College Students' Attitudes Toward Oral Lectures and Integrated Media Presentations

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As more and more activities in the classroom are orchestrated with computers, educators are realizing that the computer is more complex and more capable than other media such as filmstrips or overheads. Computer systems are currently moving toward integrating all other media within their own resources (e.g., CD-ROM, video, and audio). Therefore, educators are introducing more and various forms of software and computer-driven media into their classroom activities (Tolhurst, 1995).

Hypertext, hypermedia, multimedia, and integrated media are examples of organizational, retrieval, and presentation systems being incorporated. These systems make information available at the stroke of a key on a computer keyboard. There is much excitement among educators and also confusion as to the best ways in which to use these systems (Allred & Locatis, 1989; Anglin, 1995; Balajthy, 1990; D'Ignazio, 1989; Marchionini, 1988).

We have shifted from an information society to a post-information society in which information access is becoming more personalized. According to Negroponte (1996), individuals of this post-information society will deal with huge amounts of information that are generated and disseminated. Creating ways to manage this information is a tremendous undertaking. As educators, we must work to manage this information overload by developing and refining electronic systems for data input storage and retrieval.

Moreover, educators must be sensitive to the idea that students' motivation to learn is influenced by attitudes (Fenneman, 1973; Lamb, 1987; Levy, 1973; Simonson, 1979; Simonson & Bullard, 1978). According to Fleming and Levie (1978), attitudes help shape subsequent behaviors that determine our actions, such as attention to and acceptance of instructional messages. People pay attention to what they enjoy and ignore or misinterpret what they dislike. Furthermore, information is retained when it is consistent with attitude and disregarded when it is in conflict with attitude.

There is evidence that the medium used to deliver persuasive messages is hierarchical (Simonson, 1979). Some types of media may be more effective in changing attitudes. For example, several researchers have claimed that the media most effective in changing attitudes is motion (i.e., films versus slides). Simonson et al. (1987) reported in a series study that attitudes can be modified by mediated messages. Their research found that authentically delivered messages were more effective in creating attitude change than messages presented in a less authentic way.

New opportunities abound because computers are becoming a component of the classroom learning environment. Moreover, computers (with their related peripheral devices) are accessible, available, and increasing in numbers.

Teachers have many presentation methods from which to choose that allow them to actualize instructional objectives (Hensen, 1988). Using integrated media for presentations allows teachers to literally bring the world to the classroom with the stroke of a key.

Lecturing and Using Media

Kim and Kellough (1987) identified two "avenues" for consideration in selecting a method for teaching content or processes. First, the *delivery mode* whereby the instructor sees that information is delivered to the students. This is referred to as "the traditional or didactic mode where knowledge is passed on to the learners via the teachers, or from content reading in a textbook, or both" (p. 202). Second, the *access mode*, where the teacher provides students access to "information and experiences" so "they develop knowledge and skills" (p. 202).

The strengths of the traditional delivery mode as defined by Kim and Kellough (1987) are(a) time efficient, (b) controllable by the teacher, and (c) predictable and manageable student learning. These three strengths are also looked at as being the weaknesses of the access mode. The weaknesses of the delivery mode are (a) the stifling of creative thinking, (b) student's self-concepts are not addressed, (c) little student involvement in decision making, and (d) lack of intrinsic sources for student motivation. Again, as with the strengths noted previously, the weaknesses for the delivery mode are strengths for the access mode.

Zenger and Zenger (1990) defined the traditional lecture as "an oral presentation given to a class by the teacher" (p. 31), while Ericson (1960) stated that the lecture or "telling" method is the method of teaching outside of manipulative work. Teachers are comfortable with the traditional method because they remain in control of content and time (Kim & Kellough, 1987). For the purposes of this study, traditional instruction was the lecture and textbook method of instructional delivery.

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Integrated Media Instruction

There has been much confusion surrounding the exact meanings of the terms *multimedia*, *hypertext*, *hypermedia*, and *integrated media* since there is no generally accepted definition for any of them (Tolhurst, 1995). Often, working definitions are developed depending on the point of view of whoever is doing the defining. For example, cognitive psychologists may define these terms based on the effects on human learning. Computer scientists may define these terms based on user interfaces. For the most part, the terms and their applications are still evolving. The following descriptions and applications of these terms are placed in perspective for educators.

Multimedia is not a new term. In fact, according to Kozma (1991), this term has been used for several decades and only recently has been linked to the use of computers. Multimedia only specifies the use of multiple media formats to present information. Multimedia definitions do not include nonlinear links between information. Multimedia becomes interactive when it is orchestrated using a computer.

