Note Taking Enhancements for Information Systems Courses

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Abstract

In introductory information systems courses students learn, primarily on their own, through reading the textbook and instructor lectures; both of these techniques are ineffective for student success. In this paper, "guided notes" are introduced as a way for engaging students in the reading of the textbook and the lecture. Guided notes have been shown to allow students to become actively engaged in the course and take more complete and accurate notes (Baker and Lombardi 1985); this, in turn, improves their chances for success in the course (Baker and Lombardi 1985). Informal survey results from Systems Analysis and Design courses are used to show that guided notes have had a positive impact on student success.

Keywords: Active Learning, Note Taking, Lectures, Critical Reading, Pedagogy

1. INTRODUCTION

Introductory information systems courses have two primary purposes. First, these courses provide a means to allow students to learn the "purposes, uses, and value of information systems and information resources in organizations" (Gorgone, Davis et al. 2003, pg. 12). This is especially important when teaching an introductory information systems course to general business students. Second, and more importantly, introductory IS courses provide a means to "hook' students into giving Information Systems serious consideration as a major and career. Given the declining enrollments in IS and Computer Science majors, IS faculty are failing at the latter.

Business students do not believe that information systems is a viable career path for them for many reasons, however, by providing creative, exciting, and active learning environments business students might consider information systems a viable academic major or minor.

Students in Information Systems (IS) courses, especially introductory IS courses, expect the faculty member to lecture to them as the primary means of knowledge transfer (Johnston, Turner et al. 2006). However, lectures do not have to be a passive activity in which the students only listen and occasionally take notes. "Active learning" techniques enhance traditional lectures and allows students to become more engaged in the formal learning process (Bonwell and Eison 1991). In addition, active learning techniques help students to complete "successfully" the course and "carry the course contents throughout their lifetimes and career goals" (Leong 2005, pg. 129).

Lectures can be an effective mode of knowledge transfer if the students are actively engaged in the lecture. In this paper, the use of guided notes is discussed as a means for assisting business students to remain engaged in the lecture through focused note taking. This paper then goes on to extend the use of guided notes for lectures to show how guided notes can be utilized to enhance understanding and retention of material from the textbook.

This paper is structured as follows. In section 2, guided notes are introduced and the impact of guided notes on student perform-

ance is examined. In section 3, the concept of guided notes—which are used in lectures—is extended to textbook reading. A set of guided notes is shown to allow students to glean important background knowledge and major concepts from the textbook reading. In section 4, the development (over three years) of the two types of guided notes in a Systems Analysis and Design course—taught as a business foundation course to all business majors—are discussed and informal survey responses show that guided notes for both reading and lectures are viewed positively by business students. In the final section, a summary of the efforts to use guided notes is given and future efforts to redesign the current guided notes are outlined.

2. LECTURES AND GUIDED NOTES

Lectures are the most efficient way for an instructor to use their time; however, lectures can be disorganized and uneven and allow students to be passive observers (Heward 2001). "Guided notes are instructor-prepared handouts that provide all students with background information and standard cues with specific spaces to write key facts, concepts, and/or relationships during the lecture" (Heward 2001, pg. 1). Guided notes have been found to help learning disabled students—but also those without learning disabilities—to enhance their note-taking skills and, additionally, their success in the classroom (Heward 1994; Austin, Lee et al. 2004).

Effective note-taking in lecture courses is extremely important (Carrier, Williams et al. 1988) and good notes have been linked to higher success rates in student performance (Baker and Lombardi 1985). Research has shown that students who took notes recalled more information than students who just listened (Einstein, Morris et al. 1985; Peper and Mayer 1986). However, note-taking is comprised of a complex array of skills (listening comprehension, discrimination, paraphrasing and organizing and recording) that have been found to vary widely among University students; with students often missing up to 50%of targeted main ideas (Baker and Lombardi 1985).

