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LEARNING FROM INSTRUCTIONAL TELEVISION: PRODUCTION TECHNIQUES FOR INSTRUCTION AND APPEAL

A Production Thesis

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Gretchen Barbatsis

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# LEARNING FROM INSTRUCTIONAL TELEVISION: PRODUCTION TECHNIQUES FOR INSTRUCTION AND APPEAL

A Production Thesis

By

Jeffrey W. Gnagey

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ABSTRACT

LEARNING FROM INSTRUCTIONAL TELEVISION: PRODUCTION TECHNIQUES FOR INSTRUCTION AND APPEAL

By

Jeffrey W. Gnagey

This thesis looks into the methods of presentation of educational content using the medium of television. College level instruction can be enhanced by the use of techniques and formats familiarized by commercial television.

Three types of measures were used: a content test consisting of multiple choice questions, an attitude scale questionnaire and the Production Feedback Questionnaire. The experimental group was given a program using commercial and instructional techniques. The control group was given an identical program using only commercial techniques. No difference in learning and attitudes was found between viewers of both programs. Formats with a fast pace and short length (especially P.S.A.'s) were found to have the most appeal. It may be possible to realize the potential of television for instruction by using familiar modes of presentation typified by commercial television.

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.

Director of Thesis

# DEDICATION

These pages are dedicated to my wife, Laurie, without whom it would not have been possible. Her continuous expressions of confidence in my work and abilities were blessings which will always be appreciated.

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# INTRODUCTION

Television and its use as a communication medium has capabilities which stop only where the imagination of the creator and communicator ceases. Commercials, perhaps the most purposive of commercial television messages, have progressed from talking-heads to hundred-thousand-dollar major productions that employ very sophisticated visual techniques. From the newscast to the coverage of sporting events, television has progressed from simplicity to sophistication in production techniques and methods of visual presentation. There is, however, one major and valuable use of television which, in its over 30-year history, has not made comparable progress. This is instructional television.

Generally, the flow of creative technology and methods of use, in terms of television, follow the route of development and success in the commercial sphere, filtering down through the business and industrial organizations, and then to educational and instructional institutions.[1] To date, however, there have been relatively few organizations and institutions that have adapted production techniques which utilize the unique qualities and capabilities of a motion-oriented visual medium. Among some of the more notable exceptions are the instructional programs created by the Childrens Television Workshop[2] and the series developed in connection with William H. Cosby, Jr., entitled Fat Albert and the Cosby Kids.[3]

College level instructional television, however, shows little attempt to utilize the capacity of visual communication through innovative production

techniques.[4] In many cases, the use of television in the classroom is merely a device to transmit live or taped lectures to a larger number of students than would normally be possible in a single lecture hall. While this use of television may reduce class size per room or provide flexibility of viewing time, it does not address the capacity and unique application of the visual medium to instructional purposes. The lack of innovation in designing most college level instructional telecourses may account for the research findings that televised instruction only equals the effectiveness of the live instructor,[5] and is inferior in appeal.[6]

The ability of the medium to provide visual variety, comparison and contrast, explanation, and symbolism is particularly appropriate to instructional objectives. Such visualization can make the theoretical concrete by illustrating applications or demonstrating concepts. In addition, putting new information into a familiar setting can make understanding of concepts easier by visual and aural associations. Further, even if the course instructor has access to every new innovation in a particular field of study and experts in the operation of such equipment, chances are that class size, time, and work or display area will reduce the effectiveness of live attendance and observation. Television is capable of capturing these events and enhancing their effectiveness by displaying them through use of close-up view, alternate angles, selected areas of importance, amplification or selective use of sound and reaction shots, by tracing historical development, by recording opinions of experts, and by showing the larger context.

As in live classroom lectures, attention is a primary ingredient for the effective use of television for instruction. Unlike the live lecture situation, however, students viewing televised instruction do not have the pressure to be prepared to answer questions or discuss the material if

called upon. Attention under this condition of instruction must be motivated and maintained by the structure and design of the program. Content alone does not maintain attention.[7] Investigation of student attitude formation suggests that a student's perception of the quality and interest of the subject matter is closely related to attitude formation towards an instructional television program.[8] Attitudes are also found to be affected by the nature of the subject matter, the manner of its presentation, and how boring or interesting the program seems.[9] As attitude affects attention, appeal of the production is a factor in the quantity and quality of information (visual and aural) an individual absorbs from the program.

Although liking a program and learning from it are two different matters,[10] learning appears to be greater when material is presented in a visually exciting and interesting way. Edwardson, et al. found, for example, that the learning and retention of factual information was greater in a format combining visuals with a talking-head in such a way as to illustrate the factual material, as opposed to merely reading the information with the communicator on camera.[11] Even when the interesting visuals didn't directly relate to the subject matter, the attention and retention of the factual information was found to be greater for those who viewed the visually enhanced program than for those who viewed only a talking-head.[12] This tends to support the supposition that using innovative production techniques which increase the amount of attention, interest and appeal can enhance college level televised instruction. If college level instructional television can be produced which accomplishes the appropriate learning objectives in a form that is appealing and interesting the potential of the medium of television for instruction might be realized.

It was the purpose of this thesis to demonstrate that instructional video programs can be designed to accomplish learning objectives within a form that is interesting and appealing to college level students. The unique characteristics of television were used not only to impart knowledge, but to do so in such a way as to make the message and the medium an appealing and interesting source of instruction.

Applying research which identified effective use of video and audio techniques to enhancing both appeal and instruction, two version of one program for the course TC 230 Telecommunication Technology were produced. This course was particularly appropriate as the content often seems theoretical and abstract to students unfamiliar with the application of the principles covered. Through the use of video, the theoretical was made concrete and meaningful.

