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Interactive Cases in MIS

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Abstract

There is no turning back on the information age. Employers are very interested in employees that understand the appropriate use of information technology to support their organization. This does not mean that the students must be able to program; however they do need to understand the issues associated with applying information technology. In addition educational institutions are exploring the use of technology enhanced delivery methodologies, such as the world wide web. This research evaluated the effectiveness of the use of a computerized, interactive case. This case uses hypertext media to engage the students in a problem solving activity in which they apply theory learned in lecture and text material to successfully accomplish a "real world" type problem. This is an example of an active learning methodology, which leads to improved learning of the content areas, with higher-order reasoning and increased retention.

Introduction

This paper addresses the issue of applying technology to the classroom to enhance the student's depth of understanding of the content of the course (Grunnert, 1997). Specifically, it involves the use of hypertext media to engage the student in a problem solving activity in which they apply theory learned in lecture and text to successfully accomplish a "real world" type problem. The challenge for the instructor in the introductory management information system (MIS) course is to develop student understanding of how the theory they've been discussing applies to the business world. To help the students understand, and to be motivated to understand, the course material the authors developed an interactive case. The interactive case is used to implement a type of active learning that will engage student thinking and increase motivation.

Active learning (Bellamy and McNeill, 1994; Kreke, 1997; Patton, 1994) leads to more learning in a content area, higher-order reasoning, increased retention, and improved oral, written, and interpersonal or collaborative skills. As educators we know that note taking and lectures are not the most effective way to motivate students to go beyond rote memorization of the material (Pascarella and Terenzini, 1991). We need to engage them into an activity that requires them to process, internalize, and synthesize the material then apply the knowledge and skills being developed in the class to solve a problem.

The format of the interactive case has students apply theory learned in lecture to solve a business problem. The case presents a business scenario in which the students must use the theory to make decisions on their way to successfully solving the problem. Each decision leads to another situation in which a decision must be made. This continues until the student successfully (or unsuccessfully) complete the case. Choices in the decision lead to other situations or to "dead ends" in which the student is asked to reconsider their last choice.

Decision-making Examples from the Case

Frank and Jim spend parts of the next two weeks developing a description of the project. Their final report indicates that the benefits of the project are primarily in two areas. First, the project would support the strategic objectives by reducing the down time of Reliable engines that had experienced a problem. Problems that normally took a few weeks to diagnose and fix could be done in a matter of hours or days. This was because problems that traditionally had to be referred to the company had to be written up and mailed in. Mailed in problems were then handled on a first come - first serve basis. When the technician received a written problem they then often had to phone the service provider to get further information and have further tests run. The reduced down time would enhance the perception that Reliable's engines were reliable and result in happier customers due to the fact that their outboard spent less time in the shop.

The second area in which the application would provide benefits is operations cost. By off-loading some of the trouble shooting there would be a reduced need for individuals to do trouble shooting and they could spend more time on more difficult problems or be allocated to other projects. You compliment Frank and Jim on their analysis. They await your next decision.

The next move you suggest is:

- A. Suggest the two individuals continue their analysis with a cost benefit analysis (2A).
- B. Time is of the essence. You know your competitors are also investigating the potential for the Internet and you want to beat them to the punch. Allocate resources to initiate the life cycle of the project (2B).
- C. Present the idea at the weekly meeting of the CEO and VP's to see if the application fits with the strategic objectives of the organization (2C).

2A. Frank and Jim spend two weeks on the cost/benefit analysis. They report that the project would have a two and one half year payback. However, they're not sure if this is the best method for estimating the cost/benefit of the project. They ask you what should be done next.

- A. You tell them to go on to a feasibility analysis of the project (3A).
- B. You tell them you share their concerns and ask them to calculate the return on investment for the proposed project (ROI) (3B).
- C. You tell them you share their concerns and ask them to do the analysis using the Net Present Value Method (NPV) (3C).

2B. The internet application is more difficult than originally expected. Much of the problem is not with the Internet side, but determining the type of information to be included in the trouble-shooting application and how to arrange it. Six months into the project you realize that Reliable Outboards does not have the technical skills to complete the application. You realize that you should have had Frank and Jim do a feasibility analysis before initiating the project. You decide to kill the project and try to figure out how you're going to explain the expenses associated with the project to the other executives. Go back to your previous decision and reevaluate (1A).

Research Methodology

An interactive case, as presented above, was developed to help students understand and apply the theory of investing in information systems. The students read through the case making decisions. The case uses hypertext links to take the student to the next level of discussion about his/her decision. If the decision is correct they proceed in the case. However, if the decision is incorrect they are given additional material (hints) and taken back to the previous screen to re-make the decision.

The sections of the introductory MIS course were divided into two groups. Group one received the lecture only. Group two received the same lecture as group one, then worked with the interactive case. Group two receives an attitudinal survey to be filled out at the end of the case. Both group one and two were given a multiple-choice test over the material.

Our experience with the case suggests that students both enjoy the case and find value in using it. This conclusion is based on an attitudinal survey of 119 students that have used the case in the course. With the multiple-choice exam, we have attempted to determine if the case makes a difference in their learning of the subject. However, many problems have occurred in this portion of the investigation that have not provided an answer to this question. We are attempting this portion of the investigation again this semester. Our non-scientific conclusion is that students do understand the material at a greater depth after using the case but we are unable to confirm this scientifically. The literature shows that students pull in more ideas into their decision-making (Bonwell and Eison, 1991 and Patton, 1994). Research on the students' performance on multiple-choice testing (Pascarella and Terenzini, 1991) is inconclusive; we felt that this was the best way for us to initially test the student's comprehension. One answer may be that interactive learning is most successful when assessment is non-competitive and multiple-choice exams are perceived by the students to be a competitive assessment method (Kreke, 1997 and Page, 1990).

We are redoing this experiment this semester and hope to have more conclusive results.

Importance of the Project

There is no turning back on the information age. Employers are very interested in employees that understand the appropriate use of information technology to support their organization. This does not mean that students must be able to program; however they do need to understand the issues associated with applying information technology. We feel that this research will support more in-depth understanding of these issues. Additionally the interactive case constitutes an "active learning" approach, which has been associated with greater depth of understanding.

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