Interactive Video Instruction for Teaching Organizational Techniques in Public Speaking

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Research, though limited, generally supports the conclusion that effective organization of an oral message increases recall (Baird, 1974; Daniels & Whitman, 1981; Johnson, 1970; Thompson, 1967; Whitman & Timmis, 1975), attitude change (McCroskey & Mehrley, 1969), positive evaluations of the speech (Thompson, 1967), ratings of interest level (Thompson, 1967), and speaker credibility ratings (McCroskey & Mehrley, 1969). A survey of recent public speaking texts reveals that organization is seen as a key to speaker success and outlines and effective use of the four S's (signpost, statement, support, and summary) are seen as fundamental to organization (e.g., Beebe & Beebe, 1991; Grice & Skinner, 1993; Sprague & Stuart, 1988; Sproule, 1991; Verderber, 1991).

Although many academic disciplines use IVI to supplement traditional instruction, the communication discipline has been slow to integrate IVI. Limited software in communication and the absence of empirical data to support applications of IVI in communication have impeded the use of IVI in communication instruction.

To address these needs, the State Council of Higher Education for Virginia awarded a $200,000 grant to Radford University in 1990 to develop and assess IVI modules in oral communication. The major focus of this grant was to determine if IVI modules could provide effective instruction in
basic oral communication skills outside of class, thus freeing instructors to devote more time in class to discussion, performance, feedback, and evaluation.

Many research studies comparing learning outcomes from IVI with learning outcomes from traditional instruction (e.g., lecture) have been conducted. Two recent meta-analyses (Fletcher, 1990; McNeil, 1989) reported that IVI produced significantly greater achievement and performance gains than traditional instruction. Additional comparative research has been discouraged for two major reasons. First, most IVI (including the IVI used in this study) is designed to supplement, rather than supplant, traditional instruction. Research regarding the relative effectiveness of IVI versus traditional instruction is of limited value in such applications. Second, due to the self-paced, interactive nature of IVI, it is impossible to ensure exact equivalence of the lessons in studies comparing IVI versus traditional instruction. Leaders in educational technology research have called for a new research focus. They have recommended that future research should investigate the instructional messages and strategies that can be conveyed effectively via IVI, rather than focusing on comparisons of IVI with alternative delivery systems (Clark & Sugrue, 1988; Matta & Kern, 1989; Reeves, 1991).

Thus, this investigation does not attempt to compare IVI with traditional instruction. This investigation assumes that competent instruction in organizational techniques in public speaking classes is effective. The purpose of this investigation is not to determine if IVI is superior to competent conventional instruction (partly because there are so many approaches to "conventional" instruction). The assumption of this investigation is that there is too little time in a typical public speaking class to provide all the cognitive instruction, speaking opportunities, feedback, and evaluation needed to produce competent speakers. Can some of this cognitive instruction be provided outside of class? The instructional goals for the IVI modules were to enhance students' cognitive
learning regarding the organizational techniques taught in a typical public speaking class. This research seeks to determine if the messages and strategies in the IVI modules on organizational techniques produce significant learning outcomes. If these IVI modules are effective in teaching students to construct speaking outlines and develop key ideas in a speech, instructors could modify their instructional approach to these topics. They could require students to use IVI on these topics outside of class and devote more time in class to discussion, performance, feedback, and evaluation.

This article describes the IVI modules in "Constructing Speaking Outlines" and "Developing Key Ideas: The Four S's" that were designed to teach the organizational techniques recommended by public speaking experts. It details the assessment of these modules and offers implications for using these IVI programs to supplement traditional instruction in public speaking.

IVI IN ORGANIZATIONAL TECHNIQUES

Two IVI modules were developed to teach basic organizational techniques in public speaking. The modules are designed to be used outside of class. They provide individualized, self-paced instruction and assume no prior knowledge of the subject matter. Each module can be completed in less than one hour.

The level III videodisc-based IVI "Constructing Speaking Outlines" lesson was divided into three parts: (a) principles of outlining, (b) application tests on basic outlining principles, and (c) principles of constructing speaking notes. The level III videodisc-based IVI "Developing Key Ideas: The Four S's" lesson included (a) definitions of the four S's (signpost, statement, support, summary), (b) computer-based video and text exercises to test students' understanding of the use of the four S's in speeches, and (c) a worksheet exercise in which
students could practice using the four S's in developing a key idea in a sample speech.