# NOTES--INTRODUCTION

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# REVIEW OF LITERATURE

## Capabilities of Television for Instruction

Many experts and researchers agree that television used for instruction has capabilities far beyond its standard uses. The opinions, findings and statements are too numerous to mention, but a selected few are condensed for emphasis.

In its most common form, instructional television is used as a transmission device of live lectures shot in a classroom setting. The literature summary of Schramm and Chu in 1962 concluded that children and adults can learn efficiently from instructional television. Out of 193 studies, the overall consensus was that television is equal to the effectiveness of a live classroom instructor.[1] However, the general opinion among professionals is that television possesses characteristics which, if used creatively and effectively, can increase the messages' interest and appeal for all students. It is agreed that the potential of video is enormous.

Costillo and Gordon assert that with the capacity of the medium for the combination of devices for explanation and illustration, television can become a reliable vehicle for "concretizing" abstractions.[2] Mark May, Professor in communication at Yale University, found that "visual representations are more likely to elicit correct responses," than verbal descriptions.[3] These two points support the visual aspect as being immensely important for effective communication, and the latter tends to support attention and appeal of visual communication to the viewer. The classroom

tends to become a difficult area in which to use many visual aids other than television and film. May Lynn Crow holds that television involves carefully designed, produced and written programs and that the precision and quality which can be attained cannot be replaced in normal classroom presentations.[4] Thus, Crow argues that the medium holds tremendous possibilities by the sheer nature of pre-production preparation, research, writing and re-writing as well as its careful and critical execution. The medium can, through presentation and content, elicit responses from the viewer. Palmer asserts that the activity which can be produced via television and the potential of the medium for that purpose, is the basis for its instructional value.[5] It is obvious that television has the power to elicit physical actions by examining the success of commercial television in advertising requests and revenues. It is also obvious that the medium has the power to elicit mental actions, by observing the number of political messages and promotions that are aired during the election season. What Palmer had in mind is that a definitive method must and does exist, which can assert the power towards specific instructional goals in the form of physical or mental activity on the part of the viewer. Tierney, in her research of childrens television brings us closer to an exact description of utilizing the influence of television. She concluded that the visibility of learning segments and the attention-getting devices of the medium brings us a glimpse of the visual medium's potential to utilize effective medium characteristics to teach creatively.[6] The medium of television has much more potential than being merely equal in effectiveness to the live lecture. Even though television has been relatively effective in instruction for the transmission of information, however, the opinion remains that the potential of the medium for instruction has yet to be fully realized.

Appeal and Attention in Instructional Television

It is generally held that the generation of students flowing into the classroom of today's colleges and universities have set expectations in regards to television. Cherubim contends that most college students have "...become sophisticated, they expect a great deal from television, and they deserve it."[7] The need for production treatment and techniques is comprehended by some, and has been called for since 1964. Weld stated that a single camera set up on an instructor can't be expected to be a good learning experience, and that "...you have to do what the Networks call production."[8]

Prior to the mid-sixties, most instructional television programs at the college level were nothing more than live or delayed transmissions of a classroom lecture. Hideya Kumata, in 1960, found that the use of methods tied to conventional type teaching in the use of television for instruction affected the students attention and performance.[9] Cherubim agrees that using live lecture techniques on television wastes the power of the medium and results in losing the attention of the student.[10] The body of research conducted before the mid-sixties reveals evidence related to relative appeal of the content. Some of these findings are comparison experiments using face-to-face instruction versus televised instruction (or transmission). French, in 1963, found that at the college level, most students prefer small discussion classes to television.[11] An earlier study conducted by school districts in Los Angeles in 1959, found that a majority of college students also preferred live instruction to televised instruction.[12] Only in 1958 was there any evidence of student preference to televised instruction, but this was between large class size and small class size, the latter being preferred.[13] This, then, would tend to support the idea

that transmission of a lecture oriented program is unappealing to college age students, and that there is a need for televised instruction which utilizes the capabilities of the medium.

Surprisingly, the larger body of research before the mid-sixties concluded that visual imagery increases interest and performance in relation to instructional film and television. Studies by Le boutet, LeFrance and Nozet, 1949, Vandermeer, 1950, Kale, 1953, Grosslight and McIntyre, 1955, Lasser, 1955, Tannenbaum, 1965, Williams, Paul and Ogilive, 1957, Westly and Barrow, 1959, Beach, 1969, Glasgow, 1961, Ketcham and Heath, 1963, and Evans, 1964, provide evidence that the visual aspect is significant in terms of attention, appeal and performance.[14] There has not, however, been a consistent effort to develop visually appealing televised instruction on the college level.

Although Schramm and Chu indicate no clear evidence that variations in production techniques will increase attention or performance, the Sesame Street and "Fat Albert" productions did find significant results in connection with production techniques. Reeves found that certain production techniques do affect attention and learning in pre-school and elementary students and that those techniques designed for holding attention and increasing performance accomplished their objectives.[15] A later study by Korman, 1974, replicates this finding.[16] Lasser discovered that entertaining televised instruction was able to transmit basic learning objectives and still be interesting and appealing.[17] Levine and Anderson concluded in 1976 that communication of educational material was easier when using production techniques and formats which develop attention.[18]

The danger of overdoing a production with capricious use of visual techniques is also a concern. Brown, et al. found that sophisticated

production techniques "can also serve as distractions to learning if not properly paced and integrated."[19] In a study conducted two years later, Krugman and Hartley found that attention and interest are enhanced by a relaxed state of mind accomplished with the expectations of being entertained.[20] It appears that the entertainment accompanying instruction does not inhibit concentration if the pacing of complex production techniques is well planned and executed. In addition, simple uses of visual imagery or illustration positively enhance an otherwise mundain and straight forward presentation of factual information.

