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"Right Way/Wrong Way" Presentations: The Use of Common Errors in Instructional Videos for Procedure Learning

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"RIGHT WAY/WRONG WAY" PRESENTATIONS - THE USE OF COMMON ERRORS IN INSTRUCTIONAL VIDEOS FOR PROCEDURE LEARNING

A Production Thesis

By

Tom McCarthy

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ABSTRACT

"RIGHT WAY/WRONG WAY" PRESENTATIONS -
THE USE OF COMMON ERRORS IN INSTRUCTIONAL
VIDEOS FOR PROCEDURE LEARNING

By

Tom McCarthy

This thesis compared two instructional presentation formats for learning achievement and interest. The presentation formats under examination were "right way/wrong way" (in which a common error is presented previous to the presentation of the correct method to achieve a task) and "right way" (in which only the correct method to achieve a task is demonstrated).

Three measures were used. To determine learning achievement a recall, evaluation, and application oriented test was constructed. To measure interest, two five-point scales were used along with open-ended questions regarding likability. A Production Feedback Questionnaire was used to determine if there was any significant difference between groups in their attitudes toward particular production variables or segments.

The "right way/wrong way" format showed significantly higher learning achievement. No difference in interest was found between groups.

Accepted by the faculty of the Department of Telecommunication, College of Communication Arts and Sciences, Michigan State University, in partial fulfillment of the requirements for the Master of Arts degree.

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Director of Thesis

DEDICATION

This work is dedicated to Mary and Tom McCarthy. Without their support, this would not have been possible.

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INTRODUCTION

Television is perhaps our most far-reaching and even invasive medium. A great deal of us today know no other lifestyle than that which includes regular television viewing, be it for entertainment, sports, news, and now, even shopping. And with the advent of cable and home video, we are confronted with an even wider variety of programming than ever before.

As mentioned, we go to television for news, sports, and entertainment, but as Gnagey (1982) points out, " . . . there is . . . one major and valuable use of television which, in its over 30-year history, has not made comparable progress. This is instructional television."

From the very beginning of the full motion medium of film, it was forecasted that its greatest uses would be educational in nature. Edison failed to patent the motion picture projector due to his feeling that its uses were mostly for instructional purposes (Sanderson, 1968).

May and Lumsdaine (1958b) believed that the research, " . . . indicates that films have a great unrealized potential as teaching materials . . .," citing evidence such as the fact that, " . . . from some films pupils learn faster and remember a body of subject matter longer than when the same material is presented only verbally; films have been used successfully to

facilitate thinking and problem solving; other films have motivated the further study of a topic."

The forecasts for television as an instructional medium have been just as enthusiastic. Tondow (1968) made a general forecast for automated teaching systems:

> . . . we are moving inexorably toward a world which more and more can be described as a man-machine system . . . As we look ahead, we see a much different proportional relationship between man and machine, with more and more productive and problem-solving responsibilities assigned to machines.

Diamond (1968) predicted that " . . . within the next decade the television set will become a standard fixture in most classrooms."

And while the impact of television on instruction is not small (Phillips, 1964) we are constantly brought back to Gnagey's (1982) and many others' belief that the development of instructional television and video is not comparable to the amount of innovation that has taken place in other uses of television. So what is needed to remedy this situation?

While instructional television " . . . has been subjected to more research than any other instructional innovation . . . " (Greenhill, 1964), this research certainly cannot compete with the ongoing research in the exploitation of other areas of television being conducted by Nielson and Arbitron, et al. If instructional television is to be developed to its full potential, then more research needs to be conducted to determine what will facilitate more interest on the learner's part in the instructional materials of this medium, as well as

what will facilitate higher learning achievement from the variety of techniques and formats this medium has to offer.

Coldevin (1980) states: "In the wake of the strenuous research emphasis on the 'teaching effectiveness' of television and its comparative strength versus other media, the present concern appears to be more sensitively attuned to how to best use the medium in a given situation." Diamond (1968) asserts that " . . . the question is no longer if television will be used, but how . . .," and certainly television is being used for instructional purposes, but it is in answering the questions of how we utilize this medium that we will facilitate the greater use of it. It is in this spirit that the research reported here was conducted.

Due to the wide variety of presentation formats available to the instructional video producer, it is necessary for research to be conducted that will determine which formats stimulate the highest levels of learning achievement in learners. Two presentation formats were compared and contrasted within this study. One format known in the instructional video production industry as "right way/wrong way" is compared to a format to be known in this study as "right way."

This report will first provide an overview of research that has been previously conducted that is relevant to this study. A plan for an experiment to measure the difference (or lack thereof) of learning achievement and interest levels between students who view a video done in the "right way"

presentation style and those students who view a video done in the "right way/wrong way" presentation style is provided. Results of the experiment are reported statistically, followed by a discussion of those results. This report concludes with a summary, conclusions, and recommendations for further research.

Statement of the Problem

Is there a significant difference in learning achievement and interest levels between learners who view video presentations using the "right way" format and learners who view video presentations using the "right way/wrong way" format?

Purpose of the Study

It was the purpose of this study to determine the relative levels of learning achievement and interest between learners who view videos using either of the two video formats, "right way" or "right way/wrong way."

Need of This Study

As Coldevin (1980) states: " . . . the bridge from experimental research to formative series evaluation should aid considerably in the formulation of practical theory for ETV production." While this study alone is not enough to change current production practices with regard to the use of either of the two presentation formats being investigated, it is the beginning of research that will someday answer the question of which format will, and in what ways, be of greatest aid to the instructional video producer. To answer

the question of which format stimulates higher learning achievement in learners might then lead us to answer the question of whether or not "right way/wrong way" stimulates learners to be more critical of their own behavior in regard to the skills being taught, as well as answering other questions.

Through many informal discussions with instructional video producers, it appears that the use of the "right way/ wrong way" format is a growing trend in the instructional video industry. Comparisons of "right way/wrong way" need to be made to all types of presentation formats, but since it is more expensive to shoot and edit "right way/wrong way" presentations it is especially important to compare "right way/wrong way" to "right way" as substantial monetary savings or costs to the instructional video producer may be involved.

Definition of Terms

Presentation Format - The way in which content is organized in order to present information via television, film, or video.

Right Way - A presentation format that instructs the viewer as to the correct method (positive instance) of completing a task.

Right Way/Wrong Way - A presentation format that first instructs the viewer as to the incorrect method or methods (negative instances) of accomplishing a task (usually using as an example a common mistake that other learners often make).

The viewer is then instructed in the correct method (positive instance) of accomplishing the task.

Merrill and Tennyson (1977) write of instances, both positive and negative, and refer to them as examples and nonexamples: "The word instance is a general term used to refer to both members and nonmembers of a concept class . . . An example is a member of the concept under consideration . . . A nonexmaple is any instance which is not a member of the concept under consideration."

Shumway, et al (1983) further define the way in which positive and negative instances are used in this text: " . . . those objects that are examples of the concept are called positive instances, and those examples that are not examples of the concept are called negative instances."

The concept in the case of "right way/wrong way" is the correct manner of accomplishing the skill being taught. The positive instance is the example (right way) given of the correct way of accomplishing the task. The negative instance is the nonexample (wrong way) given of the correct way to accomplish the task.

Learning Achievement - The amount of significant information retained by the learner as determined by comparative testing.

Limitations of the Study

This study was meant only to determine differences in learning achievement and interest between learners viewing "right way" video presentations and learners viewing "right

way/wrong way" video presentations. This study did not determine whether or not "right way/wrong way" has any benefits to the producer or learner other than a possible increase in learning achievement or interest level (for instance, whether or not "right way/wrong way" formats stimulate critical thinking on the part of the learner in regard to his or her own performance when actually confronted by the task being taught). Likewise, this study did not investigate any other benefits or liabilities inherent in the "right way" presentation format that are not directly related to learning achievement or overall interest.

The experiment developed and used in this study controlled for unintended biases. Biases that did not have to do directly with the differences between the two formats being investigated were duplicated by using the same footage in both video presentations used for comparison. Thus, any non-related issues were duplicated in each tape, and as such, were controlled.

The only known bias that was not controlled was the time variable. The two presentation formats, "right way" and "right way/wrong way," were presented as they naturally occur in the instructional video production industry. As such, the "right way" presentation was shorter than the "right way/wrong way" presentation. This study preferred a direct comparison of alternate format choices natural to the video producer, rather than an isolation of the effect of the common error variable in its purest conceptual form.

Summary

The use of television for instructional purposes has been heavily researched, but more research is needed to insure its proper development. This study investigates the instructional benefits of "right way/wrong way" presentations in relation to "right way" presentations.

REVIEW OF THE LITERATURE

Concepts, Examples and Nonexamples, and Common Errors

Merrill and Tennyson (1977) define concepts as ordered information regarding the properties of one or more things, objects, events, or processes which allow for differentiation or likening to other objects. The effective teaching of concepts is considered a fundamental area of inquiry in educational psychology research. Researchers suggest that " . . . concept learning may be thought of as the stimulus occurrence of two processes: 1) generalization of all examples of the concept, and 2) discrimination of examples of the concept from nonexamples" (Jassal and Tennyson, 1982).

In order to facilitate these two processes, Merrill and Tennyson (1977) have developed a method for teaching concepts in the traditional classroom setting. First, a definition of the concept is provided. This is followed by an expository presentation of matched example and nonexample pairs (examples and nonexamples are matched when they are as similar as possible save where the critical discriminating attribute is concerned). Matched pairs are dissimilar and progress from those more easily grasped to those requiring more effort in understanding. Finally, a practice presentation of previously

unencountered examples and nonexamples, in random order, is provided.

A great deal of research has been devoted to finding out whether or not the presentation of matched example/nonexample pairs does facilitate concept attainment (Klausmeier, et al 1974, cited by Jassal and Tennyson, 1981-82; Feldman, 1971, cited by Tennyson and Park, 1980; Tennyson, 1973; McKinney, 1985). All the research concurs that the matching example/nonexample pairs do, in fact, increase concept attainment. One of the reasons for this increase in concept attainment is hypothesized by Trowbridge and Mintzes (1985) in that " . . . each pair focuses attention on one or more of the critical attributes of the concepts." The researchers further prescribed that descriptions of the critical attributes which are absent from nonexamples be provided.

Markle and Tiemann (1969, cited by Tennyson, et al, 1972) define the possibilities of a lack of adequate concept attainment as overgeneralization, undergeneralization, and misconception. Overgeneralization results when both examples and some nonexamples are classified as members of the concept class. Undergeneralization results when by the subject is able to identify the more obvious examples of the concept class, but cannot identify subtle varieties of the concept. Misconception happens when the subject falsely assumes that irrelevant attributes are actually relevant.

The final possibility posed by Tennyson, et al (1972), was correct classification. The researchers hypothesized

correctly that accurate concept classification would be the result of matched example/nonexample pairs presented at all probability levels, with as much divergence between pairs as possible. This is important to the hypotheses found later in this text, as only the first of these three criteria prescribed by these researchers is fulfilled by the "right way/wrong way" presentation style. While "right way/wrong way" does present matched example/nonexample pairs, it does not present them at all levels of probability. Since only one matched pair is provided, the requirement for divergence between pairs is also left unfulfilled.

