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ABSTRACT

A study explained the manner in which a computer-assisted tutorial was built and assessed the utility of the courseware. The tutorial was designed to demonstrate the efficacy of good organization in informing the audience about a topic and provide appropriate models for the presentation of the well-organized informative speech. The topic of the half-hour tutorial was the Underground Railroad. One speech outline was arranged according to chronological order; another was arranged according to a topical pattern including motivation for and means of escape by fugitive slaves. The courseware was evaluated over a 2-semester period. In the first semester, students in two sections of a basic speaking course used the tutorial, and two sections did not. All 83 speeches were graded by the instructor and independent graders. In the second semester, students in four sections were randomly assigned to either treatment or control groups. All speeches were videotaped, and two graduate students teaching other public speaking sections graded the speeches. Results indicated that, overall, exposure to the courseware had no significant impact on outcomes related to giving an informative speech. Results also indicated that students enjoyed using the courseware and believed that they carried away important knowledge from their encounter with the tutorial. Findings suggest reconsidering the strategy of packing into a half-hour encounter with a computer an explication of the informative speech format. The paper concludes with the caveat that new technology is not a panacea, but a useful supplement in education, and that in domains such as public speaking, courseware cannot substitute for the experience of learning from the successful classroom teacher. (Contains 30 references and 2 tables of data. Seven sample computer screen images from the tutorial are attached.) (RS)

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Issues of Development and Implementation

Introduction

"Have you ever heard of a railroad with no railroad tracks, with secret stations, and where all the conductors were considered criminals?" This quote, a sample rhetorical question taken from a computer-based tutorial for a course in public speaking, leads to the pedagogical question: can multimedia courseware based in CD-ROM technology serve as an effective means of helping students master public speaking skills?

Against the backdrop of the debate over the efficacy of computer-aided instruction (e.g., Kulik, Kulik, and Cohen, 1980; Clark, 1985; Kulik, 1985), educators have attempted to use CAI to enhance learning in areas as diverse as biology (More & Ralph, 1992), economics (Reclam and Sexton, 1994), and library research (Bourne, 1990). Assessment of the results of these and other efforts have led investigators to arrive at mixed conclusions regarding the effectiveness of CAI. Several authors note the limitations of CAI. Bourne's research found that students enjoy using CAI for library instruction more than learning through a librarian, but that the same studies failed to indicate differences in amount of learning. Carrington (1993) found that students who used CAI on laboratory techniques and calculations had higher scores on the post-test, but that the differences did not achieve significance. Chung & Reigeluth (1992) report the inconclusive, and often negative, findings on the effects of CAI on low-ability students. McKnight, Dillon, &

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Richardson (1990) found that subjects "performed more accurately with linear formats" than those who used a hyper-media format in answering 12 questions related to the text.

Other studies have demonstrated the effectiveness of CAI. Leeds, Davidson, & Gold (1991) indicate that "developmental students' achievement levels for the CAI group were equal to or statistically significantly better than their non-CAI counterparts." Ramaiah & Meadows (1993) documented the "superior performance" of students trained with hypertext medium over those who were not, in retrieval time, number of questions answered, and the number of correct answers. More & Ralph (1992) indicate that the group of biology students using CAI for the laboratory component of the course gained "significantly in the change between pretest and posttest performance."

In the field of speech, Cronin's work (Cronin, 1993; Cronin & Grice 1993; Cronin, Grice & Olsen, 1994) has demonstrated some of the positive effects of CAI. Cronin looked at a spectrum of communication topics including speech apprehension, constructing speaking outlines, and listening skills; he used interactive-video instruction to engage students "through humorous graphics, visual memory cues, and workbook exercises" (Cronin, Grice & Olsen, 1994, p. 45). This approach is built upon a MacIntosh platform using laserdisk as the video source.

