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Using Interactive Video Instruction to Enhance Public Speaking Instruction

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Public speaking faculty must provide instruction in out-lining, topic development, delivery, critical thinking, and a long list of other important topics to prepare students to construct and deliver effective speeches. In addition, time must be allocated for presentations and critiques. The time available in class limits the depth of cognitive instruction and/or the opportunity for performance and feedback. Interactive video instruction (IVI) enables teachers to move some of this cognitive instruction from the classroom into a self-paced learning laboratory. An IVI laboratory in oral communication allows students to learn, internalize, and practice knowledge and skills which are essential to classroom performance.

> Technology has the capacity to free courses from the constraints of time and, to some degree, space. Software is available and constantly being developed to introduce students to everything from the principles of public speaking to statistics. (State Council of Higher Education for Virginia, 1992, p. 34)

IVI can expand pedagogical opportunities in public speaking instruction. An IVI laboratory can provide oral communication instruction in contexts and at times that, currently, are not available in traditional instruction. It is

important to note that IVI should not and cannot replace classroom instruction. However, instructors using IVI should determine what is best done in the classroom (e.g., discussion, performance, critiques, etc.) and what instruction should be shifted from the classroom to the IVI laboratory.

> Technology is a powerful tool for instruction that does not require the continuous presence of a faculty member. But it has to be used correctly to free faculty *for* students, not *from* them. (State Council of Higher Education for Virginia, 1992, p. 7, emphasis in original)

This review, first, defines the distinctive features of IVI; second, assesses the effectiveness of IVI; third, describes IVI modules developed at Radford University that are applicable for public speaking instruction; fourth, provides information on equipment requirements and costs for implementing IVI; and finally, suggests strategies for integrating IVI into public speaking instruction.

WHAT IS INTERACTIVE VIDEO?

IVI allows students to interact via a computer with any combination of videotape, videodisc, film, slide, and graphic materials. In most cases, the student can view a segment of a module and respond to it. Based on that response, appropriate video/textual information is provided. Most IVI modules are designed to provide individualized, self-paced instruction. Rapid access to information is available based on the student's demonstrated understanding of topics or expressed interest in specific information. Although the degree to which modules are truly interactive can vary significantly, well-designed IVI modules adapt to the user's knowledge, ability, and interest by "branching" to remedial material, more

advanced topics, or additional examples in direct response to the student's input (Gayeski & Williams, 1985).

One of the key attributes of IVI is the level of involvement that students experience. Instead of reading or listening passively, the interactive video user must respond actively to the program. Effectively designed IVI materials provide practice, feedback, repetition, motivation, and exposure to multisensory information. This method of instruction also can stimulate interaction and collaborative learning among students as they work together on a program (Chang, 1989; Cockayne, 1990; Dalton, 1990; Dalton, Hannafin, & Hooper, 1989; Noell & Carnine, 1989).

IVI programs can allow the computer to record students' responses and response times for many activities and questions. Instructors can use this information to gain valuable insights about student learning. This particular feature also opens "avenues for behavioral research and psychological assessment through less obtrusive measures, more vivid nonverbal stimuli, and adaptive, individualized testing" (Gayeski & Williams, 1985, p. 144). For example, printouts can provide information on each user's participation and performance including items selected for study, time-on-task, latency of response, correct and incorrect answers on practice exercises, and performance on competency tests.

IVI integrates computerized programmed logic with visual messages. Theorists suggest that visuals enhance learning by increasing learners' attention, enjoyment, and understanding of the content (Cronin & Cronin, 1992a). The most prominent theoretical support for visuals "is the dual-coding hypothesis, which suggests that humans possess both visual and verbal encoding mechanisms" (Hannifan & Rieber, 1989, p. 106). It appears that visual representations that are stored in memory contain more information and are better remembered than verbal representations (Baggett, 1989; Kozma, 1991). The visuals available in IVI can illustrate information central to the program, depict structural

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relationships mentioned in the text, or represent new content central to the lesson.