Ali (1981, cited by Marcone and Riegeluth, 1988) investigated the use of positive and negative instances for teaching all types of content, and noted that little research has been done in defining their use in procedure learning. Within the scope of procedure learning, a nonexample is termed a "common error." Marcone and Riegeluth (1988) state that:

> . . . a matched nonexample for a concept is the side-by-side presentation of an example of the concept with a nonexample that is as similar to it as possible . . . following the same rationale, a matched nonexample for a procedure is the demonstration of a common error in a performance of the procedure, along with a demonstration of the corresponding correct performance.

A procedure is defined as an ordered method of accomplishing a task (Riegeluth, et al, 1978). A common error is further defined by Macomber (1980; cited by Garduno, et al, 1984) as the most often made mistake.

Muriel Lim-quek (1985) sees procedures as concepts learned by rote, relatively isolated from other concepts, and as such, easily forgotten. Principles (cause and effect relationships), however, are seen by Lim-quek as the underlying process on which a procedure is based. Principles are more related to other concepts, and are perhaps for that reason, more easily anchored in memory. (It should be noted here that Lim-quek found no significant difference between principle-procedure and procedure-principle sequencing of information on procedure learning achievement).

Bentti, et al (1983) found that performance increases significantly " . . . as a result of the presentation of common errors in the instruction for procedure learning at the application level." Bentti, et al (1983) and Gropper (1983) concur that the teaching of nonexamples may be an effective strategy for other than pure concept learning, and suggest its applicability to procedure learning as well.

Garduno, et al (1984) did not support these findings. It is in the research of Marcone and Riegeluth (1988) that we begin to see a clarification of this discrepancy in their findings that:

1. The presentation of common errors in generality form significantly improves learning to perform a procedure at the application level.

2. The use of common errors in the example form appears not to be beneficial to the learner, even when matched with the correct performance and when attention focusing devices are employed on common errors.

Because of this finding, common errors in the example form were related to conceptual rules in the generality form, as is the common practice in "right way/wrong way" presentations.

While all the research does not coordinate to absolute agreement on if and how common errors aid in teaching procedures, Bentti, et al (1983), Garduno, et al (1984), and Marcone and Riegeluth (1988), all agree on three basic rules:

1. Common errors should be presented at varying difficulty levels to teach procedures effectively.
2. Common errors should be errors that are commonly made by those who attempt to perform the task.
3. When using a common error it is most beneficial when it is made apparent that it is, in fact, a common error.

Also uncovered by this review of the literature were findings of specific importance to the construction of the two scripts prepared for this experiment.

It has been suggested that an orderly presentation of instances increases the ease of concept attainment more than a random presentation (Grant, 1951) although this report was not supported by research evidence provided by Laughlin (1965). Grant's findings do, however, coincide with the normally orderly and formulaic approach taken by "right way/wrong way" presentations.

A great deal of research supports the conclusion that pointing out critical attributes or a conceptual rule would raise the level of concept attainment more than when students

were left to classify attributes on their own (Goss and Moylan, 1958; McCreary, 1963; Underwood and Richardson, 1956; and Weiner, 1967, all cited by Clarke, 1971; Haygood and Devine, 1967; Haygood and Stevenson, 1967; Klausmeier and Meinke, 1968). This would suggest that commentary be provided aside from the example/nonexample pairs presented in a "right way/wrong way" format.

The Capabilities of Television for Instruction

It has become overwhelmingly clear that television can, and does, teach. The number of studies concerning the question of whether or not television is an effective teaching medium are too numerous to cite here. But as Chu and Schramm (1967) put it:

> . . . it has become clear that there is no longer any reason to raise the question whether instructional television can serve as an efficient tool of learning. This is not to say that it always does. But the evidence is now overwhelming that it can and under favorable circumstances, does. This evidence comes from many countries, from studies of all age levels from preschool to adults, and from a great variety of subject matter and learning objectives.

Comparisons of television to other media for instructional effectiveness have been made frequently. The comparisons between television and conventional teaching are far too numerous to go into in this text. But to get an idea of some of the comparisons between media a select few are cited.

Lasser (1955) found that there was no significant difference in overall learning achievement between a film and filmstrip presentation of identical material, save in one sub-operation where the film group did better. This was presumably because the film was more continuous.

Williams, et al (1957), compared the live lecture, televised lecture, radio lecture, and written version of an instructional program. Television was rated highest in achieving learning goals, followed by radio, and then reading and live lecture tied two ways for last place.

Silent films with narration provided by the classroom teacher were found to be more effective at teaching than sound films (Craig, 1956). Although not a comparison between different media, it is from studies such as these that the question of how best to utilize the television medium arises. And subsequent to that question comes the question of what is it about television that makes it a good teaching medium?

Mark May (1968) found that visual stimuli is superior to verbal stimuli for inspiring simple forms of learning achievement and retention of information. One reason hypothesized for this is that there is more room for misinterpretation of verbal information due to the fact that words often have more than one meaning, whereas simple pictures are whatever they appear to be, and could serve as a stronger mnemonic device.

It would seem that the very presence of varied visual stimuli makes learning retention greater, even when unrelated

to the content being presented (Edwardson, et al, 1981). When comparisons were made between a format that had only talking heads and presentation that had talking heads interspersed with related and unrelated visuals, it was found that learning achievement was higher when there were visuals presented, as in the second format. This suggests the possibility that when viewers watch varied material that material acts as a type of mnemonic device.

Joan Tierney (1980) also cites television's capability to teach visually as a major benefit of the medium. She concludes that television's attention-gaining devices and ability to actually display material visually demonstrates its teaching capacity.

In the same vein, Costello and Gordon (1961) point out that:

> . . . as a vehicle for concretizing abstractions . . . television allows an instructor to bring together many devices for illustration and explanation. Where concretized abstractions must be shown working, as in mathematics, the potentials of video are enormous.

Gnagey (1982) makes the point even clearer by stating that " . . . visualization can make the theoretical concrete by illustrating applications or demonstrating concepts."

Beyond that of the visual superiority of television, film, and video to other media, Mary Lynn Crow (1979) relates that some of the advantages of television instruction is the preparation inherent in the production process. The research and pre-production necessary to produce most instructional

television programming insures a quality that cannot easily be matched in a conventional classroom setting. R. A. Sanderson (1968) asserts that the capability of film (and hence television and video) to provide a common experience for students is one of the medium's primary benefits for teaching purposes.

Presentation Formats

There is not a tremendous amount of research in the area of presentation formats (Coldevin, 1980). In the past forty years, there have been in the neighborhood of ten or fifteen significant papers written on the subject of how content is organized for film, television, and video instruction (Coldevin, 1980).

After comparing a number of formats categorized for their technical attributes, Salomon and Cohen (1977) found that " . . . different formats typical of the television medium differentially affect the mental skills that are called into play." This leads to the question of just what the differences are between formats as well as what the differences are in their effect on learners.

Schwarzwalder (1960) concluded that students learned more from watching programming that showed visual organization and continuity as well as visual reinforcement. Comparisons of television formats have also helped researchers to determine that superior technical production is important to all types of viewers (Green and Matsui, 1981).

James Paluzzi (1980) compares and contrasts five presentation formats: 1) faceless narrator, 2) talking head, 3) interview, 4) dramatic encounter, and 5) participant observer. It is Paluzzi's finding that " . . . we have to date, little conclusive evidence that suggests the superiority of a given production format." In this assertion Paluzzi is absolutely correct, for in most of the experimental research where there are not conflicting findings there are usually no significant differences in learning achievement between the control and the experimental groups.

In comparing the lecture, interview, and discussion methods of presenting factual information, Brandon (1956) found a significant difference in interest between groups, but no significant difference between groups when comparing for learning achievement:

1. Programs utilizing the interview and discussion methods of presentation are significantly more interesting than the programs utilizing the lecture method of presentation.

2. The three methods of presentation do not differ significantly in their ability to communicate information.

This is just one of many studies that failed to make any correlation between interest level and learning achievement.

The validity of these three formats in regard to their effectiveness as instructional presentations was further tested by Ketcham and Heath (1963) who found no significant difference in learning achievement between those who viewed films that had a direct visual representation of content and

those that did not (where a speaker presenting the information was the only visual material).

The lecture style has been compared to the problem-solving approach (Detmeier, et al, 1963, cited by Chu and Schramm, 1967; Kaplan, 1963) with somewhat conflicting results. Detmeier, et al, found no significant difference in the learning achievement of the lecture viewers and that of the problem-solving audience. Kaplan, on the other hand, tested subjects with a test designed to appraise students' problem-solving ability and found significantly higher learning achievement on the part of the students who viewed the material presented with the problem-solving approach.

Expository and dramatic presentation styles were tested for relative learning achievement and interest levels. Television was actually found to be more instructive than face-to-face instruction when unaided by any dramatic reinforcement (Rock, et al, 1951a, cited by Chu and Schramm, 1967).

Blain (1956, cited by Chu and Schramm, 1967) found no significant variance in learning achievement between fifth grade groups that viewed expository and dramatic presentations. There was, however, significant variance among eighth graders who viewed the same presentations with learning achievement being higher in those students exposed to the expository version.

Lumsdaine and Gladstone (1958) found fifth graders' interest level in dramatic presentations higher, whereas ninth

graders were more interested in the expository version. The interesting thing about these results is that when learning achievement was concerned, the tendencies were exactly opposite: fifth graders learned more from the expository version, whereas ninth graders' learning achievement was raised as a result of the dramatic version.

Kazem (1961) found no significant variance in learning achievement between groups viewing dramatic and expository versions of a film covering the same content.

Costello and Gordon (1961) assert that " . . . certain subjects seem to lend themselves to dramatization better than others, most notably the social sciences, literature, psychology, [and] sociology." Meaney (1962, cited by Crow, 1979) states that " . . . a psychologist can present to his students in a course on television many experiences which he cannot give them otherwise. He can plan skits dramatizing the dynamics of behavior, he can plan a mock counseling interview."

Paluzzi (1980) also believed that the dramatic encounter has its place in instructional television, describing it as " . . . an interview conducted without any production consciousness . . . " allowing the viewer to " . . . identify with the characters to an even greater degree, since the removal of the artificial traditional interview situation allows the viewer to vicariously experience that encounter."

An interesting comparison was made between videos that had narrators that acted as a part of instructional vignettes

and those that had narrators who acted apart from these vignettes (Brown, et al, 1975). Adult learners did better on learning achievement tests when the presenter took part in the instructional vignettes.

Technical Comparisons

Over the past forty years a tremendous amount of research has been conducted that compares specific production techniques for their effect on learning achievement and interest levels. Presented here is a review of the research that has specific relevance to this study and the techniques under consideration for the experiment described in the method chapter of this text.

It has been found that a variety of shots rather than a static composition is favored slightly by students, and that learning achievement was increased in part of one test due to that variety (Cobin and McIntyre, 1961).

Ellery (1959) compared a wide variety of production variables including a "limbo set" that showed a speaker in no particular place, and an "actual set" where the speaker was placed in front of a studio curtain. There was no significant difference in learning achievement, but there was more interest expressed in the presentation made with the "limbo set." This suggests that sets need not necessarily be of elaborate design to interest an audience. This finding is in direct contrast to the film verite approach of most industrial videos, which are usually field productions.

Advance organizers, it has been found, do facilitate learning achievement, but while doing so, sometimes seem to confuse students (Nugent, et al, 1980), suggesting that advance organizers might set up expectations on the part of the student that may or may not be realistic.

Insertion of questions, before and after learning segments, was examined by Kantor (1960). No significant gain in learning achievement was recorded.