Our efforts build upon Cronin's work, but our purposes and technology differ to some degree. First, our focus is quite narrow; our tutorial is designed to link with the specific concepts, language, and style of the Lucas (1995) text used in our basic public speaking course. Second, since we already augment the Lucas text with our own course book specifically designed to help students get the most out of this text, the computer-aided tutorial is primarily intended to

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re-inforce and recapitulate important concepts and strategies. This approach is consonant with Cates' (1992) recommendation that computer-aided tutorials ought dovetail with specific "curricular emphases" and "teaching practice" (p. 5); our intent is to build on classroom discussion and student reading assignments to "reinforce and extend the user's understanding" (Reclam & Sexton, 1994, p 379). Third, we are building the tutorial unit by unit; currently we are testing a module to address the specific issues facing students preparing the informative speech; we will move on to other types of speeches once this unit is developed satisfactorily. Finally, the technology basis for this project is CD-ROM rather than the laserdisk; this distinction bears further discussion.

CD-ROM enjoys both immediate and long-term advantages over laserdisk. CD-ROM is becoming a standard and relatively inexpensive component of the current generation of computers; further, CD-ROM is increasingly the medium of choice for distribution and use of software. Laserdisk, on the other hand, is a special-purpose "add-on" technology of limited value beyond video playback; additionally, even proponents of the laserdisk acknowledge it will become obsolete once manufacturers agree upon standards for digital video disks and begin to produce this technology. Finally, the advantage of superior picture quality and ease of use that laserdisks have enjoyed is being rapidly eroded by the development and adoption of improved video compression schemes such as MPEG and greater sensitivity on the part of computer manufacturers to issues of software and hardware compatibility (as demonstrated by Windows95 "plug and play" capability).

The purpose of this paper is, then, to detail the rationale for developing a CD-ROM-based courseware for public speaking, to explain the manner in which this courseware has been built,

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and to report the results of a study assessing the utility of the courseware.

Rationale

There are several arguments to support the position that multimedia technology is especially suited to supplement the teaching of public speaking. First, the simultaneous presentation of written, visual, and audio information makes the material accessible across different modalities (Frey & Simonson, 1990; Rowland & Stuessy, 1988). Students can see, hear, and read each part of the speech simultaneously, with the following positive effects: 1) the written material allows students to see the coordinated and subordinated points of the speech and their relationship to the oral presentation, and learners who favor the written word are reached at their most favorable point of entry; 2) the visual presentation enables the students to see the nonverbal elements of delivery; 3) the audio information presents the content of the speech through another modality and allows the student to gauge the impact of inflection, enunciation, and other technical verbal elements of delivery.

Second, as Menzel and Carrell (1994) point out, "[a]n important but underemphasized aspect of preparation is simply watching other speeches." Students in public speaking classes often ask for samples of what is expected; they want to see someone demonstrate the speech assignment. While showing students a videotaped speech is one effective way of presenting such samples, especially during instructor-guided class discussion, videotape does not facilitate student analysis in a tutorial setting. Watching a well prepared, well delivered speech is something like watching an Olympic skater on television glide across the ice. The performance seems effortless until it is broken down into its component parts by an expert commentator who is able to explain the performer's hard work and skill. Computer technology enables the

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conversion of an entire speech recorded on videotape to computer files or "clips " These short clips which isolate specific techniques are called and displayed by a simple click of the mouse button. When a speech segment is placed alongside the expert commentary of the instructor, the student is enabled to understand a complex and otherwise mystifying performance. Introduced to an abstract principle, such as the explanation of a rhetorical question, the student then observes a concrete illustration of that principle in the form of a video segment taken from a sample speech. This coupling of the abstract principle with a specific example generates a full circle of comprehension.

Third, interactive tutorials allow students to digest the material at their own pace, keeping them alert and involved in the task of learning (Bourne, 1990; Cronin, 1994; McLellan, 1992). The program will not move forward automatically, they must click the mouse to see the next screen or view the video. This "student control of pacing," as one student commented, helped keep her "more focussed" (Bourne, 1990). As in Cronin's study, most students found the tutorial helpful, simple to use, and stimulating, while several students indicated that they preferred it over a textbook (94). Additionally, as students feel the need, they can backtrack and review in effect personalizing their learning experience. Thus, the effort necessary to propel the program forward, as well as the freedom to pause when necessary or move back, help motivate students to remain attentive.