More recent studies indicate that appeal and interest can be directly related to production techniques. Zillman, et al. in 1980, experimented with such techniques as pace, rhythm and other manipulations of subjective time with indiscriminate insertions of humorous material. For elementary aged students, the findings indicated that a fast paced program with the humorous inserts evoked the greatest amount of attention and information gain.[21] Brown, et al. found that the effect of pacing related to the age of viewers. For the older student (25 and up), slower pacing and more repetition were effective. Better results with college-level students, however, were correlated with a more active and upbeat presentation. Brown further asserts that it is better to "...risk an over-enthusiastic presentation than a neutral or noncommittal one."[22]

It seems to be evident that the lack of interest, attention or appeal in an instructional television program would tend to be related to the lack of appropriate pacing, use of attention getting production techniques or visual imagery, and would tend to account for the findings that televised instruction is inferior in appeal, and only equal to the effectiveness of the live instructor. If special attention is given to producing instructional television programs that use the special capabilities of

the medium, rather than just following the live lecture format, the potential of the medium for creative and appealing instruction may be realized.

Special Techniques of Instructional Production

Several acceptable as well as non-acceptable procedures have been discovered in the past 30 years. Many of the successful techniques are now integrated into instructional programs.

Northrop discovered in his instructional film experiments in 1952 that the use of subtitles generally increased learning if the program is loosely organized.[23] Further, he found that subtitles tend to have a negative impact on learning in well organized productions.[24] The technique tends to hold attention when the material fails to, but distracts the viewer when the program is doing well in interesting the viewer.

The effect of pacing was studied prior to the 1970's, and evidence suggests that pauses inserted into natural break-off points served to refresh attention spans and increase comprehension of the material as a whole.[25] This held true regardless of the content that was presented during the break or pause.

Much speculation has been made about the value of inserted questions in an instructional television production, and in many cases the inserted questions were used in association with the idea of a pause in the program. Kantor and Vuke both found that no significant differences existed among viewers who were exposed to productions with inserted questions and those who viewed productions without.[26] Palmer asserts, however, that "attention and achievement are related to the manner of presentation of the subject matter to the extent to which the program elicits responses, and

repetition of the subject matter."[27] Ross, 1927, Greenspoon and Foreman, 1956, Grapper and Lumsdaine, 1961, Michael and Maccoby, 1953, and Hirsch, 1953 all found that eliciting responses tends to increase attention and that immediate feedback is extremely effective in increasing comprehension. The value of inserted questions in an instructional production appears to lie in the value of a pause in the material being presented and when, combined with immediate answers or feedback, will increase comprehension, interest and attention.[28]

Another area in which pacing is a concern deals with students taking notes during a televised instructional program. Schramm and Chu found that taking notes is likely to interfere with learning and attention if time for that activity is not provided.[29] Thus, it is conceivable that a time for taking notes could be included with the inserted questions and immediate feedback portions of the program.

Repetition of material presented in televised instruction is generally found to be an effective means of increasing comprehension. However, Haymen and Johnson found that teacher directed follow-up is a more effective method of increasing comprehension than a second exposure to the same program.[30] When possible, this approach should be incorporated with televised instruction.

The use of visual imagery has also been studied. May discovered that the "association of a familiar name with a more complex name is most effectively transmitted with visual imagery."[31] Further, Sanderson found that "a visual presentation will have greater impact when used to reinforce and extend the previous knowledge, attitudes and motivations of students."[32] In order to communicate effectively, then, the content must be visually

as well as aurally oriented towards students' ability to use the presented information in such a way as to further their own pursuits and to complement their former conceptions of the field.

The use of drama and humor in the form of vignettes has been found effective in increasing attention and appeal in adult students. Brown, et al. found that adults generally prefer vignettes, but the personalities of the actors must be enthusiastic.[33] If a narrator is used before vignettes, the narrator must be involved in the vignette for it to be effective.[34] This research has important implications for future production of instructional television because it makes a definite thrust towards a mode of presentation which would liken the program to the style which is evident in commercial television production. Conflict and humor appear to be the elements of drama that work well in instructional productions. Dietmeir, et al. discovered that the presentation of a subject which solves a problem is more effective and interesting than lecturing.[35] Solomon and Cohen conclude that "one way to improve the conceptualization of media as well as the broader domain of instructional means, is to distinguish between the message content they convey and the codes, formats and methods that are used as message vehicles."[36]

It is generally held that the appropriate educational presentation for the medium of television is a lifelike supplement to the textbook,[37] and that the construction of such a program should be in accordance with textbook organization. Nugent, et al. found in 1980 that the use of verbal advanced organizers were extremely effective in increasing student comprehension and interest in instructional television programs.[38] Consequently, the instructional television production should have an

introduction or forward, a body broken up by pauses such as chapters in a book, summaries at the end of each break and appropriate time for teacher directed follow-up. Additionally, the manipulation of production techniques to tie the sections together and to evoke identification and involvement in the production has been found effective in experiments conducted by Hoben and Van Oren.[39] Further illustrations of techniques and capabilities of the medium for instruction and communication is found in the glossary of production techniques provided in Appendix A.

Based on these patterns of findings, the following hypotheses were developed:

Assumption

Learning will occur with programs using solely commercial production techniques, with or without instructional production techniques.

Hypotheses

1) Learning will be greater with programs which combine instructional and commercial techniques, than those which use solely commercial techniques.

2) Appeal will be greater for those programs combining commercial and instructional techniques, than those using only commercial techniques.

3) Specific production formats or techniques will differ in levels of appeal.

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# METHOD

## Program Development

Using research which is condensed on the following pages, two versions of a single instructional television program were produced. The experimental treatment program was 30 minutes, the control group version was 22 minutes in length. The topic covered entailed the nature of sound, audio tape/tape recording, and microphones. The program was produced for use in Telecommunication 230, a class offered in that department of Michigan State University. As a technology course, it presented an ample challenge for developing an effective and appealing television production. The material covered came directly from a portion of the course covering pick-up and processing systems in electronic communication. Content of the program was developed from interviews with instructors of the course as well as those of courses for which material in TC 230 was a prerequisite. In addition, drafts and the final copy of the script were checked and approved by appropriate instructors for accuracy. The program was designed for the college sophomore and junior level student.