The multimedia IVI modules incorporate a tutorial approach including carefully designed orienting activities, questions, feedback, and review options to promote understanding. The multimedia approach promotes interest and understanding through humorous graphics, visual memory cues, dual-screen and dual-channel presentations, and exercises designed to enable students to apply IVI learning to the topic studied. Two-screen or two-channel display in IVI allows the user to adapt the program to his/her preferences for information display. Keefe (1979) indicated that some learners prefer auditory or verbal channels (older adults) and some prefer visual stimuli (teenagers and young adults). Users can adapt the text, graphics, video, audio, animation, and slides available in IVI to their information-display preferences on a particular task. The user can decide whether to listen intently to the voice-over, to listen while reading the summary, to try to tie in the visuals with the text, or to integrate all of these elements.

These IVI modules included messages and strategies that incorporated the following principles of effective instructional design. A brief discussion of each design principle and the messages and strategies used to achieve that standard are detailed below.

**Provide for Appropriate Interactive Instruction**

"In general, where the learner reacts to or interacts with the criterial stimulus, learning is facilitated, and that facilitation increases with the degree of learner activity or involvement" (Fleming & Levie, 1978, p. 138). Specific types of interactivity such as guided pathways for inexperienced users (Hoelscher, 1989) and instructional cues for complex interactive programs (Lee, 1989) help learners form accurate
interpretations, provide practice in important concepts, and provide relevant feedback (Schaffer & Hannafin, 1986).

A narrator encouraged users to complete the practice exercises and provided relevant feedback to users tailored to each specific response on practice exercises. Users were able to select from a variety of instructional and application options to help them form accurate interpretations of the instructional material. We provided menus and submenus to guide learners. However, the interactive options within each instructional segment of the IVI programs were limited to comply with the following design principle.

**Provide for an Appropriate Combination of Learner Control and Program Control**

Appropriate use of the learner-control options in well-designed IVI can enhance learning. Informed learner control by motivated learners generally increases the effectiveness and appeal of instruction (Reigeluth & Stein, 1983). Learner control is most effective when students have some expertise in the content area, are trained in the use of learner control, possess high aptitude and high inquiry, and are unlikely to skip important material or quit the lesson prematurely (Milheim & Azbell, 1988).

Total control of the IVI lessons by learners was inappropriate for our instructional purposes. Most users of these modules are expected to have moderate initial motivation to learn the material, little expertise in the content area, and little training in the use of learner control in IVI. We designed the IVI modules to allow users to select the instructional units within the IVI modules that were most appropriate for them (learner control); and yet be guided *within* each unit selected by the instructional design that was developed by the content experts (program control).
Provide Appropriate Visuals

Visual images available in well-designed IVI can enhance learning. Theorists have suggested that visuals enhance learning by providing increased comprehensibility of the content (Burwell, 1991); selective increases in learners' attention (Brandt, 1987; Miller & Irving, 1988); and increased enjoyment (Sewell & Moore, 1980).

We worked with our Telecommunications Bureau to develop professionally designed video, graphics, and animations to illustrate key instructional objectives. For example, in the "Constructing Speaking Outlines" IVI program, we included visuals of speaking outlines and video of speakers using speaking notes while practicing and delivering a speech. In the "Developing Key Ideas: The Four S's" IVI program, we included visuals illustrating each of the four S's and video of several speakers using the four S's in developing a point in a speech. Users can view various portions of each speech, attempt to identify which of the four S's is illustrated, and receive video feedback tailored to each correct and incorrect answer.

Provide Continuing Motivation

Even if learners are initially interested in learning, programs must be designed to enhance motivation to learn throughout the program. Continuing motivation can be enhanced by demonstrating the relevance of multimedia lessons to learners, providing motivating overviews to encourage exploration of various parts of the program, encouraging individual curiosity, and providing instruction that promotes learner perceptions of competence and self-efficacy (Kinzie & Berdel, 1990).

The IVI programs on organizational techniques in public speaking include attention steps designed to convince users
that the organizational techniques discussed in the program will help them become more effective speakers, will help them write more clearly, and will contribute to career success. Narrators explain the benefits of each major part of the programs. Short tests with immediate feedback are provided if users choose to skip major portions of the program. If users do not do well on the tests, they are encouraged to study relevant program materials. Each major section includes a series of application exercises that progress from relatively easy to moderately difficult applications. These exercises enable users to assess their understanding of the instruction while promoting perceptions of competence and self-efficacy through the easy-to-moderate degree of difficulty of practice exercises.

**Provide Follow-up Discussion and Practice**

Students vary in their ability and motivation to make the most of self-paced, interactive multimedia instruction. Many users require practice and additional instruction and guidance in applying the learning strategies in various situations and contexts. Structured learning activities accompanied by feedback and additional instruction from teachers allow "students to gain expertise in managing their own learning and can promote feelings of self-efficacy" (Kinzie & Berdel, 1990, p. 66).