Tutorial Description

The first tutorial we have developed is designed to assist students to deliver a successful informative speech. Toward this end, we had two goals: 1) to demonstrate the efficacy of good organization in informing the audience about a topic; 2) to provide appropriate models for the

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presentation of the well-organized informative speech. The subject we chose to illustrate principles of good public speaking is the Underground Railroad. This topic was chosen for its rich historical content which lends itself to numerous patterns of organization as well as providing abundant illustrative material. Historical works by Siebert (1989), Gara (1961), and Blockson (1984), as well as the first hand accounts of fugitives such as Frederick Douglass (1968), Harriet Tubman (in Blockson, 1984), and Henry "Box" Brown all provide gripping accounts from this tumultuous period. These stories of adventure and intrigue form a fascinating part of our nation's heritage.

Two patterns of organization were constructed from the research on this topic. One speech outline was arranged according to chronological order including the origins, the heyday, and the end of the Underground Railroad. The other outline was arranged according to a topical pattern including motivation for and means of escape by fugitive slaves. These outlines, which serve as the basis for the body of the speeches, demonstrated close attention to principles of coordination and subordination and to the necessity of appropriate source citation. Our plan is to expand the range of available patterns to include geographic and causal forms of organization.

While concern over good organization and proper citation drove the construction of the tutorial's material on the body of the speech, the tutorial drew heavily on the specific concepts and principles Lucas sets out for the introduction, conclusion, and transitions. This constitutes organization at the strategic level. The introduction seeks to engage the attention of the audience. The tutorial presents five parts, namely, an attention getting statement, audience adaptation, establishment of credibility, statement of thesis, and preview of the main points. A treatment of transitions demonstrates ways to bridge between main points, and remind the

listeners where they are in the speech. The conclusion of the speech mirrors the introduction by providing a restatement of the thesis, a review of the main points, and a decisive closing line.

Once the material to be used in the tutorial had been developed, we used Asymetrix's Multimedia Toolbook to create the means by which students would access information. Toolbook allows users to navigate through our tutorial by "clicking" on buttons which invisibly execute the program's internal commands. For instance, these buttons are labeled for the user as directions (e.g., "Next") or topics (e.g., "Attention-getters). By tailoring the labeling of the buttons and the range of available options, we created a template which guided the students first through the overall speech framework and then through successively finer levels of explanation concerning the individual parts of the speech.

At the finest level of detail in the tutorial, students viewed a model student actually presenting that portion of the speech. The video for this modeling was obtained by taping an undergraduate student delivering the speech and digitizing these video segments as computer-readable files. This student used to model the speeches had been recommended by several professors has having excellent delivery; consequently, students can see another student demonstrate good public speaking skills. Illustrative screens from the tutorial are included in the appendix.

The tutorial enabled students, therefore, to see basic concepts of public speaking both explained and modeled. Here is an example of how the tutorial moved from general requirements of public speaking to modeling specific successful instances of public speaking. In laying out the elements of the introduction, the tutorial points out the necessity of gaining the audience's attention and making a favorable first impression. The tutorial continues, "[t]he

question is, what is the best way to gain your classmates' attention?" Several possibilities are listed, including the use of a rhetorical question. When the student comes to the "Rhetorical Question" page, detailed instructions concerning the rhetorical question are presented. Then, the student can click on a "Next" button, leading to a screen displaying the text of an appropriate rhetorical question ("Have you ever heard of a railroad with no railroad tracks, with secret stations, and where all the conductors were considered criminals?") and a blank stage with a "Play" button beneath it. When the student clicks "Play," the video of a student modeling the rhetorical question appears in the window. The Appendix includes sample screens from this portion of the tutorial as well as screens from the body of the speech.