The creative focus of the program was formats of commercial television within a context of narrowcasting via cable television and satellites. In order to maximize appeal, technical quality and production techniques were developed with as much quality as possible. The facilities and equipment of WKAR-TV Channel 23, a public television station at Michigan

State University, were graciously donated for eight hours over two days.

The following research was utilized in developing both the experimental and control group verions of the program:

1) Schramm and Chu's findings that students' perception of the quality and interest of an instructional program closely relates to attitude formation towards the same.[1]

2) Krugman and Hartley's evidence that attention and interest are enhanced by a relaxed state of mind and with the expectation of being entertained.[2]

3) Increased attention and learning from fast pacing of a television production with humorous inserts.[3]

4) Reference for vignettes with an enthusiastic presentation; better results in learning and appeal from an up-beat and active presentation.[4]

5) Deitmeir, et al. assertion that problem-solving is more effective and interesting than lecturing.[5]

6) Motivation of attention by the structure and design of the program.[6]

7) Capability of entertaining televised instruction to transmit basic learning objectives.[7]

8) Communication of educational material made easier when using production techniques and formats which develop attention.[8]

9) Association of a familiar name with a more complex name best accomplished using visual imagery rather than only a verbal description.[9]

Treatment

Two versions of the instructional program were produced. Both versions were identical in the commercial formats used to present the

content. The experimental treatment differed from the control treatment in the addition of two instructional production formats, the Advanced Organizer and the Viewdata in Review. Each program was developed by matching instructional and appeal objectives with specific production techniques deemed appropriate for using the visual medium of television for achieving these objectives. A description of the commercial and instructional formats as well as the instructional and appeal objectives for each format is presented in Figure 1. A complete script is provided in Appendix B.

The Advanced Organizer was developed and integrated into the experimental treatment on the basis of research conducted by Gwen Nugent, et al. Findings in Nugent's research indicated that verbal advanced organizers increased student comprehension and appeal in educational television presentations.[11]

Viewdata in Review was developed and used on the basis of Pickrass' finding that pauses inserted into natural break points increased learning and refreshed attention spans,[12] as well as Schramm and Chu's finding that note taking interferred with learning and appeal unless a specific time for it was laid aside.[13] Viewdata was designed to function in three ways: First, to allow a pause in the flow of new information; second, to reduce interference in the presentation of information by allowing a period of time to take notes; third, to provide feedback. Major facts from each portion of the program preceding Viewdata were summarized using electronic graphics and a synthesized music track, as well as a narrated voice-over. (Viewdata is actually a type of information retrieval system utilized in Europe.)

Although the feedback function was not that specifically studied by Ross, 1927, Gresspman and Foreman, 1956, Grapper and Lumsdaine, 1961,

FIGURE 1. Program Breakdown

| PRODUCTION TECHNIQUE | INSTRUCTIONAL OBJECTIVES | APPEAL OBJECTIVES |
|---|---|---|
| *(1) Verbal Advanced Organizer<br>Electronic title roll with announcer giving description of the program, freeze framed illustrations of what will be seen, and tips on how to best utilize the program (i.e. when to take notes). | To inform the viewer how best to take notes and utilize portions of the program. Used as an introduction to a speech is used (i.e. tell them what you are going to tell them). To set the expectations of the viewer towards an advanced concept of instructional television. A narrowcast program with narrow information content, but distributed by a commercial satellite, therefore, meaning higher quality in production techniques and concepts. | To make clear what is going to be learned, and that the viewer may relax and be satisifed and involved in the program itself, without suffering the anxiety of maybe missing some of the notes for the examination. |
| (2) Opening Sequence<br>Fade to television set which is on. Channels begin to change. We then see a pair of hands switching buttons on a control box. When the hands hit 108, we cut to logo. | Further emphasis that this type of program could very well be available on any 108 channel cable system. The Telecommunication Technology Network is a narrowcast programming service which will deliver them information concerning their focus of study. | To aid in viewer involvement and to help achieve the atmosphere of a relaxed, entertaining environment which is found outside of normal classroom environments. |
| (3) Channel Identification<br>Fade up to a "star's eyeview" of a satellite orbiting earth. Wipe keyed in Chyron saying "Cable Channel 108--the Telecommunication Technology Network--stay tuned for the nature of sound. | Further emphasis of first two objectives by using a commercial production technique visually illustrating the idea of a national narrowcast network. | A device to re-establish curiosity, involvement and satisfaction in the program throughout the program, between major changes in information content. |

(continued)

*only used in experimental version of program as an instructional technique.

| PRODUCTION TECHNIQUE | INSTRUCTIONAL OBJECTIVES | APPEAL OBJECTIVES |
|---|---|---|
| (4) Sound-Off<br>A weekly interview with Host Rudyard Klemm, which looks into interesting aspects of listening media. This weeks guest was Dr. Norman Pierce, an expert in radiating energy. | a) Sound is actually made up of mechanical vibrations causing periodic variations in air pressure.<br>b) Vibrations are orderly (i.e. occur in identifiable patterns) and occur in waves, which are sent out from the point of the mechanical vibration. | Appeal was judged to be high by using an authority to explain some of the complex facts dealing with the nature of sound. With this excerpt was also some visual illustrations of what he was explaining. |
| b) Visual cut aways of both pebbles and bolders being thrown in pond. | c) Positive and negative peaks return to equilibrium or calmness of pond.<br>d) Sound occurs in the form of complex sine waves.<br>e) Amplitude is the height of the wave peaks.<br>f) The greater the initial mechanical vibration the greater the resulting amplitude. | b) Combining simple and recognizable concepts with more theoretical and complex concepts using interesting visuals to develop greater appeal. |
| g) and h) cut away to CU of graphic representation of a sine wave with audible tone and finger of host pointing to what he is describing. | g) The distance traveled by one cycle in one second is called the wavelength.<br>h) One cycle is achieved when the wave travels from equilibrium to one positive and one negative peak and back down equilibrium.<br>i) Sound waves are distinguished from other waves by their frequency.<br>j) Higher frequencies mean higher pitched sounds.<br>k) The range of human hearing is between 20 to 20,000 cycles per second.<br>l) The more sensitive range of human hearing is between 1,000 and 6,000 Hertz. | g) Using graphic and tones, the same appeal objectives as were discussed in b) were sought. |