The IVI modules encourage students to engage in speaking and writing activities to enhance their understanding of these organizational techniques. Students are encouraged to visit speaking and writing laboratories. These laboratories provide speaking and writing activities with feedback from trained tutors. For example, students are encouraged to give a practice speech and receive feedback from tutors on their use of speaking outlines and the four S's. In addition, students may videotape their practice speeches and use the videotape to analyze their organizational techniques. (Because follow-up
discussion and practice could confound IVI treatment effects, no delayed measures were used in the studies detailed below.)

**ASSESSMENT METHOD**

**Subjects**

Ninety-one college students at a middle-sized, comprehensive university in the southeast region served as subjects. Male subjects comprised 51% of the sample and female subjects made up 49%. The subjects in the treatment group for study 1 served as the control group for study 2, and vice versa.

**Procedures and Design**

Students from non-speech classes in economics, political science, health, and marketing either volunteered or were required to undergo IVI. These subjects received no instruction in developing key ideas or constructing speaking outlines in class prior to the study. Subjects received no extra credit for their participation in this study. However, because all participants were required to present either a debate or an oral report as a major class project, most were motivated to learn more about oral communication.

Students randomly assigned to group A (the control group for study 1 and the treatment group for study 2) received approximately 30 minutes of individual IVI in "Developing Key Ideas: The Four S's." This instruction provided no information on constructing speaking outlines. Students randomly assigned to group B (the treatment group for study 1 and the control group for study 2) received approximately 35 minutes of individual IVI in "Constructing Speaking Outlines." This instruction provided no information on developing key ideas.
The subjects in the treatment group for study 1 served as the control group for study 2, and vice versa. This design controlled for a Hawthorne-type effect of providing IVI to the treatment group only by providing IVI on an unrelated topic to the control group. Because the control group in each study received "placebo" IVI on a topic unrelated to the treatment under investigation, this design meets the standard treatment versus no treatment requirement.

Participants in both the treatment and control conditions were shown how to use the IVI program by a trained student worker and were left alone to complete the lesson. Students in the treatment and control groups completed a sixteen-item recall/application test on constructing speaking outlines, a sixteen-item recall/application test on developing key ideas, and a formative evaluation of the instruction immediately after they received the instructional material. These measures were randomly ordered to control for an order effect. No delayed tests were used in this study. The variety of courses and instructors included in this study introduce uncontrolled variables that would confound the long-term effects of IVI on dependent measures used in this study.

**Dependent Measures**

No standardized tests are available to measure only the specific skills addressed in these IVI programs (constructing speaking outlines or developing key ideas). Thus, a sixteen-item test was developed to measure recall/application skills regarding constructing speaking outlines. For example, multiple-choice questions about a partial outline were designed to identify correct (and incorrect) use of key principles including subordination, coordination, lettering, and numbering. Likewise, a sixteen-item test was developed to measure recall/application skills for developing key ideas. For example, open-ended questions were included to assess knowledge of the four steps to developing a key idea (signpost,
statement, support, and summary); the proper sequence of these steps; and correct identification of the function(s) of each step in developing a key idea. These tests avoided literal replication of the questions embedded in the instructional treatment. The tests were validated for instructional convergence by three independent speech professors. The split-half reliability of the tests, based on Pearson Correlation Coefficients, was .891 for developing key ideas and .885 for constructing speaking outlines.

RESULTS

Study 1: Constructing Speaking Outlines

The means and standard deviations of the recall/application test scores for the treatment and control groups are presented in Table 1.

ANOVA results indicated that students using IVI on constructing speaking outlines achieved significantly higher

<table>
<thead>
<tr>
<th>Condition</th>
<th>Test Score max. = 16</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Trt. (voluntary-IVI on spk. outlines)</td>
<td>25</td>
</tr>
<tr>
<td>Trt. (required-IVI on spk. outlines)</td>
<td>19</td>
</tr>
<tr>
<td>Control (required-IVI on unrelated topic)</td>
<td>22</td>
</tr>
<tr>
<td>Control (voluntary-IVI on unrelated topic)</td>
<td>25</td>
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</tbody>
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test scores than did students in the control group ($R^2 = .30$, $F[2, 88] = 18.80, p < .0001$). The group differences accounted for 30% of the variance. There was no significant difference on test scores between volunteers and required participants (see Table 1).

**Study 2: Developing Key Ideas**

The means and standard deviations of the recall/application test scores for the treatment and control groups are presented in Table 2.