Students can adapt IVI to their learning styles. Most lectures, books, linear videotapes, and films are designed to be used in a linear fashion. IVI can be used in a non-linear fashion. Although not always desirable, students can move around in the program in response to their interest, knowledge, and learning objectives. Keefe (1979) indicated that some learners prefer auditory or verbal channels (older adults) and some prefer visual stimuli (teenagers and young adults). Well-designed IVI allows users to adapt the text, graphics, video, audio, animation, and slides available in IVI to their learning styles. For example, users can focus on the text, or the audio or the video accompanying the text, or they can attempt to integrate all three symbol systems to enhance their learning on a particular task.

THE PEDAGOGICAL IMPACT
OF INTERACTIVE VIDEO INSTRUCTION

Recent empirical investigations support the conclusion that IVI generally enhances learning. Extensive meta-analyses reported significant effects of IVI on cognition, performance, and learning efficiency in a variety of situations and applications, primarily in hard skill areas (Fletcher, 1990; McNeil, 1989). Each of these meta-analyses found that IVI improved achievement and performance by about .50 standard deviations over less interactive, more conventional instruction. This improvement is roughly equivalent to moving the typical user from the 50th to the 69.2 percentile of achievement (McNeil, 1989). Cronin and Cronin (1992b) reviewed 33 recent studies that dealt with "soft skill" areas (such as communication skills, logical reasoning, foreign language, and sales training) and concluded that IVI

produced significantly greater cognitive and application gains than conventional methods of soft skill instruction.[1]

Clark (1985) and Cronin and Cronin (1992a) identified concerns about the research design and the lack of theoretical grounding in several IVI studies. Many of the recent empirical investigations of IVI in soft skill areas have addressed these concerns (e.g., failure to compare *similar* instruction across treatments, insufficient subjects, lack of random assignment of subjects (or matching), lack of control group). For example, Cronin and Cronin (1992b) identified 16 recent IVI studies comparing similar IVI and conventional instruction that included 80 or more subjects randomly assigned to treatment and control groups. Excluding IVI studies with major methodological flaws, the literature appears to support three conclusions about the pedagogical effectiveness of IVI that may be relevant to public speaking instruction.

First, in general, IVI appears to produce greater learning than linear video instruction (Chen 1990; Penaranda, 1989). Simply showing a linear videotape of a successful or unsuccessful speech offers no active participation in the learning process and no feedback concerning the acquisition of new skills or knowledge. On the other hand, IVI allows students to participate actively in specific aspects of the skill or knowledge being taught, and receive immediate feedback.

Second, users prefer IVI over other instructional methods. Gold (1989) reviewed 30 studies that compared IVI with other training methods and concluded that IVI enhanced learning

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[1]It is beyond the scope of this review to provide a detailed analysis of the empirical research regarding the pedagogical effects of IVI in soft skill areas. See Cronin and Cronin (1992b) for a detailed analysis of IVI research in soft skill areas including: (a) the instructional advantages of IVI over linear video instruction, (b) the instructional advantages of IVI over conventional instruction, (c) a methodological analysis of empirical research regarding learning outcomes from IVI, and (d) suggestions for theoretic and methodological refinements in IVI research.

and that participants preferred IVI over other training

methods. Preference for IVI may be partially attributed to the novelty effect of a new approach to learning. IVI users who are unfamiliar with the technology may experience increased motivation to learn due to the novelty effect. However, a novelty effect does not explain the significant instructional advantages reported for IVI when students used the technology for a substantial time period (Fletcher, 1990; Lookatch & Doremus, 1989). Furthermore, even if preference for IVI over traditional instruction is partially explained by a novelty effect, public speaking instructors can take advantage of this short-term effect. Students respond positively to this form of instruction and are likely to select it, if available, as a means of extending classroom instruction.