A consideration introduced in the discussion of navigation requires more attention. The issues concerning decisions about how to allow users to navigate through a program are complex. At one extreme, users can be allowed to navigate from any point in a program to any other point; at the other extreme, navigation can be restricted such that only a predetermined course of action will be allowed. The first time a student uses our tutorial, navigation is restricted well toward the latter limit. The tutorial is set up as a guided tour or slide show presentation, with only movement forward or backward through successive menu, instructional, and demonstration screens allowed. Although Multimedia Toolbook enabled us to create a program allowing the student to move freely via hypertext through the range of issues we wished to cover, we opted for a restricted, guided-tour approach to navigation for first-time users for the following reasons.

Since our primary focus early in the course was on providing basic information and good modeling to students faced with the challenge of public speaking, creating a complex web of

associations (which would be highly desirable for a data-base, for instance) was considered counter-productive. Given the introductory nature of the material, we wanted to be sure students encountered all the material in the best sequence for learning and with the least amount of distraction. This approach is consistent with McGrath's (1992) findings which indicate "low-ability students do not do well under a high degree of learner control" (p. 530). Besides keeping students on the job at hand (Reid & Mitchell, 1990), an additional advantage from this form of presentation is that students are guided by practice through basic navigation (Ramaiah & Meadows 1993).

In terms of teaching public speaking skills, the following advantages accrue to the guided-tour approach: 1) controlled sequencing allows for presentation of techniques in the abstract to be immediately followed by well-modeled examples; 2) students can replay video clips to absorb fine points of delivery and then to back up easily to prior screens to review and clarify principles once the examples have been displayed. Our plans for this module include permitting more free navigation once the tutorial has been viewed once as a whole; such an option would allow students to return to selected material for additional study and review. A prior familiarity with the basics of navigation provided by the guided tour will give students more confidence as they are allowed more options.

Method

The courseware was evaluated over a two semester period. In the first semester, four sections of the basic public speaking course (taught by the same instructor) were used. The courseware was assigned to two of the sections; the other two sections did not have access to the courseware. Students assigned to use the courseware signed up for computer time such that they

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used the program several days before they were to give their informative speeches. When students arrived for the tutorial, they were guided to the computer and given, if necessary, basic instruction in the use of the mouse. Once they began using the program, students were left alone to work through the tutorial. After students completed the tutorial, the lab assistant interviewed them to determine perceived strengths and weaknesses of the courseware.

The instructor graded the speeches from all four sections (83 speeches). To assure that the instructor had not graded sections differently according to their use of the courseware, independent graders (graduate students who also taught the same public speaking course) evaluated a 50% sample of the student speeches as well.

In the second semester, four sections taught by the same instructor were used again, but this time students from all sections were randomly assigned to either treatment (computer-use) or control groups. Having determined that students were spending about half an hour with the computer tutorial, we assigned students in the control group to work through a topic selection and outlining exercise of about the same duration. The student use of the computer tutorial was unchanged from the first term.

All speeches from the four sections were videotaped, and two graduate students teaching other public speaking sections graded the speeches. In order to assess intercoder reliability, 20% of the speeches were graded by both coders. In addition to assigning a letter grade to each speech, the graders evaluated items from our informative speech check-sheet.

Results

In the first semester, independent coders scored 52% of the sampled speeches the same as the instructor (A = 4.0); they scored an additional 33% one letter grade *lower* than the instructor

(see Table 1). Our experience with independent evaluation of speeches (as a part of classroom quality control) is consistent with this pattern; independent coders do not have the same investment in the students and consequently tend to grade borderline cases a bit more harshly. To ascertain if the differences between instructor and coders was attributable to the instructor's knowledge of a student's use of the computer tutorial, we examined the *differences* in grades grouped according to use of courseware. The instructor tended to grade courseware users more harshly than did the independent coders; instructor bias in favor of courseware users was not an issue during the first semester.

