comparison of costs and benefits for alternative projects.

The primary objective of this system, however, is to provide an information base to be used by accounting courses. Since the information is meant to represent actual formats for business, there would be no orientation toward any particular course or toward any particular textbook. Most accounting programs are organized such that certain accounting concepts are taught with different levels of complexity in several classes. Thus, problems are oriented toward the accounting concept rather than the particular textbook approach and toward the level of complexity for each course.

The ACQUIRES system will provide the simulated information and workbooks directed at each of the different levels of accounting courses. The problems in these workbooks will be organized according to accounting concepts, thus allowing for supplemental usage with any accounting textbook. The computer system will be designed to report information of varying complexity depending upon the level of workbook problems. Thus, the depreciation problems in the intermediate accounting workbook will be more complex than those found in the introductory accounting workbook.

The ACQUIRES Package to be Developed

The completed system would include several components to be offered to schools that would use ACQUIRES. The central part of the system would be computer programs that would store and retrieve information on request. These programs would be either given or sold to the participating schools depending upon how the package would be distributed. Included with the programs would be a manual of operations written for usage by the computer center personnel who operate and maintain the actual programs. This manual is not intended for instructors or students, as it is technically oriented and useful only to the technicians who would keep the programs functioning.

The actual computer programs (the software) will be the most complex portion of ACQUIRES development. The success of the teaching tool will depend completely upon the capability of these programs in terms of storage capabilities, speed of retrieval, similarity to an actual business, and flexibility for multiple uses. Therefore, the objectives and features that will be incorporated into the

design of the system are described more completely below. Once the system is developed, distribution of ACQUIRES will involve making available programs on punched cards (two or three small boxes) to the participating schools.

ACQUIRES System Design Objectives and Incorporated Features

I.   Major Objective: The system will be non-computer oriented. That is, users will not be required to have prior computer knowledge to effectively use ACQUIRES. The computer will be used as a tool to store and retrieve information.

Related Features:

A.   Student information request formats and syntax will be accounting-oriented rather than computer-oriented.

B.   Interfacing between the Instructor and the system will involve requests and reports in English sentence structure.

C.   Information requested by students will be reported in typical business formats.

D.   A request editing routine will be incorporated to facilitate student usage by communicating syntax errors in information requests to the student along with hints and suggestions for corrections.

II.   Objective Two: The system design will reinforce learning of terminology and relationships among accounting concepts.

Related Features:

A.   Information stored will be input documents. Students will not be able to request answers but rather can request information which can be used to compute answers.

B.   Student requests must use correct business terminology to obtain information.

C.   Only information specifically requested will be reported. Students will not be able to ask such questions as "tell me all you know about …"

D.   Instructors will receive reports about amounts of information requested for each problem by each student.

III.   Objective Three: The system will be flexible so that it can be used (a) for courses at several different levels, (b) year after year, (c) for both managerial and financial accounting courses, and (d) non-accounting courses.

Related Features:

A.   An easy-to-use routine is incorporated to allow instructors to change values of information by changing a few numbers and dates. Instructors will also be able to add documents when a need arises.

B.   The information will be available in several forms, including base documents, summarizations of documents, and specified reports. Included in this feature will be the availability of statistical routines that can be applied to the basic data upon request.

C.   Codes will be incorporated for different course levels to vary the complexity of information given upon request. This will permit problems to be worked by both introductory and advanced courses with the same basic information.

D.   The simulated firm will incorporate both financial and managerial information. For example, inventories will include both production types and purchases types.

IV.   Objective Four: The computer system will be practical for use by schools with small as well as large computers.

Related Features:

A.   Programs will be compatible with many computer types and sizes. Programs will be designed for a small computer.

B.   The system will be designed for fast retrieval and printing so that usage of the system will not require excessive computer time.

Feasibility

Most academic programs currently have access to computing machinery at least as sophisticated as the hardware required by this system. The system will be designed for batch processing of requests and spooling of output, thus permitting a computer center to process requests during the day and to output the information during the slack period each night at a high printer speed. Different colleges will have various limitations concerning time availability; however, the above feature will enable even the busiest computer center to service the accounting program with at least daily turn-around. Many centers, of course, will be able to provide much quicker turn-around.