(continued)

| PRODUCTION TECHNIQUE | INSTRUCTIONAL OBJECTIVES | APPEAL OBJECTIVES |
|---|---|---|
| (5) We'd Like You to Know<br>(NOTE: This and number (6)--A Backward Glance--occurred as a break between the Sound-Off interview show)<br>a) Public Service Announcement<br>Using an actor similar to Hal Linden talking about speed. Visual cutaways of the space shuttle and of 2-shot of conversion-keying speed of sound information. | (NOTE: This break between halves of Sound-Off was to quicken the pace of the program, offer alternative sources of similar information and to increase the satisfaction that TTN was a national narrowcast network.)<br>a) Speed of sound is 1150 feet per second which is 698 miles per hour, when the air temperature is $70^{0}$ Fahrenheit. | (NOTE: Break to affiliate programming with commercial television practices, to entice an attitude or impression of professional quality.)<br>a) Related information from a new source to refresh attention spans of viewer and increase interest in the program. |
| (6) A Backwards Glance<br>A historical look at Heindrich Hertz who discovered radio waves and transmitted them. Dissolves between visuals of Hertz, film animation of waves and Hertz. | Frequency of waves equals the number of cycles per second. The name of the unit of measurement cycles per second is called Hertz in honor of Heindrich Hertz. | A historical note to involve, satisfy and increase the clarity of the term Hertz and its use. |
| *(7) Viewdata in Review<br>Music, narration and electronic graphics used in review panels to condense major items that student should have in his notes. | Repetition of material, presented in chronological and condensed form to allow for immediate feedback, a pause in the flow of new information and programming. Slower pacing and alternative form of presentation. | To increase clarity and satisfaction of the viewer in relation to what information should be paid careful attention to. |
| (continued)<br>*This technique instructional, and | only contained in experimental program. | |

| PRODUCTION TECHNIQUE | INSTRUCTIONAL OBJECTIVES | APPEAL OBJECTIVES |
|---|---|---|
| (8) Problems, Problems<br>Humorous drama set in production studio facilities. Using visual demonstrations and a lot of visual action. Variety of shots, image size and camera angle. | a) Audio tape is made of plastic with metal particles bonded to one side.<br>b) Audio tape heads are really just small electromagnets.<br>c) The erase head randomly magnetizes the tape particles to remove sound patterns.<br>d) The record head responds to audio inputs by magnetizing particles into patterns or codes which represent frequencies, wavelengths, and amplitudes.<br>e) The play head senses these magnetic particles and reconverts them into electrical impulses which are amplified and sent out of speakers as sound.<br>f) Dropout occurs when portions of the audio tape have lost particles which have been worn off. | Problem solving plot with humorous and dramatic intonations to increase involvement, clarity and attractiveness to subject matter. |
| (9) Audio Analysts<br>Game show host and segments from show in a question/answer format with applause and visual representation of pick-up patterns. | a) Omni-directional pattern picks up sound from a circular area-- all directions.<br>b) Cardiod - heart-shaped pattern picks up sounds from front and both sides but not the back.<br>c) Bi-directional - picks up sound from left and right sides, but not front and back, usually called a figure eight.<br>d) Hyper-cardiod - narrow pick-up pattern which must be pointed directly at sound source. | Humorous sequence to make identification with commercial game shows. Very upbeat to hold interest and increase curiosity. Clarify concepts. |

(continued)

| PRODUCTION TECHNIQUE | INSTRUCTIONAL OBJECTIVES | APPEAL OBJECTIVES |
|---|---|---|
| (10) TTN-Newsbreak<br>With Laurel Thomas. News stories dealing with pertinate issues, using visuals and a professional newscaster.<br>- videophone to replace carbon mic element with electret condenser<br>- Johnny Carson to lose velocity mic. | a) Carbon element microphones are essentially the same as when invented. Low quality, used in telephones, requires line voltage to operate.<br>b) Electret condenser element - has a greater frequency response and higher quality sound. It requires less voltage to operate than a carbon element.<br>c) Ribbon or velocity microphone element - very delicate, expensive and reproduces very high quality of sound especially rich vocal tones. | Appeal to authority with visuals to make clear, interesting, attractive and curious |
| (11) TTN-Technical<br>A play off the commercial format of Newsword to increase the viewers vocabulary. An electronic graphic with visual montage of oscilloscope wave. Forum keyed of mouth, microphone, mike cable and audio console. | a) A transducer takes one form of power, converts it to a second form and then supplies it to a second system.<br>b) A microphone is the most common form of transducer.<br>c) Moving coil dynamic microphone generating elements are rugged and produce good sound quality.<br>d) Moving coil dynamic microphone generating elements are common in audio and video recording studios. | Illusionary effect to entice viewer and compare clear visuals to complex process, satisfaction, in understanding the function of a transducer. |
| | | |

| PRODUCTION TECHNIQUE | INSTRUCTIONAL OBJECTIVES | APPEAL OBJECTIVES |
|---|---|---|
| (12) Closing to Program<br>Immediately after Viewdata in Review, the logo of TTN returns and the announcer says he hopes the viewer has enjoyed the presentation and gives information as to where the viewer should refer for further details on today's topics. Then the satellite heads off around the earth out of range for the day as we fade to black. | Referring to workbook for additional reading material on the topic. | Re-establishing that this program eminates from a national narrowcast network and that transmission for the day has ended. Seeks to clarify the program |