Heward (2001) cites many positive outcomes with the use of guided notes in University classrooms. With guided notes, students produce more complete and accurate notes, and students are more actively engaged with the course content. Not only are the students "listening, looking, thinking, and writing" (Heward 2001, pg. 2) but it has been shown that students ask more questions in class (Austin, Lee et al. 2002). It is easier for students to identify important information. Finally, guided notes force both the students and the instructor to become more organized and on task.

3. GUIDED NOTES FOR TEXTBOOK READING

Hutchinson and Torres state—in reference to the textbook usage in teaching English—that "the textbook plays a vital and positive part in the everyday job of teaching and learning English, and that the importance of the textbook becomes even greater in periods of change" (Hutchinson and Torres 1994, pg. 315). A similar argument can be made for the use of a textbook to introduce information systems concepts.

Since the textbook often serves to introduce foundational terms and concepts in IS courses, faculty need to provide students with the motivation and tools to understand the textbook material. Many IS textbooks are uninteresting, confusing, and complex to non-majors (business majors) and even beginning IS majors.

In order to combat these problems a set of guided notes was developed for helping students glean the important concepts and background information from the textbook. These guided notes provide cues—actual sentences from the textbook—so that student can find the particular information that has been selected as important by the instructor. Like guided notes for lectures, thought questions and response opportunities can be added to get the student to attempt to link current content to prior knowledge (either from the text or previous lectures). In this way, the guided notes provide a more efficient means for integrating textbook reading within the course.

4. GUIDED NOTES IN SYSTEMS ANALYSIS AND DESIGN

In this section, the content and structure of the guided notes for a Systems Analysis and Design course is examined. The guided notes have gone through two significant revisions since their introduction in the Fall of 2004 and both of these revisions—and the student feedback—are examined. Guided notes were introduced in the Systems Analysis and Design due largely to the make-up of the students. This course is part of the foundational curriculum for all business majors. The composition of this course is therefore primarily general business students with only an occasional IS student. An example of the textbook related guided notes is given in appendix 1. These notes follow from Chapter 4 (on Requirements Gathering) from Valacich, George, and Hofer (2006). In appendix 2 an example of the lecture related guided notes for the same material is shown.

The initial construction of the guided notes combined the important concepts covered in the textbook (Valacich, George et al. 2006) with the important concepts developed through the lectures. Like all guided notes, they contained cues with spaces to write key definitions, facts, and concepts that are important in a Systems Analysis and Design course. The students responded that that they found these notes confusing and hard to follow, primarily because the organization of the guided notes was based on the progression of the lecture material which did not follow linearly with the textbook material. By the end of the semester students reports showed that less than 20% of the students continued to use the guided notes. A revision of the guided notes was completed for the Fall of 2005.

The Fall 2005 revision created two different sets of guided notes; one that covered the textbook material and one that covered the lecture material; to avoid confusion the guided notes for the lecture material were renamed to "scavenger hunts." The response from the student surveys showed that the students generally found the scavenger hunts useful (over 75% of the students found them worthwhile) but were still confused and lost in using the guided notes for the textbook; only 30% of the students found them useful. The students found the cues from the guided notes difficult to find in the textbook and suggested that page numbers for the material be added. While the Fall 2005 revision of the guided notes were structured to reflect a linear progression of the reading material—matching the textbook order—the student were reporting being confused by the given prompts.

For the Fall 2006 semester, the scavenger hunts were left largely unchanged but page number ranges were included in the guided notes for the textbook. This change reflected a compromise between "spoon-feeding" students and providing the students more direction in finding textbook material. In addition, some of the prompts within the guided notes were modified. The response from the students was generally positive. The textbook guided notes were being used by over 90% of the students in the course and the scavenger hunts were begin used by at least 80% of the students. An additional incentive was used in the Fall of 2006 to encourage students to use of the textbook guided notes; students were allowed to refer to their completed notes while taking the subsequent in-class quizzes over the readings. The primary complaint seen on the Fall 2006 surveys—and this appeared in previous surveys as well—was that the textbook guided notes were too long (averaging about eight pages per textbook chapter) and that they took too much time to complete. However, students were completing them and using them to score well on the quizzes.