Table 1
Differences in Grades between Instructor and Independent Coder
(Semester 1)

| | Number | Percent |
|---|--------|---------|
| Instructor one grade lower than coder | 2 | 4.8 |
| Instructor and coder the same | 22 | 52.4 |
| Instructor one grade higher than coder | 14 | 33.3 |
| Instructor two grades higher than coder | 4 | 9.5 |

In the absence of instructor bias in grading, grades for all students in the four sections were compared to determine the effect of using the courseware. Courseware-using students averaged 2.75 (B-), while non-courseware-using students averaged 2.45 (C+). While the difference is statistically significant ($t=2.09$, $df=72$, $p=.02$, single-tail), it is difficult to argue that the difference is meaningful. Further, while we would assert that the sample is a random cluster one, allowing the N to be computed according to the number of students involved, others have

argued that the section should be the sample unit (N = 4), in which case there is no statistically significant difference.

In the second semester of this study, the courseware was largely unchanged, but we did modify the methodology substantially. Two independent coders graded all speeches (A=4.0) and rated individual elements of each speech (satisfactory/unsatisfactory). The intercoder reliability is reported in Table 2.

Table 2

Intercoder Reliability (Second Semester)

| | |
|-------------------------------|------|
| Adapted subject to audience | 0.87 |
| Established credibility | 1.00 |
| Announced thesis | 0.87 |
| Main points clear | 1.00 |
| Main points supported | 1.00 |
| Sources cited | 1.00 |
| Use of transitions | 0.87 |
| Audience adaptation (in body) | 1.00 |
| Summarized main points | 0.86 |
| Closed decisively | 0.76 |
| Articulation | 0.74 |
| Eye Contact | 0.87 |
| Spontaneity/Enthusiasm | 0.76 |
| Overall grade | 1.00 |

Note: Reliability coefficient = $1 - (\text{observed discrepancies} / \text{expected discrepancies})$ based on

16 comparisons.

T-tests performed on each of the above measures revealed statistical significance for only adaptation of the subject to the audience ($t=1.72, p<.05$, one-tail). Given the number of t-tests performed, this single finding is not particularly meaningful. Overall, exposure to the courseware had no significant impact on outcomes related to giving an informative speech.

Finally, student comments about the courseware were similar across the two semesters. In response to the question, "What did you find most interesting about this tutorial?," students commonly replied that they enjoyed seeing and hearing the speaker, seeing speaking techniques illustrated (modeling), and being able to compare the written outline with the actual performance of the outline. In response to the question, "In terms of learning how to structure a speech, what was most helpful?," many students stated that enumerating and then demonstrating a range of introductory and concluding tactics was most helpful. The most frequently mentioned aspect of the courseware needing improvement involved simplifying the very detailed outline of the body of the speech.

Discussion

Overall, we are disappointed that we have failed to demonstrate a unique contribution by our courseware to student performance of informative speeches. The small effect noted in overall grades for the speeches in the first semester vanished when we controlled for time on task; in short, more time spent preparing for a speech (computer or paper-and-pencil) yields slightly improved performance. Further, the courseware did not seem to impact individual aspects of preparation or performance as evidenced by our coders inability to distinguish speeches on any element from our check-sheets. Despite the lack of evidence for the efficacy of

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the courseware, however, we still have the very favorable comments of the students using the courseware. Students enjoyed using it and believed that they carried away important knowledge from their encounter with the tutorial.

These results cause us to reconsider our strategy of packing into a half-hour encounter with the computer an explication of the informative speech format, principles of outlining, and issues of presentation...all within the limitation of "guided tour" navigation. As we begin the process of re-design, we are contemplating the idea of splitting these elements into separate tutorials that will offer a preferred navigation scheme but will also allow for student browsing. The degree to which the tutorials for the informative speech can expand are limited, however, by reasonable expectations for student time commitment during the two week preparation period for this speech.