Michael and Maccoby, 1953, and Hirsh, 1953,[14] it was felt that a summary such as this would answer questions that the viewer might have raised with live instruction. From this perspective, Viewdata in Review was thought to supply feedback by sheer condensation and repetition of material. In addition, Palmer found that eliciting responses and repeating material for the viewers of televised instruction increased comprehension.[15]

Evaluation Design - A post-test only design using an experimental and control group was used to evaluate differences between the treatments in learning and attitude as well as the appeal of specific production techniques within each program. Since the number of participants in both groups was well over 100, it was assumed that the distribution of individual differences would be normal and that the subjects would be a representative sample of the universe.[16]

Subjects - Respondents were drawn from two undergraduate courses in the Department of Telecommunication at Michigan State University, TC 210 Telecommunication Process and Effects and TC 220 History and Economics of Telecommunication. The rationale for using these two classes included the fact that they would be the most logical students to enter the course TC 230 for which the televised instruction was created. None of these students could have taken this course previous to the one they were currently enrolled in, and they fulfilled the qualifications of being sophomores or juniors in the field.

The class receiving the experimental treatment had an enrollment of 185, of this number 93 participated in the treatment and testing. The class receiving the control treatment had an enrollment of 225. Of this number, 70 took part in the viewing and testing.

Subjects were told that the program was an experimental type of televised instruction designed to be more advanced than conventional television lecture-type programs. They were also told it dealt with material which they would be taking in the next required course of their curriculum, and that if this type of program was effective, it would be utilized in the future. Both groups were administered the program and told to take notes. After exposure, subjects were asked to complete a test, on content, an attitude scale, and a Production Feedback Questionnaire. No teacher-directed follow-up was used in either treatment condition.

Instrumentation

Each questionnaire consisted of three tests. The first test was developed to measure learning. Thirty multiple choice questions designed according to each of the learning objectives. They were presented in chronological order corresponding to the order of presentation in both programs and were identical for both the experimental and control group. The content questionnaire is provided in Appendix C.

The second test was an adoption of a 21-item attitude scale design for the purpose of assessing attitudes towards instructional television programs.[17] Items were changed to differentiate between conventional instructional television (i.e., T.V. lectures) and the production formats utilized in the design for this study. The attitude scale is provided in Appendix C.

The third test consisted of the Production Feedback Questionnaire developed by Barbatsis and Wong for measuring individual appeal of specific production techniques.[18] Affective involvement was assessed by the responses of the participants for each of the production techniques.

The Production Feedback Questionnaire differed for each group in that the control group did not respond to formats 1 and 7. The Production Feedback Questionnaire is provided in Appendix C.

Analysis

The learning test was compiled in the form of test scores, and a t-test (i.e., difference of means on the test) was performed between experimental and control groups. This was done to determine whether or not there was a significant difference in learning between experimental and control groups. The attitude scale tests were compiled in terms of responses and a t-test was performed to determine whether or not a significant difference existed between the attitudes of the experimental and control group. Another t-test was performed between respondents of both groups who had a previous television course, in order to determine whether a bias existed that might effect the overall analysis of attitudes. A third t-test was performed to determine if respondents with no previous experience with a television course differed in attitude toward the instructional format of the program from those who had experience with a traditional television course. A fourth t-test was conducted using all respondents using only the TTN-oriented attitude scale questions to compare total response to the program designed for this study.

Production Feedback Questionnaire scores were compiled for all respondents and a frequencies distribution and chi-square were used to determine if there was a significant difference between positive and negative appeal of individual production techniques.

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# RESULTS

Two of the three hypotheses showed no significant differences between the experimental and control groups. The first hypothesis predicted a relationship between learning and commercial production techniques.

Assumption - Learning will occur with programs using commercial production techniques, with or without instructional production techniques.

Analysis of the multiple choice test scores designed to test learning in relation to the objectives and content of the program for both groups found that both treatments were adequate in communicating instructional information. Table 1 provides a summary of the findings. Complete data is provided in Appendix D.

Table 1. Mean test scores based on 30 one-point questions.

| EXPERIMENTAL | CONTROL |
|---|---|
| N = 93 | N = 70 |
| Mean = 24.987 | Mean = 24 |
| = 83.26% | = 80% |
| Minimum = 4.0 | Minimum = 11.0 |
| Maximum = 30.0 | Maximum = 30.0 |

The mean test score for the experimental group was 24.987 or 83.26 percent correct. The mean test score for the control group was 24 or 80

percent correct. This seems to be a fairly high percentage of learning stemming from an instructional television program. Since both groups demonstrated knowledge of the material intended to be learned, the production itself was effective as a tool for learning in both treatment conditions. Therefore, the first assumption is accepted.

The first hypothesis predicted a relationship between greater learning and combining commercial and instructional production techniques.

Hypothesis 1 - Learning will be greater with programs which combine instructional and commercial techniques than with those which use commercial techniques.

A t-test (difference of means) was used to determine whether or not a significant difference existed between the experimental and control group (See Table 2).

Table 2. One-tailed t-test between groups receiving commercial plus instructional, and group receiving only commercial production techniques or formats.

| POOLED VARIANCE ESTIMATE | SEPARATE VARIANCE ESTIMATE |
|---|---|
| t = 1.39 | t = 1.40 |
| Probability = .083 (one-tailed) | Probability = .082 (one-tailed) |
| Df = 161 | Df = 152.34 |

N = 163

There were slightly over eight chances in 100 that the difference was attributable to chance rather than to the treatment, so the differences was not significant. Therefore, the first hypothesis was rejected.

The second hypothesis predicted a relationship between higher appeal and the combination of commercial and instructional techniques.