Third, the visual components of IVI enhance cognitive learning (Fletcher, 1990; McNeil, 1989). Visuals in IVI appear to produce increased enjoyment of and attention to the lesson. In most studies, visuals in IVI increased the comprehensibility of the lesson (Cronin & Cronin, 1992a). Higher levels of skill performance require active discovery and application on the part of the learner. Realistic video simulations in IVI provide "an ideal medium for learning from other peoples' learning, a quality that seems particularly appropriate when dealing with the development of interpersonal skills" (Hansen, 1989, p. 13). Students can use the video simulations available in some IVI modules in oral communication to compare their understanding of complex public speaking behaviors with video presentations of others' understanding of these same issues. For example, it may be more appropriate and more effective to use IVI to present video simulations of speakers dealing with and discussing speaking apprehension than to attempt to address these issues via live speakers in class.

IVI VIDEODISC MODULES APPLICABLE FOR PUBLIC SPEAKING INSTRUCTION

Two grants from the State Council of Higher Education for Virginia totaling over $400,000, combined with additional support from Radford University, enabled the development of the IVI modules described below. The average development time for each of these modules was 1200 hours. The design team included a producer, content experts, a graphic artist, a computer programmer, and a video producer. The design team developed specific objectives, wrote content materials, organized the video production shoot, shot the video, edited the video, created graphics and animations, merged the video and computer text, sent the videotape to a production house to master the videodisc, merged the videodisc with computer text, developed supporting materials, and field tested the program.

Coping with Speech Fright

This module provides tutorial and simulation instruction in cognitive restructuring techniques to help students manage speech fright. Topics include the nature of speech fright, the rationale for cognitive restructuring, identification and validity testing of negative self-statements, replacement of negative statements with positive self-statements, and additional approaches to coping with speech fright. This module includes a workbook for student use. Empirical evaluations support the efficacy of this IVI module. The IVI program was as effective on dependent measures as virtually identical instruction presented by outstanding public speaking instructors via lecture/linear videotape. Students in the IVI treatment condition achieved significantly higher immediate and delayed cognitive test scores and significantly

lower pre-to-post-test scores on the public speaking section of the Communication Apprehension in Generalized Contexts instrument than did students in the control group (Cronin, Grice, & Olsen, 1994).

Constructing and Using Speaking Outlines

This IVI module provides tutorial and simulation instruction in constructing both conventional outlines and speaking outlines. The module was rated as enjoyable, effective, and easy-to-use in formative evaluations. Major topics in the constructing speaking outlines portion of this program include principles of conventional outlining (coordination, subordination, indentation, numbering, lettering); conventional outlining exercises; principles of constructing a speaking outline; and analysis of examples of speaking outlines. The latter portion of this IVI module provides tutorial and simulation instruction in using a speaking outline to deliver a public speech. Major topics include using speaking notes in simulated rehearsals for a speech, using notes when using a lectern, using notes when not using a lectern, conducting an effective rehearsal with speaking notes, and using speaking notes when giving a public speech. Empirical evaluations support the efficacy of this IVI module in teaching users to construct effective conventional outlines and speaking outlines. Students receiving IVI in "Constructing Speaking Outlines" achieved significantly higher application test scores than did subjects in the control and comparison groups (Cronin, 1992).

Developing Key Ideas: The Four S's

This module, along with an accompanying worksheet, provides tutorial and simulation instruction in effective organizational patterns for developing key ideas in a written or spoken message. Users learn to identify and define the four

S's that are essential to developing each key idea in a message (signpost, statement, support, summary); identify the use of each of the four S's in three sample speeches; and apply the four S's via worksheet exercises. Empirical evaluations support the efficacy of this IVI module. Students receiving IVI in "Developing Key Ideas" achieved significantly higher recall/application test scores than did subjects in the control group (Cronin, in press).

Critical Thinking: Supporting Your Ideas with Good Evidence

This module provides tutorial and practice instruction in understanding and applying tests of evidence. Users are motivated to complete instruction by means of a game format. Dual screens and channels allow students to adapt the module to their individual learning styles. Major sections of this module include guidelines for good evidence, guided practice in evaluating evidence, and a timed application game to assess learning.