5. GUIDED NOTES ARE A WORK-IN-PROGRESS

The development of guided notes for the Systems Analysis and Design course is a continual work-in-progress. Even the current set of guided notes will be reworked for Fall 2007 due to a change in text. Multiple changes are planned.

One of the biggest changes that will be undertaken is the tighter integration the textbook and lecture guided notes. As can be seen from the examples in the appendices these notes are not integrated and further integration will show the links between the textbook and the lecture material.

Heward (2001) suggests that guided notes can be enhanced by inserting diagrams, illustrations, and outside resources; Heward

calls these "Big Ideas." Heward (2001) also suggests interspersing questions or problems sets within the guided notes to "give students additional opportunities to respond and receive feedback during the lecture" (Heward 2001, pg. 4). Questions from the textbook and/or the lecture material will be added.

Longer term integration of the guided notes material and exam content will assist and encourage the students to take the creation of the guided notes and scavenger hunts more seriously. Some of the questions placed in guided notes can be extended and placed directly on the exam.

Guided notes in the Systems Analysis and Design course has been positively received by the students. However, the creation of the guided notes can always be improved to assist students in successfully completing the course.

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APPENDIX 1: Guided Notes for Textbook

SDLC Stage 2: Systems Analysis
Activities & Models
Covers Chapter 4: Determining System Requirements

Chapter Preview

In the systems analysis phase of the SDLC a systems analyst determines two things: (p. 119-120) (1) _____

_____

and (2) _____

The three parts to systems analysis are: (p. 119-120)

1.   _____

2.   _____

3.   _____

In requirements determination, analysts (p. 120-122) _____

_____

from sources such as _____

_____

System requirements need to be (p. 120-122) _____

and _____.

Structuring system requirements means (p. 120-122) _____

_____

In gathering system requirements, the systems analyst acts as a(n) (p. 120-122)
_____

The characteristics needed by the systems analyst in performing requirements determination are (you should be able to explain each characteristic as well): (p. 120-122)

1. _____

2. _____

3. _____

4. _____

5. _____

Information gathered in the requirements determination process can take many forms (p. 120-122):

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

In addition to the information gathered, the analyst needs to understand various components of the organization; those components include (p. 120-122):

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

Describe the term *analysis paralysis* (p. 120-122). _____

_____

APPENDIX 2: Guided Notes for Lectures

Scavenger Hunt
Chapter 4 (VGH)--Requirements Determination

1. The objective of the analysis phase of the SDLC is to _____

_____ .

2. The three parts to systems analysis are:

      a. _____

      b. _____

      c. _____

3. In order to ensure an effective solution is created, the business professional must:

(1) _____ ,

(2) _____ , and

(3) _____ .

4. On the other hand, the systems analyst must:

(1) _____ ,

(2) _____ , and

(3) _____ .

4. The three key communication skills are:

(1) _____ ,

(2) _____ , and

(3) _____ .

5. The analyst will gain preliminary information from _____

_____ .

6. The Requirements Definition Document is _____ document that contains

_____ models.   These models are: (1) _____,

(2) _____, and (3) _____.

7.   The   functional   requirements   describe   _____

_____,   while   the

technical requirements describe _____

_____.

8. The functional requirements are derived from _____ and

_____ and the technical requirements are obtained

from _____ and

_____.

9. A business process is defined as _____

_____.   A   process

has:

(1)   _____,

(2)   _____,

(3) _____, and

(4) _____.

10. A prototype is defined as _____.   There are

two types of prototypes: (1) _____ and

(2) _____, but the one used to determine require-

ments   is   a(n)   _____   prototype   because

_____

_____.

11. The three chief characteristics of a prototype are (1) _____,

(2) _____, and (3) _____. The goal of us-

ing prototypes in requirement determination is _____

_____.