Hypothesis 3 - Appeal will be greater for the program which combines commercial and instructional techniques than for the one using only commercial techniques.

A t-test was performed on the responses from the attitude scale questionnaire between the groups to determine whether a significant difference in attitude rating existed (see Table 3). Attitude scale statements which were worded negatively were recoded such that all the statements registered 1 as Strongly Agree, 2 as Agree, 3 as Undecided, 4 as Disagree and 5 as Strongly Disagree.

Table 3. A one-tailed t-test of attitudinal responses between groups.

| POOLED VARIANCE ESTIMATE | SEPARATE VARIANCE ESTIMATE |
|---|---|
| t = -.61 | t = -.60 |
| Degrees of freedom = 161 | Degrees of freedom = 138.69 |
| Probability = .271 (one-tailed) | Probability = .275 (one-tailed) |

N = 163

There was no significant difference between the experimental and control groups.

Analysis of group characteristics revealed that 65 of the 93 respondents in the experimental group had previously taken an instructional television course. Twenty-nine of the 70 respondents in the control group had also taken an instructional television course. Since the experimental group had been predicted to have higher positive attitudes towards this production, a possibility of bias may have existed in terms of prior attitude formation. In order to see if bias existed because of the larger proportion of these participants within the experimental group, a series

of t-tests were conducted which controlled for specific attitude measures and previous exposure to instructional television courses (see Table 4).

Table 4. T-test (one-tailed) between groups using only attitudinal items dealing with conventional televised instruction or instructional television programs in general.

| POOLED VARIANCE ESTIMATE | SEPARATE VARIANCE ESTIMATE |
|---|---|
| t = 1.41 | t = 1.39 |
| Df = 161 | Df = 141.11 |
| Probability = .0805 (one-tailed) | Probability = .0835 (one-tailed) |

N = 163

There were slightly over eight chances in 100 that the differences occurred by chance rather than from the treatment condition. Therefore, the difference was not significant between the experimental and control groups towards conventional televised instruction or instructional television in general.

There was another possibility of previous experience causing a bias in attitudes, so a t-test was performed using respondents from both groups who had a previous course utilizing televised instruction. Only attitude scale statements referring to the instructional program were utilized (see Table 5).

Table 5. T-test between groups using only respondents who had previous exposure to televised instruction, and only attitude statements dealing with the TTN program designed for this study.

| POOLED VARIANCE ESTIMATE | SEPARATE VARIANCE ESTIMATE |
|---|---|
| t = -.82 | t = -.74 |
| Df = 92 | Df = 43 |
| Probability = .207 (one-tailed) | Probability = .2315 (one-tailed) |

N = 94

There was no significant difference between groups whose respondents had previous experience with televised instruction as expressed on the attitude statements dealing only with the program designed for this study.

A final test for bais towards instructional television in general was performed in the form of a t-test between groups utilizing only those respondents who had no previous exposure to televised instruction and using attitude statements dealing only with the program produced for this study (see Table 6).

Table 6. One-tailed t-test between groups using only those respondents who had no previous experience with televised instruction and only the attitude statements dealing with the TTN program designed for this study.

| POOLED VAIRANCE ESTIMATE | SEPARATE VARIANCE ESTIMATE |
|---|---|
| t = -.30 | t = -.30 |
| Df = 67 | Df = 57.44 |
| Probability = .381 (one-tailed) | Probability = .384 (one-tailed) |

There was no significant difference between groups using responses from participants who had no previous exposure to televised instruction and using only attitude statements dealing with the program produced for

Therefore, the second hypothesis was rejected.

Although there was no significant difference between groups for the attitude scales, there were some interesting results found in responses to selected statements. The second attitude statement read, "This type of instructional television 'TTN' is effective in providing for a wide range of individual differences." A relative frequencies breakdown can be seen in Table 7. Agree and strongly agree categories are combined as well as disagree and strongly disagree. A more detailed breakdown can be found in Appendix D.

Table 7. Relative frequencies breakdown for second attitude statement.

| | EXPERIMENTAL | CONTROL |
|---|---|---|
| Agree | 43.4% | 57.1% |
| Undecided | 40.2% | 22.9% |
| Disagree | 16.3% | 20% |
| | N = 163 | |

Of the control group 57.1 percent agreed, but only 43.7 percent of the experimental group agreed. Commercial techniques without instructional techniques were found to provide for a wider range of individual differences, according to the attitudes of the respondents.

The third attitude statement read "Instructional programs like 'TTN' provide greater motiviation than regular or conventional televised instruction." A relative frequencies breakdown can be seen in Table 8.

Table 8. A relative frequencies breakdown of responses to the third attitude statement, expressed in percentages.

| | EXPERIMENTAL | CONTROL |
|---|---|---|
| Agree | 53.2% | 50% |
| Undecided | 25.0% | 17.1% |
| Disagree | 21.7% | 32% |
| | N = 163 | |

Slightly over half of both groups felt that this type of instructional television provided greater motivation than conventional televised instruction. Less than one-third of both groups felt that conventional televised instruction provided greater motivation.

The sixth attitude statement read, "Instructional television courses like 'TTN' would tend to improve study skills and study habits." As shown in Table 9, relative frequencies breakdown from the responses shows the groups differed in their attitudes.

Table 9. A relative frequencies breakdown of the sixth attitude statement, expressed in percentages.

| | EXPERIMENTAL | CONTROL |
|---|---|---|
| Agree | 41.9% | 25.9% |
| Undecided | 34.4% | 34.3% |
| Disagree | 23.6% | 40% |
| | N = 163 | |

The group receiving commercial and instructional techniques (experiment) agreed that this type of program would tend to improve study skills and habits. The control group receiving commercial techniques with no instructional format or techniques disagreed.