Miller and Levine (1952 and replicated Miller, Levine, and Sternberg 1954, cited by Chu and Schramm, 1967) compared three versions of a training film, one without subtitles, one with major subtitles, and one with complete subtitles. No significant differences in learning achievement were found. Northrup (1952, cited by Chu and Schramm, 1967), however, found different results. Where the film was not very well organized, learning achievement was higher in the subtitled version. When the material presented was well organized, learning achievement was higher in the non-subtitled version.

Where presenter types were concerned, it was found that thin speakers were preferred for the most part over muscular or fat speakers (McCain and Divers, 1973). Audience members rated the commentators on source credibility and interpersonal attraction. No reports of variance in interest or learning achievement were made.

No significant differences were found in learning achievement or interest as a result of increased or decreased amounts of 'eye contact' between the presenter and the camera

(Connolly, 1962, cited by Chu and Schramm, 1967; Westley and Mobius, 1960, cited by Chu and Schramm, 1967).

Unintended Biases

Within any comparison of films or videos, unintended biases may be present. Duck and Baggaley (1974) found unintended biases in an experiment which compared two video presentations of the same lecture. One version showed the audience in a bored and inattentive state, the other version showed the audience in an interested and attentive state. Not surprisingly, the viewers of the two videos rated the speaker as boring in the version where the audience was shown bored, and interesting where the audience was shown interested.

Duck and Baggaley (1975a) also found that film style shooting and editing of interviews made the respondent seem more interesting and profound than in two camera live edited shoots. This is interesting because it is the footage of the interviewer rather than the respondent that is manipulated in the film style shooting and editing processes.

In another experiment, Baggaley and Duck (1974) concluded that " . . . when presented against the [chromakeyed] picture background the speaker was construed as significantly more honest, more profound, more reliable, and more fair than when seen against a plain background." This finding was further validated by Coldevin (1978).

Speakers were also perceived as being more profound when shown in camera angles that did not reveal them referring to their notes (Duck and Baggaley, 1975b). The interesting point

here is that respondents to the video that showed the speaker referring to his or her notes did not consciously know that they were reacting negatively to the inclusion of the notes in the shot.

All in all, the evidence by Baggaley, Duck, and Coldevin demonstrates that within any video there is the potential for the audience to react in unexpected ways to specific production techniques.

The Use of Humor in Instructional Television

Many theories have been developed in regard to the use of humor for instructional purposes. Opposite camps cite the theories that humor is an effective attention-gaining device or that humor serves as a distraction to the instructional message.

The results of research in this area have proven to be confusing and at odds with each other. Lumsdaine and Gladstone (1958) report that when two versions of a filmstrip were compared, the non-humorous version yielded the highest learning achievement.

McIntyre (1954, cited by Chu and Schramm, 1967) found no significant difference in learning achievement where a humorous and non-humorous version of a program were shown.

Zillman, et al (1980) found that humorous inserts unrelated to the instructional content, especially those that were fast paced, do facilitate learning achievement on the part of younger viewers. Zillman and Bryant (1980) in their review of literature on this subject came to the conclusion

that where adults were concerned, mild humor, semantically related to the instructional content, could facilitate learning achievement on the part of adult viewers.

Summary

The research concerning the use of common errors and matched example/nonexample pairs, presentation formats, various techniques, and unintended biases is contradicted when considering the question of what benefits or liabilities "right way/wrong way" presentations have to offer the instructional video producer. Therefore, the two hypotheses developed in this thesis were based on the industry-wide presumption that "right way/wrong way" does have benefits to offer.

Hypotheses

Based on the patterns of research results uncovered in this review of the literature, the following hypotheses were developed:

Assumption:

Learning and interest will be inspired by the "right way" video presentation, as well as the "right way/wrong way" video presentation.

Hypotheses:

1) Learning achievement will be greater on the part of students who view "right way/wrong way" video presentation than for those who view the "right way" presentation.

2) Interest levels will be greater in the "right way/wrong way" video presentation on the part of student viewers than in the "right way" presentation.

METHODOLOGY

Program Development -

Using research which is cited and condensed on the following pages, two versions of an instructional video program were produced. The control group ("right way") version was 10 minutes 17 seconds long; the experimental group ("right way/wrong way") version was 12 minutes 55 seconds. The content of the programs was the four steps necessary to demonstrating a task effectively. The program was shown to 98 undergraduate and graduate students from the Advertising, Communication, and Telecommunication Departments of the College of Communications Arts and Sciences at Michigan State University.

The difference between the two programs was isolated to the examples and discussion segments that had to do with the non-examples, or common errors, made by demonstrators. Sequences in the "right way/wrong way" video program progressed in the following manner:

Discussion of wrong way - example of wrong way - discussion of right way - example of right way - discussion of wrong way, etc.

Whereas sequences in the "right way" video program progressed in the following manner:

Discussion of right way - example of right way - discussion of right way, etc.

The following research was referred to and drawn upon in developing both or either the "right way" and "right way/wrong way" video programs:

1. Merrill and Tennyson's (1977) model of providing a definition followed by a closely matched example/non-example pairs (note: only one level of difficulty was provided for the steps being demonstrated in the "right way/wrong way" video, in keeping with most "right way/wrong way" treatments). This research was, of course, central to the hypotheses being tested. This method of teaching is further substantiated by Klausmeier, et al (1974, cited by Jassal and Tennyson, 1981-82); Feldman (1971, cited by Tennyson and Park, 1980); Tennyson (1973); McKinney (1985).

2. Bentti, et al (1983) and Gropper's (1983) suggestion that the teaching of non-examples can be used for procedure learning.

3. Bentti, et al (1983); Garduno, et al (1984); and Marcone and Riegeluth's (1988) findings that common errors when shown should be errors that are commonly made by those performing the task.

4. Bentti, et al (1983); Garduno, et al (1984); and Marcone and Riegeluth's (1988) finding that when using a common error for an example it is most beneficial when it is made apparent that it is, in fact, a common error.

5. Grant's (1951) finding that an ordered presentation of instances increases the ease of concept attainment.

6. Research that suggests the need for commentary to be that points out critical attributes of an instance (Goss and Moylan, 1958; McCreary, 1963; Underwood and Richardson, 1956; and Weiner, 1967, all cited by Clark, 1971; Haygood and Devine, 1967; Haygood and Stevenson, 1967; Klausmeier and Meinke, 1968).

7. Brandon's (1956) finding that the interview and discussion methods of presentation yield higher interest levels.

8. Costello and Gordon's (1961) assertion that dramatization lends itself to subjects within the social sciences, such as educational psychology.

9. Paluzzi's assertion that dramatization is essentially "an interview conducted without any production consciousness, which allows the viewer to identify even more with the characters depicted."

10. Brown, Brown, and Danielson's (1975) finding that adult learners did better when presenter's took part in the example vignettes.

11. Nugent's (1980) finding that advance organizers can facilitate learning achievement.

12. McCain and Divers' (1973) finding that thin presenters were preferred to fat or muscular speakers.

13. Duck and Baggaley's (1974) finding that presenters are held in higher esteem by viewers when their video audience shows interest and are held in lower esteem by viewers when their video audience appears bored.

14. Ellery's (1959) discovery that films don't necessarily need a complex set to gain students' interest, but can be as easily involved in scenes with a "limbo set."

Treatment -

The following is an analysis of program segments used in the two videos, as well as production variables utilized during those segments. Analysis is made in reference to the instructional and interest objectives of each segment or variable.

Segment: The Opening

Action and dialogue:

Hands perform rope trick while Dr. Yelon asks the audience to watch, and then if the audience is ready to perform the trick themselves. He then asks what it would take for him to show the audience how to perform a trick like the one he just performed. He then tells the audience that that is the topic of the program they are watching.

Instructional Objectives:

To state the problem (i.e., the trouble with just showing somebody how to do something without using the four steps to demonstration), and to indicate that the answer is forthcoming.

Interest Objectives:

To create a sense of curiosity and interest.

Production Variable: Music During Introduction

Instructional Objective:

To raise production value and therefore credibility as per Schramm and Chu's (1967) finding that students' perception of the quality and interest of an instructional video program is related to the attitude formation toward that program.

Interest Objectives:

To raise interest in the video by giving it an appearance closer to that of an entertainment program.

Production Segment: The Discussion

Stacey and Dr. Yelon (see Appendix A and B) discuss the topic of demonstration and point out particular characteristics of each example.

Instructional Objective:

To show the need for information about demonstration, as well as to "set up" the examples with information that clues the viewers as to what to look for, as well as commentary about what they have just seen. There is also the objective of displacing any possible learner apprehension on the part of viewers to the character, Stacey, through the identification process described in the interest objectives.

Interest Objectives:

To allow the viewer to identify with Stacey (rather than be lectured to) and, as such, to be put in a receptive mood.

Production Segment: The Examples

Action and Dialogue:

Dr. Yelon addresses a classroom with a demonstration of a knot that he is teaching the class to tie. In the "right way" version, all examples are examples of the correct way to demonstrate according to the step being presented. In the "right way/wrong way" version, the examples are both of the correct and incorrect ways of accomplishing the task.

Instructional Objectives:

In the "right way" version, the examples are provided to show how to accomplish the task in the simplest (perhaps least confusing) means possible. In the "right way/wrong way" version, the wrong way of accomplishing the task is shown to demonstrate not only the common error, but the results of the common error as a reinforcement of learning. Specific data being presented are the four steps necessary to effective demonstration: 1) tell students they will perform, 2) tell students what clues to pay attention to, 3) say and then do, and 4) have students commit the steps to memory.

Interest Objectives:

The instructor acted as a part of the vignettes as per Brown, et al's (1975) finding.

Production Variable: Classroom Participants

Action:

Students in the classroom are shown reacting to Dr. Yelon's incorrect (in the "right way/wrong way" version) and

correct (in both versions) applications of the demonstration techniques.

Instructional Objectives:

The use of this variable was to facilitate an understanding of the results of the correct or incorrect application of the demonstration techniques being presented (when students appeared bored due to the absence of the first step, for instance).

Interest Objectives:

Student participation was a dramatic presentation and was meant to involve the viewer through his or her identification with Dr. Yelon.

Production Variable: The Narrations

Dialogue:

At the end of some of the example segments, narration by Dr. Yelon was provided.

Instructional Objective:

To encapsulate and condense the instructional objectives with the example segment for the viewer.

Interest Objective:

This variable was meant to remain as transparent as possible and was meant to create an easy transition between the example and discussion segments by foreshadowing Dr. Yelon's presence in the discussion with his voice in the example.

Production Variable: Graphics During Transitions

Visuals:

Graphics were provided between the discussion and example segments of the program (i.e., "say and then do" in the "right way" version or "say and then do, right way" in the "right way/wrong way" version).

Instructional Objective:

The graphics were provided to let the audience know what instance they would be viewing so as to reflect the present step being demonstrated in the program. Advance organizers were provided in order to facilitate an orderly presentation in the program as well as to prepare viewers for forthcoming information.

Interest Objectives:

This variable was intended (along with the music during these segments) to raise the production value of the program and put the viewer in a receptive mood.

Production Variable: Music During Graphics

Music was provided during the graphics presented previous to the examples. In the "right way" version, the music during the graphics was of a positive tonality because each of the examples was a positive instance. In the "right way/wrong way" version, the tonality was either positive or negative depending on whether the instance was positive or negative.

Instructional Objectives:

The instructional objectives for the music during the graphics were the same as for the instructional objectives for

the graphics: to alert viewers to the type of instance (positive or negative) by the tonality of the music.

Interest Objectives:

The interest objectives for the music during the graphics were the same as for the interest objectives of the graphics: to raise the production value of the program and to put the viewer into a receptive mood.