In the end, student response to the courseware tells us that our goal is worth pursuing. The benefits to be gained by providing an enjoyable and effective means of encountering useful information and positive modeling extend far beyond our classrooms. If multimedia courseware can successfully do these things employing computer-readable files only, then a myriad of possibilities emerge for speech educators. Thinking in terms of distribution alone, developers who wish to share courseware will be able to make it available directly to anyone connected to the Internet. For individuals who have a serious interest in distributing programs, establishing dedicated Gophers or World-Wide Web home pages will make access to courseware easier than requesting supplemental materials from conventional book publishers.

Despite our optimism about the potential of such courseware, however, we want to close this paper with a statement of concern. Too often, educators have viewed new technology as a

panacea. For us, courseware is best understood as a minor but useful supplement in education. Especially in domains such as public speaking, courseware cannot substitute for the experience of learning from the successful classroom teacher, for the experience of giving speeches in front of live, attentive classmates, or for the experience of careful, thoughtful discussion following the speech. Our excitement over courseware comes from our belief that it can augment nicely the critical, face-to-face classroom experience.

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Organization of the Speech

In this unit you will explore the structure of an informative speech. Most of the principles apply to any speech you will give in the future. The three basic parts of a speech are the introduction, the body, and the conclusion. To learn more about each part of the speech, click the active button.

Introduction

Body

Conclusion

Prior Screen

Introduction

In the introduction to the speech, you will attempt to win a favorable hearing for your message. An introduction has five basic parts, which generally follow the order indicated by the buttons on your right. Click on the active button to discover more about each particular part.

Attention Getter

Audience Adaptation

Credibility Statement

Statement of Thesis

Preview of Main Points

Prior Screen

Attention Getting Options

The audience's attention will be focused at the start of your speech. A favorable first impression will pay off throughout your presentation. The question is, what is the best way to gain your classmates' attention? Here are a few possibilities:

1. a Rhetorical Question,
2. a Striking Statement,
3. a Story,
4. an Unusual Statement,
5. the Use of Humor,
6. or a Shocking Statistic.



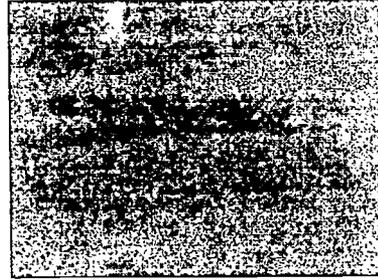
Rhetorical Question

One option to consider is a rhetorical question which the audience is not expected to answer out loud. Either the answer will be obvious, or if it isn't apparent, the question will arouse curiosity until the presentation provides the answer.



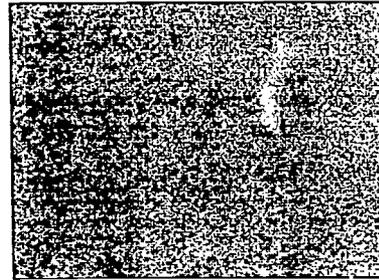
Rhetorical Question

Have you ever heard of a
railroad with no tracks,
with secret stations, and
whose conductors were
considered criminals?



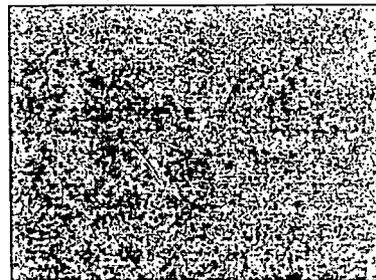
Next
Prior Screen

- II. Those slaves who chose to flee used a variety of methods; these methods made for an effective escape.



Next
Prior Screen

- A. Slaves waited to leave until they wouldn't be missed for several days.
1. Weekends and holidays served this purpose.
 2. For example, William Still recorded the story of Barnaby Grigby, and Mary Elizabeth, his wife, Frank Wanzer, and Emily Foster who escaped with their master's carriage from Loudon, County Virginia on Monday, Christmas Eve, 1855 (Still 124).



Next
Prior Screen