Mission Possible: Listening Skills For Better Communication

In this module, students are provided with tutorials and simulations designed to improve listening. Users are motivated to complete instruction by means of a game format. Dual screens and channels allow users to adapt the module to their personal learning styles. Major topics include identifying bad listening habits, assessing personal listening behavior, overcoming bad listening habits, and enhancing active listening. Empirical evaluations indicated that students randomly assigned to IVI on listening achieved significantly higher cognitive test scores and significantly higher gain scores on the Watson-Barker Listening Test

(video version) than did students randomly assigned to a control group (Cronin & Myers, in press).

Effective Introductions and Conclusions in Public Speaking

This module provides tutorials, simulations, and a worksheet to enable users to construct effective introductions and conclusions in public speeches. Dual screens and channels (visual, audio, and text) allow users to adapt the modules to their personal learning styles. The "introduction" portion of the module includes (a) the basic objectives of an introduction (gain attention, reveal topic, establish need to know, establish credibility, preview key ideas); (b) strategies for accomplishing each objective; and (c) video-based assessment of user understanding of effective use of these objectives and strategies in sample introductions. The "conclusion" portion of the module includes (a) the basic objectives of a conclusion (logical closure and psychological closure), (b) strategies for accomplishing each objective, and (c) video-based assessment of user understanding of effective use of these objectives and strategies in sample conclusions.

EQUIPMENT NEEDS FOR INTERACTIVE VIDEO INSTRUCTION

This section lists the least expensive hardware necessary for implementing this IVI. At present, the IVI modules will play only on the Macintosh platform. However, the IVI programs are being cross-developed for the MS-DOS platform and should be available by mid 1995. Information on both platforms is provided below. However, more powerful plat-forms capable of running more advanced multimedia applications should be considered. Institutions implementing IVI in oral communication will probably wish to run a number

of other multimedia applications that require more powerful platforms. However, it is beyond the scope of this review to explore the software and hardware options involved in more advanced multimedia applications.

The Macintosh Platform

Item	Approximate Price
Macintosh II (including monitor, mouse, and keyboard)	$2,000 (March, 1994)
Videodisc player (RS-232)	$ 600
Monitor for videodisc player	$300
Interface cables	$100

The MS-DOS Platform

Item	Approximate Price
MS-DOS AT compatible computer (Order an AT computer which includes a VGA graphics adapter and compatible monitor, a high density disk drive, and an RS-232c serial port. A minimum 40 megabyte hard drive is required.)	$1,500 (March, 1994)
Videodisc player (RS-232)	$600
Monitor for videodisc player	$300
Interface cables	$50

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CLASSROOM APPLICATIONS

The primary application at Radford University involves IVI in conjunction with a speaking laboratory. The goals of the IVI/speaking laboratory method are to improve the quality of public speaking instruction and to provide cost-effective instruction in oral communication to more students. The IVI/speaking laboratory method provides individualized, self-paced, active instruction (versus passive mass lectures) by using IVI to present almost 50% of (and eventually most of) the instruction necessary to prepare students for public speaking performance. Students use IVI outside the traditional classroom, thus expanding active learning opportunities in both time and space. The class instructor provides lecture material to supplement IVI and offers extensive feedback and evaluation of student performance in the speaking laboratory. Used in this manner, technology allows public speaking teachers to provide more performance feedback to more students.[2]

IVI modules may be used in various ways to supplement public speaking instruction. The following suggestions explore some of the contributions that IVI can make to teaching and learning in public speaking classes. Although the suggestions are categorized according to instructor, student, and institutional applications; each suggestion has implications for each category.

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[2]Although IVI has proven more effective than conventional methods of soft skill instruction and *individual* IVI units in oral communication have proven effective, the IVI *package* for public speaking instruction must be assessed empirically. We will conduct quasi-experimental studies to assess learning outcomes for public speaking students taught via the traditional lecture/performance method versus the IVI/speaking laboratory method using dependent variables such as nationally recognized tests of communication competence in public speaking.