Evaluation Design

A post-test only design using the same test (see Appendix C) for the experimental (right way/wrong way") and control ("right way") groups was used to evaluate differences in learning achievement, interest, subjective response evaluation of specific program segments and production variables and demographics. Since the number of participants in both groups combined approached 100, it was assumed that the distribution of individual differences would be normal and the subjects would be a representative sample of motivated learners.

Subjects

Respondents were undergraduate and graduate students drawn from the Advertising, Communication, and Telecommunication Departments in the College of Communication Arts and Sciences at Michigan State University. The rationale for using students from these programs was both for convenience and for the fact that they can be considered motivated learners. The primary target audience for the program was instructors and teachers, but the program design was made to create a "stand alone" instructional video, requiring no

special knowledge or jargon a college-level student would be unaccustomed to. Student participation was voluntary although some classes did provide extra credit for participating.

The age of the students participating ranged from 19 to 30, with the average being 22.3 years of age. The grade levels ranged from sophomore to first-year graduate level, the average being just less than senior level.

Subjects were divided into the experimental and control groups via random assignment. Both groups were told that they were to watch a video, after which they would respond to a questionnaire which consisted of a test on content, a survey on interest levels, a production feedback questionnaire, and a demographic questionnaire. Students were not allowed to take notes, and no teacher-directed follow-up was used after either presentation.

Instrumentation

Each questionnaire consisted of three tests. The first test was developed to measure learning achievement. An eleven-question, nineteen-point questionnaire was developed with multiple choice, essay, and recall responses called for.

The learning achievement test was followed by Production Feedback Questionnaire, developed by Barbatsis and Wong (1977), so as to determine the effectiveness of certain production variables.

The Production Feedback Questionnaire was followed by brief interest questionnaire designed to gauge viewers' overall interest in the subject as well as the video. The

interest section was interspersed with open-ended and closed-ended questions regarding certain production variables unsuited to being gauged by the Production Feedback Questionnaire. Following the interest survey was the Demographic Survey, designed to determine the type of person being tested.

The test was designed to be as brief as possible, as one of the main concerns of students deciding on whether or not to participate was the length of time necessary to complete the exercise. The complete test can be found in Appendix C.

Analysis

The learning test was compiled in the form of five test scores in order to segment the scores according to what level of learning the test was operating (i.e., recall, recognition, or application). A compilation of all five scores was also made. Each segment average score, as well as the compiled average score, of all segments was compared by means of a t-test performed between groups.

The interest scale questions, as well as the production scale questions (regarding the likability of Dr. Yelon and Stacey), were compiled into scores which were then summed and averaged. A t-test was then performed on each question to determine if there was a significant difference between groups.

The Production Feedback Questionnaire scores were evaluated through the use of cross-tabulation to determine if a significant difference existed between the frequencies

observed and the frequencies expected in positive and negative responses between groups.

Summary

Based on the research summarized in the Review of the Literature, two video treatments were developed to compare the differences between "right way" (control) and "right way/wrong way" (experimental) presentation formats.

A test was developed to determine if there was a difference between the two treatments in the areas of learning achievement, interest, affective response to individual production segments and variables.

The videos were viewed by 98 College of Communication Arts and Sciences students at Michigan State University, who were then administered the test.

RESULTS

One of the two hypotheses showed significant variance between the control and experimental groups. The first hypothesis predicted that higher learning achievement would be a result of the experimental, or "right way/wrong way" presentation format.

Assumption - Learning will occur with programs using either the "right way" (control) or "right way/wrong way" (experimental) presentation formats. Analysis of the multiple choice, essay, and recall portions of the test found that both treatments were adequate in communicating the instructional information embodied in the programs.

Table 1. Mean test scores based on a 19-point learning achievement test.

EXPERIMENTAL	CONTROL
N = 48	N = 50
Mean = 15.01	Mean = 13.12
= 79%	= 69%
Minimum = 7	Minimum = 7
Maximum = 19	Maximum = 18

Table 2. Breakdown of mean test scores based on a 19-point learning achievement test by section.

- Section A -

(Recall Section Reflecting Primary Learning Objectives)

EXPERIMENTAL	CONTROL
N = 48	N = 50
Mean = 3.729	Mean = 3.6
= 93.225%	= 90%
Minimum = 2	Minimum = 2
Maximum = 4	Maximum = 4

Total possible score = 4

- Section B -

(Recall Section Reflecting Primary Learning Objectives)

EXPERIMENTAL	CONTROL
N = 48	N = 50
Mean = 2.938	Mean = 2.26
= 73.45%	= 56.5%
Minimum = 0	Minimum = 0
Maximum = 4	Maximum = 4

Total possible score = 4

Table 2 (continued)

- Section C -

(Recognition Section Reflecting Secondary Learning Objectives)

EXPERIMENTAL	CONTROL
N = 48	N = 50
Mean = 3.188	Mean = 2.7
= 79.7%	= 67.5%
Minimum = 2	Minimum = 1
Maximum = 4	Maximum = 4

Total possible score = 4

- Section D -

(Recognition Section Reflecting Secondary Learning Objectives)

EXPERIMENTAL	CONTROL
N = 48	N = 50
Mean = 2.479	Mean = 2.2
= 82.63%	= 73.33%
Minimum = 1	Minimum = 1
Maximum = 3	Maximum = 3

Total possible score = 3

Table 2 (continued)

- Section E -

(Application Section Reflecting Secondary Learning Objectives)

EXPERIMENTAL	CONTROL
N = 48	N = 50
Mean = 2.677	Mean = 2.36
= 66.925%	= 59%
Minimum = 0	Minimum = 0
Maximum = 4	Maximum = 4

Total possible score = 4

The mean test score for overall learning achievement (including recall, recognition, and application test instruments) for the experimental group was 15.01 or 79% correct. This seems high considering not all the test sections concerned the primary learning objectives (recall). The mean test score for overall learning achievement was 13.12 or 69% on the part of the control group.

Even though there was a 10% difference in overall learning achievement, both groups demonstrated learning of the subject matter; therefore, both treatments of the production can be considered effective learning tools. Because of this, the first condition of the assumption is accepted.

The first hypothesis predicted a relationship between greater learning and the viewing of a "right way/wrong way" format.

Hypothesis 1: Learning will be greater on the part of students who view the "right way/wrong way" presentation.

A t-test (difference of means) was used to determine if there was any significant variance between learning achievement on the part of the control and experimental groups. A one-tailed test was used due to industry producers' assumptions that learning achievement would be higher in the "right way/wrong way" treatments.

Table 3. One tailed t-test between groups receiving "right way/wrong way" (experimental) and "right way" (control) production formats (overall learning achievement).

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
t = -3.09	t = -3.09
Probability = .0015 (one tailed)	Probability = .0015 (one tailed)
Df = 96	Df = 95.95

N = 98

Table 4. Breakdown of t-tests comparing mean scores of experimental and control groups on a 19-point learning achievement test.

- Section A -

(Recall Section Reflecting Primary Learning Objectives)

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
t = -1.05	t = -1.06
Probability = .148 (one tailed)	Probability = .147 (one tailed)
Df = 96	Df = 92.98

N = 98

- Section B -

(Recall Section Reflecting Primary Learning Objectives)

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
t = -3.15	t = -3.14
Probability = .001 (one tailed)	Probability = .001 (one tailed)
Df = 96	Df = 91.59

N = 98

- Section C -

(Recognition Section Reflecting Secondary Learning Objectives)

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
t = -3.06	t = -3.07
Probability = .0015 (one tailed)	Probability = .0015 (one tailed)
Df = 96	Df = 91.24

N = 98

Table 4 (continued)

- Section D -

(Recognition Section Reflecting Secondary Learning Achievement)

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
t = -1.95	t = -1.96
Probability = .027 (one tailed)	Probability = .0265 (one tailed)
Df = 96	Df = 95.95

N = 98

- Section E -

(Application Section Reflecting Secondary Learning Objectives)

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
t = -1.19	t = -1.19
Probability = .1185 (one tailed)	Probability = .1175 (one tailed)
Df = 96	Df = 94.34

N = 98

There were only 15 chances in 10,000 that the difference between groups is attributable to chance. Because of this, the first hypothesis predicting greater learning achievement on the part of viewers who saw the "right way/wrong way" presentation was accepted.

The second condition of the assumption was that interest would be inspired by both "right way" and "right way/wrong way" presentation formats.

Interest in the video was gauged by a five-point rating scale where a rating of one indicated low interest and a rating of five indicated high interest.

Table 5. Mean interest in video rating scores based on a five-point interest scale.

EXPERIMENTAL	CONTROL
N = 48	N = 50
Mean = 3.06	Mean = 3.04
= 51.5%	= 51%
Minimum = 1	Minimum = 1
Maximum = 5	Maximum = 5

Hypothesis 2 - Interest will be higher on the part of students who view the "right way/wrong way" presentation style.

A t-test was performed to determine if there was significant variance between experimental and control groups (see Table 6).

Table 6. One tailed t-test between response to the interest in video scale by experimental and control groups.

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
t = .19	t = .19
Probability = .424 (one tailed)	Probability = .424 (one tailed)
Df = 96	Df = 95.96

N = 98

There were over 42 chances in 100 that the difference between means was attributable to chance. Because of this, the second hypothesis predicting greater interest on the part of those who viewed the "right way/wrong way" presentation was rejected.

Because participants were not a part of the production primary target audience, two measures were used to gauge interest, the interest in video measure previously described, and an interest in subject matter measure (see Tables 7 and 8).

Table 7. Mean interest in subject matter rating scores based on a five-point interest scale.

EXPERIMENTAL	CONTROL
N = 48	N = 50
Mean = 2.979	Mean = 3.04
= 49.475%	= 51%
Minimum = 1	Minimum = 1
Maximum = 5	Maximum = 5

Table 8. One tailed t-test between response to interest in subject matter scale by experimental and control groups.

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
t = .28	t = .28
Probability = .39 (one tailed)	Probability = .39 (one tailed)
Df = 96	Df = 95.97

N = 98

There were 39 chances in 100 that the differences between the two groups' responses to interest in the subject matter was caused by chance. Because of this, the variance between groups was not considered significant.

However, a Pearsons product moment coefficient was computed between interest in the subject matter and interest in the video for both groups (see Table 9).

Table 9. Pearsons product moment coefficient correlation between interest in subject matter and interest in video for experimental and control groups.

EXPERIMENTAL	CONTROL
N = 48	N = 50
Pearsons r = .6863	Pearsons r = .6593

Pearsons r for both the experimental and control groups was over .6; therefore, it was determined that there was a strong correlation between interest in the subject matter and interest in the video presentation.

This correlation explains the somewhat low interest in video scores garnered by both treatments, especially since the results from the interest in video question seemed inconsistent with the results from the Production Feedback Questionnaire (See Tables 10, 11, 12, 13, and 14).

Table 10. A frequency distribution of the total response for each production technique from the Production Feedback Questionnaire for Group A (control).

AFFECTIVE RESPONSE RATING	TOTAL POSSIBLE RESPONSE	ACTUAL POSITIVE RESPONSE	ACTUAL NEGATIVE RESPONSE
1) Curious/indifferent	450	66 (14.67%)	124 (27.56%)
2) Involved/preached to	450	57 (12.67%)	22 (4.89%)
3) Content/confused	450	105 (23.33%)	14 (3.11%)
4) Pleased/displeased	450	52 (11.56%)	20 (4.44%)
5) Interested/ disinterested	450	100 (22.22%)	32 (7.11%)

Table 11. A frequency distribution of the total response for each production technique from the Production Feedback Questionnaire for Group B (experimental).