ANOVA results indicated that students using IVI on developing key ideas achieved significantly higher test scores than did students in the control group ($R^2 = .78$, $F[2, 88] = 154.40, p < .0001$). The group differences accounted for 78% of the variance. There was no significant difference on test scores between volunteers and required participants (see Table 2).

### Table 2

"Developing Key Ideas": Means and Standard Deviations of Test Scores

<table>
<thead>
<tr>
<th>Condition</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trt. (voluntary-IVI on dev. key ideas)</td>
<td>25</td>
<td>13.96</td>
<td>1.46</td>
</tr>
<tr>
<td>Trt. (required-IVI on dev. key ideas)</td>
<td>22</td>
<td>13.14</td>
<td>2.44</td>
</tr>
<tr>
<td>Control (voluntary-IVI on unrelated topic)</td>
<td>25</td>
<td>4.96</td>
<td>2.96</td>
</tr>
<tr>
<td>Control (required-IVI on unrelated topic)</td>
<td>19</td>
<td>4.95</td>
<td>2.32</td>
</tr>
</tbody>
</table>
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Formative Evaluations

Immediately following instruction, students completed a series of self-report items to evaluate the instruction. Each of the items was rated on a scale of 1 = strongly agree, 2 = agree, 3 = undecided, 4 = disagree, and 5 = strongly disagree.

Because the means for each item were virtually identical for the formative evaluations of the constructing speaking outlines IVI and the developing key ideas IVI, the average of the two means is reported here. Students reported that they enjoyed the IVI treatment ($M = 1.85$). Students felt that the video portions of the IVI helped them understand the material ($M = 1.79$), made the presentation more enjoyable ($M = 1.72$), and made the presentation more interesting ($M = 1.65$). Students indicated that they would be capable of using the instruction to construct speaking outlines or develop key ideas ($M = 1.73$) and reported moderate to high effort to learn the material in the IVI lesson ($M = 2.53$). Most students reported that they were undecided about how well-versed they were in using computers in general ($M = 2.80$), did not find it difficult to learn via the IVI ($M = 1.58$), and had not used IVI previously ($M = 1.15$). Three items assessed student perceptions of the responses (feedback) provided by the computer in the IVI program. Most students felt that the feedback informed them about constructing speaking outlines or developing key ideas ($M = 1.77$), did not attempt to control their behavior ($M = 2.35$), and was believable ($M = 1.96$).

DISCUSSION

These studies were designed to investigate either the effects of IVI in "Constructing Speaking Outlines" or "Developing Key Ideas" on students' learning and formative evaluations of the learning experience. In each study, recall/
application test scores of the randomly assigned treatment group were compared to those of a randomly assigned control group receiving "placebo" IVI on an unrelated topic.

The results are summarized as follows. Students using the IVI programs on "Constructing Speaking Outlines" and "Developing Key Ideas" achieved significantly higher recall/application test scores than students in the control group. Most students found the IVI enjoyable, easy to use in learning the material, useful in learning to construct speaking outlines or develop key ideas, and motivating.

The positive affective responses of students to these IVI modules may encourage instructors to explore using IVI to supplement traditional instruction. Some may fear that students who are unfamiliar with IVI would not enjoy using such technology. Most students reported that they had not used IVI previously; yet most of them reported positive affective responses towards using IVI. This study did not compare affective responses to IVI versus other novel instructional methods. However, Gold (1989) reviewed 30 studies that compared IVI with other training methods and concluded that participants preferred IVI over other training methods.

The apparent efficacy of these IVI programs in teaching students about constructing speaking outlines and developing key ideas is consistent with research on the effects of IVI in teaching cognitive restructuring techniques for coping with speech fright (Cronin, Grice, & Olsen, 1994). It is likewise consistent with research on the effects of IVI in related soft skill areas (Cronin & Cronin, 1992). The instructional messages and strategies in these IVI modules appear to be effective in teaching students to construct speaking outlines and develop key ideas. These findings are not intended to imply that IVI is more effective than classroom instruction in teaching organizational techniques. If IVI is capable of providing effective instruction in these areas outside of class, instructors could use limited class time to do things that can be done only in class. Rather than lecturing on material in the
IVI programs, instructors could cover other material or devote more time to student speaking activities.

Although the combined instructional messages and strategies in these IVI modules appear to be effective in teaching students to construct speaking outlines and develop key ideas, further research is needed to isolate those factors and examine their relative impact. For example, researchers may wish to isolate the effect of video versus no video on learning outcomes, the association between students' perceived level of learner control and learning, or the association between the actual motivational level of the IVI lessons and student recall. Such research would contribute to theory building and more effective design of IVI in oral communication.

REFERENCES


IVI — Organizational Techniques in Public Speaking