Instructor Applications

Each public speaking instructor using IVI modules to supplement classroom instruction should adapt these teaching aids to his or her needs. Instructors should go through each IVI module to determine its applicability to their classes. Just as certain chapters in a textbook are omitted, corrected, or amended in a particular class; instructors should use only those IVI modules that support their instructional approach. Instructors should correct or amend instruction in any IVI module they choose to require (or recommend).

Instructors should provide opportunities for students to discuss learning outcomes associated with IVI. Instructors could schedule conferences with students to discuss the material outside of class or could schedule in-class discussions after all students have completed a particular IVI module. Where the demand on IVI equipment is greater than the ability of the facility to serve students, instructors can assign two or three students to work together on IVI modules. Alternatively, individuals could be assigned to use specific IVI modules and required to present class reports on the instructional content as one of their speaking assignments. Instructors can require students to write a paper describing the instructional content of specific IVI modules and evaluating the use of IVI as an instructional tool. This kind of activity provides important insight into student responses to the technology itself as well as the learning and skill development that is taking place.

Instructors who are absent from class may use IVI to provide effective instruction on selected topics during their absence(s) from class. This approach may be preferable to trying to find a colleague to cover the class and is generally preferable to using a linear videotaped lecture during an instructor's absence.

Instructors may use IVI primarily to attempt to help low achievers raise their performance in the class. IVI generally raises average achievement more equitably across all student achievement levels than does conventional instruction (Cronin & Cronin, 1992b; Fletcher, 1990). Low achievers may benefit even more than high achievers from the self-paced, individualized instruction; the immediate feedback; and the visual components of IVI. Instructors may wish to investigate theoretical explanations and explore the utility of specific IVI programs in oral communication for low achievers.

Student Applications

Students who have missed class lectures can use IVI relevant to that material to help them prepare for exams and speaking assignments. Rather than borrowing a classmate's notes that may be incomplete or inaccurate or arranging individual meetings with their instructors, absentees can use self-paced IVI at a time that is convenient for them.

Students who attended class lectures may need additional information or may wish to review lecture material. IVI may be used to provide additional information or review if it is similar in content to class lecture material.

Students can adapt IVI to their knowledge level and comprehension of a lesson. In a typical classroom it is usually impractical for the instructor to ensure that each student understands the material before moving on. However, the self-paced learning available via IVI allows students to repeat portions of the lesson that they do not understand. Furthermore, IVI programs can be written to require demonstrated understanding of particular material before a student is allowed to move on in the lesson.

Institutional Applications

Institutions may supplement mass lectures in public speaking courses with the self-paced, individualized instruction available through IVI. This approach could provide the economy of the mass-lecture approach and the adaptation to individual learning styles available through well-designed IVI.

Institutions could develop their own IVI modules designed to meet their specific instructional objectives. Institutions should support and reward software development.

> Institutions also need to generate the software to make technology-based instruction possible. The council suggests that in redesigning their faculty reward systems, institutions acknowledge faculty for software development and testing as they do now for research and scholarship. (State Council of Higher Education for Virginia, 1992, p. 34)

Institutions can encourage non-speech instructors who use public speaking exercises in oral communication across the curriculum to require their students to use IVI modules to help prepare for speaking assignments. IVI modules can provide instruction and feedback from communication experts at times convenient to student needs. Also, IVI makes it possible for students to have instruction and feedback available at times in the speech preparation process when it is most needed (when communication faculty may be unable to provide lectures to non-speech classes).

Institutions can establish (or expand) a public speaking laboratory available to any individual in the community or on campus. The IVI modules can be used to provide basic instruction on selected topics in public speaking to individuals unable to take a public speaking course without placing unreasonable demands on communication faculty.

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SUMMARY

IVI offers a unique and affordable means of expanding the traditional public speaking classroom in time and space. IVI makes it possible for large numbers of students to experience self-paced, effective instruction outside the classroom. The major thesis of this review is that IVI can provide effective oral communication instruction to students outside the classroom, thus allowing more time in the classroom for performance, feedback, evaluation, and discussion.

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