AFFECTIVE RESPONSE RATING	TOTAL POSSIBLE RESPONSE	ACTUAL POSITIVE RESPONSE	ACTUAL NEGATIVE RESPONSE
1) Curious/indifferent	432	59 (13.65%)	118 (27.31%)
2) Involved/preached to	432	45 (10.42%)	17 (3.94%)
3) Content/confused	432	89 (20.6%)	4 (.93%)
4) Pleased/displeased	432	71 (16.44%)	39 (9.03%)
5) Interested/ disinterested	432	81 (18.75%)	42 (9.72%)

Table 12. A relative frequencies breakdown of total possible affective response to the production techniques presented to Group A (control).

		TOTAL POSSIBLE RESPONSE	TOTAL POSITIVE RESPONSE	TOTAL NEGATIVE RESPONSE
1)	Opening	250	68 (27.2%)	14 (5.6%)
2)	Discussion	250	44 (17.6%)	32 (12.8%)
3)	Examples	250	62 (24.8%)	18 (7.2%)
4)	Narrations	250	41 (16.4%)	20 (8%)
5)	Transitions I	250	36 (14.4%)	22 (8.8%)
6)	Transitions II	250	27 (10.8%)	25 (10%)
7)	Music-introduction	250	30 (12%)	26 (10.4%)
8)	Music-before examples	250	29 (11.6%)	23 (9.2%)
9)	Graphics	250	45 (18%)	18 (7.2%)

Table 13. A relative frequencies breakdown of total possible affective response to the production techniques presented to Group B (experimental).

		TOTAL POSSIBLE RESPONSE	TOTAL POSITIVE RESPONSE	TOTAL NEGATIVE RESPONSE
1)	Opening	240	57 (23.75%)	12 (5%)
2)	Discussion	240	28 (11.67%)	48 (20%)
3)	Examples	240	62 (25.8%)	13 (5.42%)
4)	Narrations	240	51 (21.25%)	15 (6.25%)
5)	Transitions I	240	27 (11.25%)	24 (10%)
6)	Transitions II	240	28 (11.67%)	28 (11.67%)
7)	Music-introduction	240	22 (9.17%)	25 (10.42%)
8)	Music-before examples	240	28 (7.5%)	27 (11.25%)
9)	Graphics	240	36 (15%)	17 (7.08%)

Table 14. Chi-square statistic based on a 2 x 2 cross tabulation of group participation by total positive and negative response, ranked by order of production segment.

PRODUCTION SEGMENT	CHI-SQUARE
1) Opening	.0027
2) Discussion	6.6
3) Examples	.6465
4) Narrations	1.61
5) Transitions I	.93
6) Transitions II	.05
7) Music-introduction	.469
8) Music-example	2.39
9) Graphics	.167

Df = 1

Chi-square necessary to be significant at the .05 level = 3.841.

The only significant Chi-square statistic resulted from the cross tabulation of group participation by positive or negative response for the discussion segment of the production. It was found that participants in the control group were more likely to react positively to the discussion segments than those in the experimental group.

To account for this variance, t-tests were performed to find if there was any difference between groups on the five-point likability scales from the interest questionnaire rating

Dr. Yelon and Stacey. No significant difference was found (see Tables 15, 16, 17, and 18).

Table 15. Mean likability ratings for Dr. Yelon based on a five-point scale.

EXPERIMENTAL	CONTROL
N = 48	N = 50
Mean = 4.063	Mean = 3.94
= 76.575%	= 73.5%
Minimum = 1	Minimum = 2
Maximum = 5	Maximum = 5

Table 16. Two tailed t-test between response to the likability scale by experimental and control groups for Dr. Yelon.

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
t = -.68	t = -.68
Probability = .496 (two tailed)	Probability = .497 (two tailed)
Df = 96	Df = 95.26

N = 98

Table 17. Mean likability ratings for Stacey based on a five-point scale.

EXPERIMENTAL	CONTROL
N = 48	N = 50
Mean = 2.521	Mean = 2.68
= 38.025%	= 42%
Minimum = 1	Minimum = 1
Maximum = 5	Maximum = 5

Table 18. Two-tailed t-test between response to five-point likability scale by experimental and control groups for Stacey.

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
t = .74	t = .74
Probability = .461	Probability = .461
Df = 96	Df = 95.96

N = 98

Summary

Significant difference was found in learning achievement between experimental and control groups in favor of the "right way/wrong way" presentation. This finding supports the first hypothesis.

No significant difference was found between experimental and control groups where interest was concerned, rejecting the second hypothesis.

DISCUSSION

Summary

The results of the t-test comparing overall learning achievement were interesting (and should be especially so for instructional video producers), if not unexpected. There was a significant difference between the results from the experimental and control groups, favoring the experimental ("right way/wrong way") presentation technique for learning achievement.

Of the sections of the learning achievement test dealing with the primary recall learning objectives (sections A and B), only Section B showed significant variance, lending further credibility to the findings of Nugent, et al (1980) in that the material covered by Section A used advance organizers in both treatments. The material covered by Section B of the learning achievement test was not pre-emphasized by an advance organizer, but was given extra emphasis in the negative examples given in the "right way/wrong way" presentation. This finding suggests that "right way/wrong way" presentations offer an opportunity to organize and present information when a production has used advance organizers and other techniques to their fullest capability.

It also suggests that "right way/wrong way" presentations may be especially useful in imparting information regarding the consequences of a common error as the material covered in Section B of the learning achievement test dealt exclusively with the reasons for using a given step. It should be noted that narrations to sum up and emphasize the results of these steps were used.

Results from Sections C, D, and E concerning secondary learning objectives also show significant variance in favor of the "right way/wrong way" presentation format. Sections C and D both concerned recognitive responses suggesting that "right way/wrong way" presentations do, in fact, inspire a critical, recognitive capability in those viewers in regard to the specific subject covered by the presentation.

There was no difference in Section E which concerned secondary learning objectives of an applications nature, which is not surprising, given the content of the presentations. Both production treatments concerned a procedure that can be applied to an infinite variety of situations, whereas if the procedure had been applicable to a particular machine or instance a presentation of this sort might be testable on the application level.

The lack of significant variance between the interest measures was not completely surprising, considering Brandon's (1956) finding that interest and learning achievement were not necessarily related. It is even more easily understood when one considers that there was a significant correlation between

interest in the subject matter and interest in the video. As expected, interest in the subject matter was evenly distributed between groups, and as such, so was interest in the video.

An interesting result was from the comparison of results from the Production Feedback Questionnaire responses between the experimental and control groups. All of the production segments examined, save one, were insignificant showing no variance between groups. The production segment that showed significant variance was the discussion segment in favor of the "right way" presentation, which was confusing considering that no significant variance between groups was found in the ratings for the likability of the two active elements in those production segments: Dr. Yelon and Stacey. Were time the specific variance accounting for this difference, one would think that there would also be a difference in the other production variable accounting for time: the example section. There was, however, no such difference. This finding does, however, seem to add further support to the finding of Lumsdaine and Gladstone (1958) that showed higher learning achievement and lower interest levels on the part of ninth graders as a result of viewing dramatic presentations.

Further results from the Production Feedback Questionnaire indicate that the "right way" group was more confused by their treatment than the "right way/wrong" group. Most of this variance seems in response to the opening sequence. (Note - A certain amount of confusion was expected

in this segment due to its nature. The confused response was often paired with a curious response.) This response is difficult to understand unless the questions and objectives posed in the "right way" (which were the same as in the "right way/wrong way" treatment) were not answered and addressed to the satisfaction of the control group.

Disinterest was higher for the "right way/wrong way" treatment and was mostly in response to the discussion segments of the presentation. This suggests that the added commentary became tedious to the "right way/wrong way" viewers. The most popular segment treatment was the opening where interest and curiosity were the dominant responses. The most popular segments in the "right way/wrong way" version were the examples, indicating the contrast between the correct and incorrect manner of accomplishing a task is intrinsically more appealing to viewers.

Table 19. Breakdown of positive response expressed toward the example segment of the experimental treatment.

Affective Response Rating	Number of Responses
Involved	15 (25%)
Interested	14 (23.33%)
Content	12 (20%)
Curious	11 (18.33%)
Pleased	9 (15%)

The most unpopular segment of both video presentations was the discussion segment. The concentration of responses in

both treatments was highest in the "indifferent" category, followed by "disinterest," and then "preached to." This can perhaps partly be attributed to the performance of Stacey, which was considered by many viewers to be stiff and unrealistic. It may also be that the commentary section is just more naturally prone to lower ratings.

Conclusion

Greater learning achievement is facilitated in college students by "right way/wrong way" video presentations than by the producer's natural alternative to that form of presentation: the "right way" format. Greater interest, however, is not a natural result of the "right way/wrong way" format.

Suggestions for Further Research

The negative instances presented in the "right way/wrong way" version of the production were the common error most likely to occur given the procedure being demonstrated. The most common error in this case was the exclusion of the step being demonstrated. The next question that needs to be answered is whether "right way/wrong way" presentations do facilitate greater learning or interest when the common error is the actual mis-performance of the task being demonstrated. It is suggested that further research be conducted in the use of common errors and negative instances in the production of instructional video programming.

Also, the treatments were testable on the recall, recognition, and application levels, but not on the analytic or synthetic levels. Further research needs to be devoted to

uses of matched example and nonexample pairs in the teaching of pure concepts (perhaps in the areas of aesthetics, psychology, physics, etc.) so as to be able to determine their effects on the analytic and synthetic levels.

NOTE

Scripts presented in Appendix A and B were not adhered to word-for-word in the actual video production, but any changes were cosmetic in nature and did not alter the spirit and intent of the information conveyed. The two appendices are presented here to provide an understanding of the content presented as well as a means to compare the structures of the two scripts and their essential differences.

APPENDIX A

- SCRIPT A -

(RIGHT WAY - CONTROL)

"FOUR STEPS TO EFFECTIVE DEMONSTRATION:

AN INSTRUCTIONAL DESIGN GUIDE"

VIDEO	AUDIO
-OPENING-	
FADE UP FROM BLACK	MUSIC UNDER
Two hands manipulating rope in front of a black background	-DR. YELON-(VO)- Watch this rope very carefully, you're about to see a trick performed with it. In a blink of an eye . . .
Hand does quick knot trick	. . . a knot is tied.
SLOW ZOOM into knot	After seeing this trick performed once, do you think you're ready to try it yourself? I wouldn't think so. What would it take for me to be able to show you how to perform a trick like this?
FADE TO BLACK	That's what we'll find out in this program. (MUSIC UP FULL)

VIDEO	AUDIO
DISSOLVE TO CG:	
Four Steps to Effective	
Demonstration: An	
Instructional Design Guide	
DISSOLVE TO CG:	
with Stephen Yelon, Ph.D.	
Professor of Educational	
Psychology	
Michigan State University	
DISSOLVE TO SCENE 1	(MUSIC OUT)
SCENE 1-	
INT. DR. YELON'S OFFICE	
FULL SHOT THRU DOOR	
DR. YELON is sitting at his	
desk working on the	
computer, a figure (STACEY)	
eclipses the frame.	
CUT TO MS	
STACEY	-STACEY-
	Dr. Yelon?
CUT TO MS	
DR. YELON looks up at	-DR. YELON-
STACEY	Oh, hi Stacey, how are you?