Tripp and Roby (1990) defined hypertext as a nonlinear, multidimensional, semantic structure in which words are linked by associations. According to Norman, Gentner, and Stevens (1976), memory and hypertext have some commonalties. Associations that we make about an idea are comprised of a set of attributes. This set of attributes could be described as schema. Schema relate to memory in the same way that nodes are a part of hypertext.

In addition to multimedia and hypertext, an electronic system being incorporated into the classroom today is hypermedia. Hypermedia implies multiple forms of communications media that are controlled, coordinated, and integrated by the microcomputer. Hypermedia is an extension of hypertext that integrates graphics, animation, audio, and video with text (Heller, 1990; Marchionini, 1988; Tsai, 1988–1989). The most important characteristic of hypermedia is its ability to encourage students to be proactive learners. Hypermedia provides "a tool that ... immediately gratifies students' intellectual curiosity" (McCarthy, 1989, p. 27).

Boone and Higgins (1991) referred to multimedia, hypertext, hypermedia, and integrated media as terms with overlapping concepts. They felt that these new terms and definitions were best presented and examined collectively. When looking at the definitions of multimedia and hypermedia, it is obvious that there is an overlapping of concepts. The Cognition and Technology Group at Vanderbilt University (1993) defined integrated media as the linkage of text, sound, video, graphics, and the computer in such a way that the users' access to these various media is nonlinear and virtually instantaneous.

Integrated media technologies are used in higher education in many different ways. For example, integrated media technology used at the front of the classroom to support classroom presentations is a more flexible and versatile update of traditional audiovisual media. Also, this technology is used in student groups for collaborative learning as well as by individual students for independent learning (Lynch, 1993). For the purposes of this study, integrated media instruction utilized hypermedia and interactive multimedia as well as lecture and text presentation.

Attitudes

Kelly, Pascarella, Terenzini, and Chapman (1976) postulated that instructional development activities "ought to have some measurable, positive effect on the attitudes of students" (p. 1). These researchers developed the Adjective Rating Scale (ARS) to measure students' attitudes toward courses and programs. After four years of testing the ARS on college students, a factor analysis revealed five dimensions: Interest Value, Practical Value, Emotional Appeal, Dullness (Apathy), and Difficulty (Kelly et al., 1976). Twenty-four adjectives were used to describe a course/program on a 4-point scale: 1 = extremely, 2 = very, 3 = somewhat, 4 = not at all.

The research reported by Kelly et al. (1976), when developing the ARS, further substantiates the findings of Fleming and Levie (1978), Kozma (1991), and Simonson (1979). Attitudes can influence the learning process. For the purposes of this study, attitude was scored on the ARS (Kelly, 1976).

WHAT WE DID

The purpose of this study was to determine whether or not there was a difference in attitudes of college students when an integrated media system was used as the method of presentation as compared to the oral lecture method in introductory computer information systems classes.

The study involved comparisons between an experimental group (N = 161), which received integrated media instruction presentations as treatment, and a control group (N = 206), which received oral lecture presentations. Both groups were given a pretest and a posttest to measure attitude of the course objectives. Participants were expected to com-

plete all of the same course requirements for the introductory computer information systems course. To strengthen the design of this study, the groups were compared on pretest scores.

Integrated Media Presentation Group

Subjects in the integrated media group received instruction from the instructor who used an IBM-compatible computer in conjunction with a transparent active matrix color liquid-crystal (LCD) panel. The LCD panel was placed on an overhead transparency projector, and the PC display was shown on the screen. A VCR was used to display video segments via the color panel. Computer application problems were reviewed in class on the computer prior to each assignment. These included applications for Procomm, Internet, DOS, LOTUS 1-2-3, Wordperfect 5.1, and dBASE III+. Selected students did computer application problems on the computer during reviews.

Class presentation concepts included the use of Asymmetrix ToolBook, Microsoft PowerPoint for Windows, Microsoft Visual Basic 3.0, and other Microsoft Windows-based software. These presentations were interactive in terms of student requests to "repeat" information or "see more" information.

Field trips to selected computer facilities were videotaped by the instructor and viewed in the class. Some material was presented in computer-based video and some material was viewed via VCR.

The DOS operating system, Microsoft Windows, Microsoft PowerPoint, and PODIUM Presentation Manager software (Hofstetter, 1993) were used to manage the integrated media presentations. PODIUM is a hypermedia presentation software that lets the user use a text editor or word processor to develop hypermedia presentations. This software allows the instructor to place any picture on the computer screen, including 35mm slides, flat art, video, computer graphics, and clip art. Text files, pictures, waveform audio files, animation sequences, digital video files, and application programs can be linked to one another. Furthermore, linkages are possible between any multimedia object, including color images, audio soundtracks, and full-motion video. This presentation system has distinct hypertextual capabilities by providing linkages between any line of text to any other text (Hofstetter, 1993). Students also utilized the textbook and laboratory activities.