VIDEO	AUDIO
	-STACEY- Pretty good, but I was wondering if I could ask you a couple of questions?
	-DR. YELON- Sure, come on in. What's on your mind?
CUT TO MS STACEY sitting down	-STACEY- Well, I've got a problem. I'm working with a class, and some of the things that I need to teach them, well . . . they just don't seem to be getting the message. It seems like no matter how many times I explain to them what they need to do, they still don't understand what I'm talking about.
CUT TO MS DR. YELON	That is is a problem. Let me ask you this: Are you demonstrating what you're trying to teach?

VIDEO	AUDIO
CUT TO MS	
STACEY	-STACEY- Well, no. But it seems to me that my explanations are good ones, I take a lot of time writing them before class.
CUT TO MS	
DR. YELON	-DR. YELON- I'm sure your explanations are great. But one important aspect of the design of a good lesson is a demonstration. If you are trying to teach someone something, or you are trying to communicate with someone, you've got to add a good demonstration to your explanation. Students simply cannot learn, and people cannot understand what you are saying and be able to perform on the simple basis of an explana-tion. They've got to be

VIDEO	AUDIO
	able to see you perform, or demonstrate the task.
CUT TO MS	
STACEY	-STACEY- Right! I see. So if I show them how it's done, they should be able to do it. Great, thanks Dr. Yelon!
STACEY starts to get up to leave	
CUT TO MS	
DR. YELON	-DR. YELON- Hold on a second Stacey.
INSERT CUTAWAY	Demonstration makes things
STACEY sitting down	a lot easier for you as a teacher, but there are a few things you should know about them before you try one. You know, most people think that demonstration is simple, that it's easy. But it can be very difficult to show people what you want them to do, if all you needed was a

VIDEO	AUDIO
	mere demonstration without any sophistication or finesse, then every one of us could sink a basket like Michael Jordan, dance like Paula Abdul, or give a speech like the President. But I'll let you in on a little secret, there are four steps to an effective demonstration. These four steps will allow you to put together a demonstration where people are likely to perform well, even on the first try. They will know what they are expected to do and will be able to monitor their own performance.

VIDEO	AUDIO
DISSOLVE TO CG:	The first step is to tell
1-Tell students they will	the students they will
perform task	perform the task you are
2-Tell students what cues	showing them after you
to attend to	finish demonstrating.
3-Say and then do	The second step is to tell
4-Students commit steps to	the students what cues they
memory	should attend to during
	your demonstration.
	Which brings us to the
	third step, say and then
	do, as you demonstrate.
	And finally, step number
	four is to ask the students
	to commit the steps to
	memory before having them
	perform the task.
DISSOLVE TO MS	
DR. YELON	So you see, demonstration
	is very systematic, which
	is not to say that it isn't
	creative as well.

VIDEO	AUDIO
CUT TO MS	
STACEY	-STACEY- I see. But I'm still not sure I understand each of the steps.
CUT TO MS	
DR. YELON	-DR. YELON- Let me take each step one at a time, and start with step number one.
-SCENE 3-	
INT. OFFICE	
MEDIUM SHOT	-DR. YELON-
DR. YELON	The first step in a good demonstration is to tell your students that they will perform the task they are being shown. Which you should remember because I'll be asking you to state all of these steps aloud after I've demonstrated them to you.
CUT TO MS	
STACEY, interested	-STACEY- That's fair warning!

VIDEO	AUDIO
CUT TO MS	
	-DR. YELON- Suppose I was teaching a group of students how to tie a bowline know . . .
DISSOLVE TO CG Tell students they will perform DISSOLVE TO SCENE 2B -SCENE 2b- INT. CLASSROOM FULL SHOT DR. YELON in front of class	-DR. YELON- Now when I finish showing you this knot you'll show me how to tie it by performing the task for me!

VIDEO	AUDIO
CUT TO MS	
DR. YELON doing trick	
INSERT MS'S	
Student's attentive faces	
	-DR. YELON-(VO)- Just look at how my students pay attention when I let them know they will be expected to perform the task after it is demonstrated.
CUT TO SCENE 4b	
-SCENE 4b	
INT. OFFICE	
MEDIUM SHOT	-DR. YELON- The best way to demonstrate a skill is to let the student know which cues to pay attention to before you show them that particular part of the skill.
CUT TO MS	
STACEY, interested	-STACEY- Which is the second step!

VIDEO	AUDIO
CUT TO MS	
DR. YELON	-DR. YELON-
	Exactly!
DISSOLVE TO CG:	
Tell students what cues to pay attention to	
DISSOLVE TO SCENE 5B	
-SCENE 5b-	
INT. CLASSROOM	
FULL SHOT	
	-DR. YELON-
INSERT MS'S	Now pay attention to these
student's faces	steps. First, I take this part of the rope this way. Second, I slip this part of the rope in the opposite direction . . . and there you go! It's really very simple.
	INSERT VO: DR. YELON
	Whether you use a diagram, a list or just tell your students what to do, students will know what to look for if you let them know what to attend to, as

VIDEO	AUDIO
	we'll see when I ask Barbara to recall the steps for me.
FULL SHOT DR. YELON in front of class erases board	Now how about a volunteer from the class to tell us what the important steps of this knot are?
CUT TO MS of class, STUDENT B raises hand	OK, why don't you tell us?
CUT TO MS	-STUDENT B- OK, let's see . . . first you take one side one way . . . second you take the other side the opposite way . . . and that's it!
CUT TO MS DR. YELON	-DR. YELON- Great!

VIDEO	AUDIO
CUT TO SCENE 6a	
-SCENE 6a-	
INT. OFFICE	
MEDIUM SHOT	-DR. YELON- So the second step is to tell the students what to pay attention to before you demonstrate.
CUT TO MS	
STACEY	-STACEY- I see.
CUT TO MS	
DR. YELON	-DR. YELON- The third step is to stagger the visual and the verbal, say and then do as you demonstrate.

VIDEO	AUDIO
DISSOLVE TO CG:	
Say and then do.	
DISSOLVE TO SCENE 7B	
-SCENE 7b-	
INT. CLASSROOM	
MEDIUM SHOT	
DR. YELON demonstrating trick, saying, and then doing	-DR. YELON-
	First you take this part of the rope to the right . . .
INSERT CU'S OF HANDS	. . . like that, second you take the other part of the rope and slip it to the left . . . like that, and there you go--it's that simple.
CUT TO LS	-DR. YELON-
	Now who thinks they can tell me the important steps to tying this knot?
STUDENT C raises hand	
DR. YELON approaches STUDENT C	
	-DR. YELON-
	OK, why don't you tell us?

VIDEO	AUDIO
CUT TO MS	
STUDENT C	-STUDENT C- Sure. First you take the one side to the right, and then you take the other side and slip it to the left, and you're done. -DR. YELON-(VO)- Students are less confused and know what to look for when you say what you want them to do, and then show them how to perform.
CUT TO SCENE 8b	
-SCENE 8b- INT. OFFICE MEDIUM SHOT	-DR. YELON- After you demonstrate a skill you should always have your students commit the steps of that skill to memory.

VIDEO	AUDIO
DISSOLVE TO CG:	
Students commit steps to memory	
DISSOLVE TO SCENE 9B	
-SCENE 9b-	
INT. CLASSROOM	
MEDIUM SHOT	
DR. YELON in front of class, finishing knot.	
	-DR. YELON-
	And there you have it. Now I want all of you to commit those steps to memory, and then we'll see if you all can do it.
INSERT CUTAWAYS	MUSIC FULL
Students faces, concentrating	
CUT TO MS	MUSIC OUT
DR. YELON	-DR. YELON-
	OK, is everybody ready? Good then let's see if we can get somebody to try it out.

VIDEO	AUDIO
CUT TO LS	
DR. YELON approaches STUDENT D	Why don't you try it for us?
CUT TO MS	
STUDENT D attempts knot successfully	-STUDENT D- Well, okay. Let's see, first you take this side of the rope this way . . . and then you take this side of the rope the opposite way . . . and that's it!
CUT TO SCENE 10	
-SCENE 10-	
INT. OFFICE	
MEDIUM SHOT	-DR. YELON- When you get the students to commit the steps to memory, you're getting them to create a mental model to work from. This model can be used by the student to judge whether or not they are conforming to the task. Your students may not be able to perform the task

VIDEO	AUDIO
	perfectly, but they will have everything they need to practice on their own.
CUT TO MS	
STACEY	-STACEY- That's great!
CUT TO MS	
DR. YELON	- DR. YELON - So, now that I've demonstrated the four steps of good demonstration to you, why don't you commit them to memory.
CUT TO MS	
STACEY concentrating	-STACEY- Okay, I think I've got it.
CUT TO MS	
DR. YELON	-DR. YELON- Alright, why don't you tell me what the steps are.

VIDEO	AUDIO
DISSOLVE TO CG:	-STACEY-(VO)-
1-Tell students they will perform the task.	First, tell the students they will perform the task being demonstrated.
2-Tell the students what to attend to.	Second, tell the students what to attend to. Third,
3-Say, and then do.	you should say and then do,
4-Students commit steps to memory.	as you demonstrate. And fourth, you should ask the students to commit the steps you have just demonstrated to memory.
DISSOLVE TO MS	
STACEY	-STACEY-
	Well this is great, I can see right away that I'll be putting these principles to use quite a bit.
CUT TO MS	
DR. YELON	-DR. YELON-
	If you do, I'll guarantee your demonstrations will be very effective!
CUT TO LS	(MUSIC FULL)
STACEY getting up, shaking hands with DR. YELON	

VIDEO	AUDIO
DISSOLVE TO CG:	
Produced and Directed by	
Tom McCarthy	
DISSOLVE TO CG:	
Written by	
Stephen Yelon, Ph.D., and	
Tom McCarthy	(MUSIC OUT)

APPENDIX B

- SCRIPT B -

(RIGHT WAY/WRONG WAY - EXPERIMENTAL)

"FOUR STEPS TO EFFECTIVE DEMONSTRATION:

AN INSTRUCTIONAL DESIGN GUIDE"

VIDEO	AUDIO
-OPENING-	
FADE UP FROM BLACK	MUSIC UNDER
Two hands manipulating rope in front of a black background	-DR. YELON-(VO)- Watch this rope very carefully, you're about to see a trick performed with it. In a blink of an eye . . .
Hand does quick knot trick	. . . a knot is tied.
SLOW ZOOM into knot	After seeing this trick performed once, do you think you're ready to try it yourself? I wouldn't think so. What would it take for me to be able to show you how to perform a trick like this?
	That's what we'll find out in this program. (MUSIC UP FULL)

VIDEO	AUDIO
DISSOLVE UP TO CG:	
Four Steps to Effective	
Demonstration: An	
Instructional Design Guide	
DISSOLVE TO CG:	
with Stephen Yelon, Ph.D.	
Professor of Educational	
Psychology	
Michigan State University	
DISSOLVE TO SCENE 1	(MUSIC OUT)
SCENE 1-	
FADE UP TO VIDEO	
INT. DR. YELON'S OFFICE	
FULL SHOT THRU DOOR	
DR. YELON is sitting at his	
desk working on the	
computer, a figure (STACEY)	
eclipses the frame.	
CUT TO MS	-STACEY-
STACEY	Dr. Yelon?
CUT TO MS	
DR. YELON looks up at	-DR. YELON-
STACEY	Oh, hi Stacey, how are you?

VIDEO	AUDIO
CUT TO MS	
STACEY	-STACEY- Pretty good, but I was wondering if I could ask you a couple of questions?
CUT TO MS	
DR. YELON	-DR. YELON- Sure, come on in. What's on your mind?
CUT TO MS	
STACEY sitting down	-STACEY- Well, I've got a problem. I'm working with a class, and some of the things that I need to teach them, well . . . they just don't seem to be getting the message. It seems like no matter how many times I explain to them what they need to do, they still don't understand what I'm talking about.

VIDEO	AUDIO
CUT TO MS	
DR. YELON	That is a problem. Let me ask you this: Are you demonstrating what you're trying to teach?
CUT TO MS	
STACEY	-STACEY- Well, no. But it seems to me that my explanations are good ones, I take a lot of time writing them before class.
CUT TO MS	
DR. YELON	-DR. YELON- I'm sure your explanations are great. But one important aspect of the design of a good lesson is a demonstration. If you are trying to teach someone something, or you are trying to communicate with someone, you've got to add a good demonstration to your explanation. Students simply cannot learn, and

VIDEO	AUDIO
	people cannot understand what you are saying and be able to perform on the simple basis of an explanation. They've got to be able to see you perform, or demonstrate the task.
CUT TO MS	
STACEY	-STACEY- Right! I see. So if I show them how it's done, they should be able to do it. Great, thanks Dr. Yelon!
STACEY starts to get up to leave	
CUT TO MS	
DR. YELON	-DR. YELON- Hold on a second Stacey.
INSERT CUTAWAY	Demonstration makes things
STACEY sitting down	a lot easier for you as a teacher, but there are a few things you should know about them before you try one. You know, most people think that demonstration is

VIDEO	AUDIO
	simple, that it's easy. But it can be very difficult to show people what you want them to do, if all you needed was a mere demonstration without any sophistication or finesse, then every one of us could sink a basket like Michael Jordan, dance like Paula Abdul, or give a speech like the President. But I'll let you in on a little secret, there are four steps to an effective demonstration. These four steps will allow you to put together a demonstration where people are likely to perform well, even on the first try. They will know what they are expected to do and will be able to monitor their own performance.

VIDEO	AUDIO
DISSOLVE TO CG:	The first step is to tell
1-Tell students they will	the students they will
perform task	perform the task you are
2-Tell students what cues	showing them after you
to attend to	finish demonstrating.
3-Say and then do	The second step is to tell
4-Students commit steps to	the students what cues they
memory	should attend to during
	your demonstration.
	Which brings us to the
	third step, say and then
	do, as you demonstrate.
	And finally, step number
	four is to ask the students
	to commit the steps to
	memory before having them
	perform the task.
DISSOLVE TO MS	
DR. YELON	So you see, demonstration
	is very systematic, which
	is not to say that it isn't
	creative as well.

VIDEO	AUDIO
CUT TO MS	
STACEY	-STACEY- I see. But I'm still not sure I understand each of the steps.
CUT TO MS	
DR. YELON	-DR. YELON- Let me take each step one at a time, and start with step number one. Suppose I was teaching a group of students how to tie a bowline knot . . .

VIDEO	AUDIO
DISSOLVE TO CG:	
Tell students they will perform: wrong way	
DISSOLVE TO SCENE 2A	
-SCENE 2a-	
INT. CLASSROOM	
FULL SHOT	
DR. YELON demonstrating knot	-DR. YELON-(VO)-
INSERT MS'S OF STUDENTS inattentive.	Notice that when I don't tell them they will perform my students are not paying any attention.
CUT TO SCENE 3	
-SCENE 3-	
INT. OFFICE	
MEDIUM SHOT	-DR. YELON-
DR. YELON	The first step in a good demonstration is to tell your students that they will perform the task they are being shown. Which you should remember because I'll be asking you to state all of these steps aloud after I've demonstrated them to you.

VIDEO	AUDIO
CUT TO MS	
STACEY, interested	-STACEY- That's fair warning!
DISSOLVE TO CG: Tell students they will perform: right way.	
DISSOLVE TO SCENE 2B	
-SCENE 2b-	
INT. CLASSROOM	
FULL SHOT	
DR. YELON in front of class	-DR. YELON- Now when I finish showing you this knot you'll show me how to tie it by performing the task for me!
CUT TO MS	
DR. YELON doing trick	
INSERT CS'S	
Student's attentive faces	
	-DR. YELON-(VO)- See how your students pay attention when you let them know they will be expected to perform the task after it is demonstrated. They may not be able to perform

VIDEO	AUDIO
	the task perfectly yet, but they're ready to try.
CUT TO SCENE 4a	
-SCENE 4a-	
INT. OFFICE	
MEDIUM SHOT	-DR. YELON- One of the things that might also be a problem is that students sometimes pay attention to the wrong cues,
CUT TO MS	
STACEY, interested	like with the bowline knot . . .

VIDEO	AUDIO
DISSOLVE TO CG:	
Tell students what cues to pay attention to: wrong way	
DISSOLVE TO SCENE 5A	
-SCENE 5a-	
INT. CLASSROOM	-DR. YELON-(VO)-
FULL SHOT	With any given task, there
DR. YELON rolls up sleeves,	are all sorts of cues that
rubs hands together, and	students might pay
begins knot.	attention to that have
	nothing to do with actually
INSERT MS'S	performing the task.
student's faces	
FULL SHOT	-DR. YELON-
	Now, how about a volunteer
	from the class to tell all
	of us what the important
	steps are for tying the
	knot.
CUT TO LS	
of class, STUDENT B raises	
hand.	OK, why don't you tell us?

VIDEO	AUDIO
CUT TO MS	
STUDENT B at table.	-STUDENT B- Let's see, first you roll up your sleeves and rub your hands . . . then the first step is to . . . hmmm . . .
CUT TO SCENE 4b	
INT. OFFICE	
MEDIUM SHOT	-DR. YELON- The best way to demonstrate a skill is to let the students know which cues to pay attention to before you show them that particular part of the skill.
CUT TO MS	
STACEY, interested	-STACEY- Which is the second step!
CUT TO MS	
DR. YELON	-DR. YELON- Exactly!

VIDEO	AUDIO
DISSOLVE TO CG:	
Tell students what cues to pay attention to: right way	
DISSOLVE TO SCENE 5B	
-SCENE 5b-	
INT. CLASSROOM	
FULL SHOT	
	-DR. YELON-
	Now pay attention to these steps. First, I take this part of the rope this way. Second, I slip this part of the rope in the opposite direction . . . and there you go! It's really very simple.
INSERT CU'S	
student's faces	
	INSERT VO: DR. YELON
	Whether you use a diagram, a list or just tell your students what to do, students will know what to look for if you let them know that to attend to, as we'll see when I ask Barbara to recall the steps for me.

VIDEO	AUDIO
FULL SHOT	
DR. YELON in front of class	
	Now how about a volunteer from the class to tell us what the important steps of this knot are?
CUT TO MS	
of class, STUDENT B raises hand	
	OK, why don't you tell us?
CUT TO MS	
	-STUDENT B- OK, let's see . . . first you take one side one way . . . second you take the other side the opposite way . . . and that's it!
CUT TO MS	
DR. YELON	-DR. YELON- Great!

VIDEO	AUDIO
CUT TO SCENE 6a	
-SCENE 6a-	
INT. OFFICE	
MEDIUM SHOT	-DR. YELON- So the second step is to tell the students what to pay attention to before you demonstrate.
CUT TO MS	
STACEY	-STACEY- I see.
CUT TO MS	
DR. YELON	-DR. YELON- The third step is to stagger the visual and the verbal, say and then do as you demonstrate.

VIDEO	AUDIO
DISSOLVE TO CG:	
Say and then do: wrong way.	
DISSOLVE TO SCENE 7A	
-SCENE 7a-	
INT. CLASSROOM	
MEDIUM SHOT	
DR. YELON tying knot simultaneously speaking as he performs	-DR. YELON-(VO)- Let me tell you what happens when you show and tell at the same time . . . -DR. YELON- First you take this part of the rope this way,
CUT TO CU	
of hands	then you take this part of the rope and slip it in the opposite direction, and there you go, now who thinks they can tell me the important parts of the task?
CUT TO LS	
STUDENT C raises hand	
CUT TO MS	-DR. YELON-
DR. YELON	Yes, how about you?

VIDEO	AUDIO
CUT TO MS	
STUDENT C	-STUDENT C- First you kind of pull the rope around and . . . well you sort of get it so that you can . . . geez, I missed the part where you . . . It looked so simple when you did it . . . How did you do that again?
CUT TO SCENE 6b	
-SCENE 6b- INT. OFFICE	
MEDIUM SHOT	-DR. YELON- Well, of course nobody could tell me, it's too confusing when you don't say what you want the student to do, and then show them how to perform. Right now let's go over the results you get when you say and then do, as you demonstrate.

VIDEO	AUDIO
DISSOLVE TO CG:	
Say and then do: right way.	
DISSOLVE TO SCENE 7B	
-SCENE 7b-	
INT. CLASSROOM	
MEDIUM SHOT	
DR. YELON demonstrating trick, saying, and then doing	-DR. YELON- First you take this part of the rope to the right . . .
INSERT CU'S OF HANDS	. . . like that, second you take the other part of the rope and slip it to the left . . . like that, and there you go--it's that simple.
CUT TO LS	-DR. YELON- Now who thinks they can tell me the important steps to tying this knot?
DR. YELON approaches STUDENT C	-DR. YELON- OK, why don't you tell us?

VIDEO	AUDIO
CUT TO CS	
STUDENT C	-STUDENT C- Sure. First you take the one side to the right, and then you take the other side and slip it to the left, and you're done. -DR. YELON-(VO)- Students are less confused and know what to look for when you say what you want them to do, and then show them how to perform.
CUT TO SCENE 8a	
-SCENE 8a- INT. OFFICE MEDIUM SHOT	
DR. YELON	-DR. YELON- Now I've got a true or false question for you: students should perform the task they are learning immediately after it is demonstrated to them?

VIDEO	AUDIO
CUT TO MS	
STACEY	-STACEY- True, they should perform the task while it's still fresh in their memory.
CUT TO MS	
DR. YELON	-DR. YELON- Well here's what happens when you have them perform immediately after seeing the task demonstrated.
DISSOLVE TO CG: Have students commit steps to memory: wrong way.	
DISSOLVE TO SCENE 9A	
-SCENE 9a- INT. CLASSROOM MEDIUM SHOT	
DR. YELON finishing knot	-DR. YELON- And there you have it. So why don't we have someone try it . . .

VIDEO	AUDIO
CUT TO LS	
DR. YELON approaches STUDENT D at desk	Here you go, why don't you try it?
CUT TO MS	
STUDENT D takes rope	-STUDENT D- OK, let's see, first you take this side this way . . . then you . . . hmmm . . . I can't remember, what was step two?
CUT TO SCENE 8b	
-SCENE 8b-	
INT. OFFICE	
MEDIUM SHOT	-DR. YELON- After you demonstrate a skill you should always have your students commit the steps of that skill to memory.
DISSOLVE TO CG: Students commit steps to memory: right way.	

VIDEO	AUDIO
DISSOLVE TO SCENE 9B	
-SCENE 9b-	
INT. CLASSROOM	
MEDIUM SHOT	
DR. YELON in front of class, finishing knot.	
	-DR. YELON-
	And there you have it. Now I want all of you to commit those steps to memory, and then we'll see if you all can do it.
CUT TO MS'S	(MUSIC FULL)
Students faces, concentrating	
CUT TO MS	(MUSIC OUT)
DR. YELON	-DR. YELON-
	OK, is everybody ready? Good then let's see if we can get somebody to try it out.
CUT TO LS	
DR. YELON approaches STUDENT D	Why don't you try it for us?