Oral Lecture Group

The oral lecture group prepared for the Introduction to Computer Information Systems #101 posttest by the traditional textbook, lecture, and lab activities. Course presentations were not supported with any electronic integrated media.

Oral presentations were given by the instructor. The main purpose of each class presentation was to present a large amount of information in a short period of time. The class presentations were formal and not accompanied by visual aids other than the chalkboard. Student participation was limited, and the presentations were teacher oriented.

WHAT WE LEARNED

The analysis of variance (ANOVA) was used to test for differences ($p < .05$) in attitude toward the course presentation between those students instructed in a traditional manner and those students instructed through integrated media in Introduction to Computer Information Systems #101 classes. To measure this, the students' factor scores and mean total scores on the Attitude Rating Scale (ARS) were used.

The subjects' responses to the items on the ARS were determined based on the following scale: 1 = extremely, 2 = very, 3 = somewhat, and 4 = not at all. This scale was used to determine scores based on the subjects' responses to the following five factors: Practical Value, Emotional Appeal (Excitement), Dullness (Apathy), Interest Value, and Difficulty. Factor scores were also added together to determine a total ARS score. (ARS scoring procedure note: Item 12, Dullness, is reverse scored; Item 23, General, is not scored; Item 24, Useless, is reverse scored.)

One significant difference was found between the control and experimental groups. On the ARS posttest, the students' scores for the Dullness factor indicated that the control group students found the course presentations to be less dull ($p < .05$). Further analysis with analysis of covariance (ANCOVA) was done to adjust the Dullness factor posttest scores for initial differences on the Dullness factor pretest scores. The adjusted scores were also found to be significant ($p < .05$).

The scores for the ARS administered at the beginning of the course show that students expected the class to be very practical in value and somewhat emotionally appealing in nature irrespective of the treatment groups. Both groups expected the class presentations to be somewhat dull or were somewhat apathetic about the class. The Interest Value factor scores for both groups were in the extreme range, that is, extremely interesting. The Difficulty factor scores show that learners expected the classroom presentations to be only somewhat difficult, irrespective of treatment.

The scores for the ARS administered at the end of the course show that the students found the class to be very practical in value and somewhat emotionally appealing in nature irrespective of the treatment groups. Both groups scored the class to be somewhat dull or were somewhat apathetic about the class. The Interest Value factor scores for both groups were in the extreme range, that is, extremely interesting. The Difficulty factor scores show that learners found the classroom presentations only somewhat difficult, irrespective of treatment.

There was not a statistically significant difference in total attitude toward the course presentations between those students instructed in a traditional manner (control group) and those students instructed through integrated media (experimental group) in Introduction to Computer Information Systems #101 classes ($p < .05$). However, according to the ARS posttest scores for the Dullness factor, the students instructed using traditional class presentations found the course presentations to be less dull ($p < .05$).

WHAT IT MEANS

In this study the findings suggest that the type of class presentation had little or no effect on the students' total ARS attitude scores. However, regarding the Dullness factor, the students who were instructed using oral lectures found the class presentations less dull ($p < .05$). These findings support what Simonson and Maushak (1996) stated: "Attitudes are predispositions to respond, and media are primarily carriers of information" (p. 1013). In other words, it is the method not the medium that influences the psychological processes that allow learning to take place. Furthermore, in a review of classroom technology since 1920, Cuban (1986) found that many researchers believe that teachers' inabilities to adjust their teaching styles to get the most out of the new technologies was the reason for technology's failure.

Early attempts to reform education with the use of technology failed because reformers underestimated the importance of the teacher in the classroom (Hannafin & Savenye, 1993). According to Hannafin and Savenye (1993), changes in teaching and learning are prerequisite for changes in technology integration.

Further studies would be useful in determining the effectiveness of integrated media presentations. Studies are needed to address the following issues: cost effectiveness, the use of various instructional media for different types of subject matter, different types of students, and different instructional methods.

Using integrated media for presentations can allow teachers to literally bring the world to the classroom with the stroke of a key and link text to other text, still pictures, dynamic video, audio clips, or to networks anywhere in the world, just to name a few possibilities (Hofstetter, 1993). To make this a reality, educators must continue to investigate appropriate ways to introduce new technologies into the classroom.

The findings of this study are in agreement with Kozma (1991), who contended that students will learn a particular task regardless of the delivery system. This study also raises questions regarding the cognitive effects of recently developed learning environments such as integrated media. Therefore, further research is necessary to better understand how media influence attitude and learning.

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