VIDEO	AUDIO
CUT TO MS	
STUDENT D attempts knot successfully	-STUDENT D- Well, okay. Let's see, first you take this side of the rope this way . . . and then you take this side of the rope the opposite way . . . and that's it!
CUT TO MS	
DR. YELON smiling.	
CUT TO SCENE 10	
-SCENE 10-	
INT. OFFICE	
MEDIUM SHOT	-DR. YELON- When you get the students to commit the steps to memory, you're getting them to create a mental model to work from. This model can be used by the student to judge whether or not they are conforming to the task. Your students may not be able to perform the task perfectly, but they will

VIDEO	AUDIO
	have everything they need to practice on their own.
CUT TO MS	
STACEY	-STACEY- That's great!
CUT TO MS	
DR. YELON	-DR. YELON- So, now that I've demonstrated the four steps of good demonstration to you, why don't you commit them to memory.
CUT TO MS	
STACEY concentrating	-STACEY- Okay, I think I've got it.
CUT TO MS	
DR. YELON	-DR. YELON- Alright, why don't you tell me what the steps are.

VIDEO	AUDIO
DISSOLVE TO CG:	-STACEY-(VO)-
1-Tell students they will perform the task.	First, tell the students they will perform the task being demonstrated.
2-Tell the students what to attend to.	Second, tell the students what to attend to. Third,
3-Say, and then do.	you should say and then do,
4-Students commit steps to memory.	as you demonstrate. And fourth, you should ask the students to commit the steps you have just demonstrated to memory.
DISSOLVE TO MS	
STACEY	-STACEY-
	Well this is great, I can see right away that I'll be putting these principles to use quite a bit.
CUT TO MS	
DR. YELON	-DR. YELON-
	If you do, I'll guarantee your demonstrations will be very effective!
CUT TO LS	(MUSIC FULL)
STACEY getting up, shaking hands with DR. YELON	

VIDEO	AUDIO
DISSOLVE TO C9G:	
Produced and Directed by	
Tom McCarthy	
DISSOLVE TO CG:	
Written by	
Stephen Yelon, Ph.D., and	
Tom McCarthy	(MUSIC OUT)
FADE TO BLACK	

APPENDIX C

EVALUATION INSTRUMENT

(LEARNING ACHIEVEMENT TEST, PRODUCTION FEEDBACK QUESTIONNAIRE, INTEREST QUESTIONNAIRE, AND DEMOGRAPHIC SURVEY)

LEARNING ACHIEVEMENT TEST*

(SECTION A, RECALL-PRIMARY LEARNING OBJECTIVE, 4 POINTS)*

1. Number and list each of the demonstration steps you learned in the video you just saw.

(SECTION B, RECALL-PRIMARY LEARNING OBJECTIVE, 4 POINTS)*

2. For each of the demonstration steps you listed, give a reason why to use it.

(SECTION C, RECOGNITION-SECONDARY LEARNING OBJECTIVE, 4 POINTS)*

For each of the following pairs of demonstration descriptions, indicate which is the correct way to demonstrate by putting a check next to either the "A" or the "B."

3.___ A) A rodeo instructor lassos a fence post by twirling the rope and then directing the rope with his arm as he releases with his hand.

___ B) A rodeo instructor tells you he is going to twirl the rope, which he does, then he tells you he will release the rope and direct it with his hand, which he does.

* Does not appear on actual test.

4.___ A) A surgery instructor asks his class to silently review the steps for dissecting a frog.

___ B) A surgery instructor reviews the steps for dissecting a frog with his class.

5.___ A) A math instructor tells the class that one or two people will have to perform the steps to solve a problem on the board.

___ B) A math instructor tells the students that each will have to show they can solve a problem.

6.___ A) A sales manager shows trainees how to overcome objections by role playing.

___ B) A sales manager shows trainees what to look for during a role-play by showing a videotape with the steps that are being performed in subtitles.

(SECTION D-RECOGNITION, SECONDARY LEARNING OBJECTIVE, 3 POINTS)*

Answer each question briefly.

7. Guitar players in your workshop show more style than technique, taking "heavy-metal" poses while they finger the fretboard incorrectly. What step was most likely missing from your demonstration?

8. Students in your math class are able to remember all the steps to long division days after you have taught them the steps, not just while you are demonstrating. What is the most likely demonstration step that would account for this?

9. Some of your students are talking to each other when you enter the classroom but they all stop talking when you begin to demonstrate how to use the wood lathe. What demonstration step did you probably include to achieve this result?

APPENDIX D

STATISTICAL ANALYSIS

(SECTION E, APPLICATION-SECONDRY LEARNING OBJECTIVES, 4 POINTS)*

10. You need to demonstrate a technique to college seniors to impress potential employers. Based on what you saw in the video you just watched and using the demonstration model you just learned, briefly describe how you would demonstrate the following series of steps:

    1. Look interviewer in the eye

    2. Shake hands firmly

    3. Speak clearly when greeting the interviewer

11. You are showing your grandparents how to play back a videotape on their new VCR. Based on what you saw in the video you just watched and using the demonstration model you just learned, briefly describe how you would demonstrate the following series of steps:

    1. Turn the power on

    2. Load the cassette into the VCR

    3. Press play

PRODUCTION FEEDBACK QUESTIONNAIRE*

For each part of the program, check any responses that apply.

When I watched this part of the program, I felt:	Curious	Indifferent	Preached to	Involved	Confused	Content	Pleased	Displeased	Interested	Disinterested
The opening (where the hands performed the rope trick)										
The discussion (between Dr. Yelon and Stacey)										
The examples (Dr. Yelon in the classroom)										
The narrations (when Dr. Yelon's voice spoke over top of the examples)										
The transitions from discussion scenes to examples										
The transition from example to discussion scenes										
Music during the introduction										
Music before the examples										
Graphics used before the examples										

INTEREST QUESTIONNAIRE*

- What did you like about the video you saw?

- What did you dislike about the video?

- How did you feel about Dr. Yelon? 1 2 3 4 5
  Liked ... Disliked

- How did you feel about Stacey? 1 2 3 4 5
  Liked ... Disliked

- How interested were you in the subject matter? 1 2 3 4 5
  Very much ... Not very much

- How interesting did you think this video was? 1 2 3 4 5
  Very interesting ... Not very interesting

When Stacey recalled the demonstration steps to herself, did you attempt to do so also?

_____Yes

_____No

DEMOGRAPHIC SURVEY*

Age_____

Major_____

Year in college_____
(Freshman = 1
Sophomore = 2
Junior = 3
Senior = 4
Grad 1st year = 5
etc.)

Grade point average (round off to nearest .5) _____

Sex _____M _____F

LEARNING ACHIEVEMENT TEST SCORES - ANALYSIS

EXPERIMENTAL	CONTROL
N = 48	N = 50
Mean = 15.01	Mean = 13.12
Variance = 8.601	Variance = 9.761
Minimum = 7	Minimum = 7
Maximum = 19	Maximum = 18
Standard error = .423	Standard error = .442
Standard deviation = 2.933	Standard deviation = 3.124
Skewness = -1.016	Skewness = -.454

T-TEST BETWEEN EXPERIMENTAL AND CONTROL GROUPS ON LEARNING ACHIEVEMENT TEST

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
T = -3.09	T = -3.09
Degrees of freedom = 96	Degrees of freedom = 95.95
2 tailed probability = .003	2 tailed probability = .003
1 tailed probability = .0015	1 tailed probability = .0015

T-TEST BETWEEN EXPERIMENTAL AND CONTROL GROUPS ON SECTION A OF THE LEARNING ACHIEVEMENT TEST

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
T = -1.05	T = -1.06
Degrees of freedom = 96	Degrees of freedom = 92.98
2 tailed probability = .296	2 tailed probability = .294
1 tailed probability = .148	1 tailed probability = .147

T-TEST BETWEEN EXPERIMENTAL AND CONTROL GROUPS ON SECTION B OF THE LEARNING ACHIEVEMENT TEST

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
T = -3.15	T = -3.14
Degrees of freedom = 96	Degrees of freedom = 91.59
2 tailed probability = .002	2 tailed probability = .002
1 tailed probability = .001	1 tailed probability = .001

T-TEST BETWEEN EXPERIMENTAL AND CONTROL GROUPS ON SECTION C OF THE LEARNING ACHIEVEMENT TEST

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
T = -3.06	T = -3.07
Degrees of freedom = 96	Degrees of freedom = 91.24
2 tailed probability = .003	2 tailed probability = .003
1 tailed probability = .0015	1 tailed probability = .0015

T-TEST BETWEEN EXPERIMENTAL AND CONTROL GROUPS ON SECTION D OF THE LEARNING ACHIEVEMENT TEST

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
T = -1.95	T = -1.96
Degrees of freedom = 96	Degrees of freedom = 95.95
2 tailed probability = .054	2 tailed probability = .053
1 tailed probability = .027	1 tailed probability = .0265

T-TEST BETWEEN EXPERIMENTAL AND CONTROL GROUPS ON SECTION E OF THE LEARNING ACHIEVEMENT TEST

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
T = -1.19	T = -1.19
Degrees of freedom = 96	Degrees of freedom = 94.34
2 tailed probability = .237	2 tailed probability = .235
1 tailed probability = .1185	1 tailed probability = .1175

INTEREST IN VIDEO SCALE RATINGS ANALYSIS

	N	MEAN	S.D.	S.E.
Experimental	48	3.063	.954	.138
Control	50	3.10	.974	.138

T-TEST OF RESPONSES TO INTEREST IN VIDEO SCALE RATINGS

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
T = .19	T = .19
Degrees of freedom = 96	Degrees of freedom = 95.96
2 tailed probability = .848	2 tailed probability = .848
1 tailed probability = .424	1 tailed probability = .424

INTEREST IN SUBJECT SCALE RATINGS ANALYSIS

	N	MEAN	S.D.	S.E.
Experimental	48	2.979	1.041	.150
Control	50	3.04	1.106	.156

T-TEST OF RESPONSES TO INTEREST IN SUBJECT SCALE

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
T = .28	T = .28
Degrees of freedom = 96	Degrees of freedom = 95.97
2 tailed probability = .780	2 tailed probability = .780
1 tailed probability = .390	1 tailed probability = .390

DR. YELON LIKABILITY SCALE RATINGS ANALYSIS

	N	MEAN	S.D.	S.E.
Experimental	48	4.06	.909	.131
Control	50	3.94	.867	.123

T-TEST OF RESPONSES TO DR. YELON LIKABILITY RATINGS

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
T = -.68	T = -.68
Degrees of freedom = 96	Degrees of freedom = 95.26
2 tailed probability = .496	2 tailed probability = .497
1 tailed probability =	1 tailed probability =

STACEY LIKABILITY SCALE RATINGS ANALYSIS

	N	MEAN	S.D.	S.E.
Experimental	48	2.521	1.031	.149
Control	50	2.68	1.096	.155

T-TEST OF RESPONSES TO STACEY LIKABILITY RATINGS

POOLED VARIANCE ESTIMATE	SEPARATE VARIANCE ESTIMATE
T = .74	T = .74
Degrees of freedom = 96	Degrees of freedom = 95.96
2 tailed probability = .461	2 tailed probability = .461
1 tailed probability = .2305	1 tailed probability = .2305

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