The ninth attitude statement read, "The effectiveness of courses using programs like 'TTN' is limited by the lack of opportunity for discussion and clarification between students and instructor." As shown in Table 10, a relative frequencies breakdown from the responses illustrates strong agreement in both groups.

Table 10. A relative frequencies breakdown of responses to the ninth attitude statement, expressed in percentages.

| | EXPERIMENTAL | CONTROL |
|---|---|---|
| Agree | 76.4% | 69.6% |
| Undecided | 9.7% | 14.5% |
| Disagree | 14% | 15.9% |
| | N = 163 | |

Both groups indicated agreement that teacher directed follow-up is a necessary element to increase the effectiveness of this type of instructional television.

The eleventh attitude statement read, "The instructional television programs like 'TTN' promote listening skills." As shown in Table 11, a relative frequences breakdown revealed that agreement existed between groups.

Table 11. A relative frequencies breakdown of responses to the eleventh attitude statement, expressed in percentages.

| | EXPERIMENTAL | CONTROL |
|---|---|---|
| Agree | 80.6% | 71.4% |
| Undecided | 10.8% | 15.7% |
| Disagree | 8.6% | 12.8% |
| | N = 163 | |

Both groups strongly indicated that this type of instructional television promoted listening skills. Less than a third of both groups were either undecided or disagreed.

The eighteenth attitude statement read, "It is hard to have confidence in the information presented on programs like 'TTN.'" As shown in Table 12, a relative frequences breakdown of responses to the statement indicate that both groups disagreed.

Table 12. A relative frequences breakdown of responses to the eighteenth attitude statement, expressed in percentages.

| | EXPERIMENTAL | CONTROL |
|---|---|---|
| Agree | 19.6% | 26.1% |
| Undecided | 20.7% | 8.7% |
| Disagree | 59.8% | 62.2% |
| | N = 163 | |

Generally, both groups indicated that they had confidence in the information presented on this type of instructional program. Less than half of both groups were either undecided or agreed with the statement.

The third hypothesis predicted a relationship between variance in appeal and specific production techniques.

Hypothesis 3 - Specific production techniques or formats will differ in levels of appeal.

A frequences and a chi-square statistic were used to determine whether or not significant differences existed between each positive and negative affective response for all production techniques. Table 13 represents the frequency response for each affective response representing appeal.

Table 13. A frequencies distribution of the number and percentage of each affective response to each production technique with chi-square statistics for each affective rating words.

| Formats | Advanced Organizer | Channel Selection | Station I.D. | Sound-Off Interview | We'd Like You to Know P.S.A. | A Backwards Glance | Viewdata in Review | Problems, Problems Drama | Audio Analysts Game Show Promo | TTN-News Break | TTN-Tech Word | Closing Comments | Chi-square | Degrees of Freedom | Alpha Level |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clear | 51 | 31 | 50 | 39 | 59 | 51 | 32 | 55 | 40 | 59 | 56 | 48 | 113.2 | 11 | .0000 |
| | 55% | 19% | 30% | 24% | 36% | 31% | 34% | 34% | 24% | 36% | 34% | 29% | | | |
| Confused | 5 | 33 | 2 | 13 | 2 | 3 | 5 | 3 | 10 | 3 | 7 | 2 | | | |
| | 5% | 20% | 1.2% | 8% | 1.2% | 1.8% | 5.3% | 1.8% | 6% | 1.8% | 4.3% | 1.2% | | | |
| Content | 5 | 4 | 12 | 15 | 17 | 21 | 13 | 16 | 18 | 21 | 19 | 19 | 42.9 | 11 | .0000 |
| | 5% | 2.4% | 7.3% | 9.1% | 10.4% | 12.8% | 13.9% | 9.7% | 10.9% | 12.8% | 11.6% | 11.6% | | | |
| Frustrated | 1 | 13 | 3 | 14 | 2 | 3 | 12 | 9 | 8 | 2 | 7 | 1 | | | |
| | 1.07% | 7.9% | 1.8% | 8.5% | 1.2% | 1.8% | 12.9% | 5.5% | 4.8% | 2.4% | 4.3% | 0.6% | | | |
| Satisfied | 7 | 13 | 21 | 15 | 30 | 27 | 12 | 26 | 23 | 37 | 23 | 27 | 68.4 | 11 | .0000 |
| | 7.5% | 7.9% | 12.8% | 9.1% | 18.3% | 16.5% | 12.9% | 15.8% | 14% | 22.5% | 14% | 16.5% | | | |
| Unfulfilled | 5 | 17 | 2 | 31 | 4 | 6 | 12 | 15 | 17 | 7 | 13 | 2 | | | |
| | 5% | 10.3% | 1.2% | 18.9% | 2.4% | 3.65% | 12.9% | 9.1% | 10.4% | 4.3% | 7.9% | 1.2% | | | |
| Attracted | 10 | 10 | 21 | 6 | 23 | 19 | 8 | 31 | 17 | 31 | 10 | 13 | 45.5 | 11 | .0000 |
| | 10.7% | 6% | 12.8% | 3.6% | 14% | 11.6% | 8.6% | 18.9% | 10.4% | 18.9% | 6% | 7.9% | | | |
| Put-Off | 4 | 13 | 12 | 28 | 7 | 10 | 6 | 27 | 24 | 8 | 16 | 9 | | | |
| | 4.3% | 7.9% | 7.3% | 17% | 4.3% | 6% | 6.4% | 16.5% | 14.6% | 4.8% | 9.7% | 5.5% | | | |
| Curious | 19 | 29 | 24 | 16 | 22 | 20 | 8 | 30 | 17 | 26 | 14 | 11 | 32.1 | 11 | .0007 |
| | 20.4% | 17.6% | 14.6% | 9.7% | 13.4% | 12.2% | 8.6% | 18.3% | 10.4% | 15.8% | 8.53% | 6.7% | | | |
| Indifferent | 7 | 30 | 19 | 22 | 13 | 18 | 2 | 6 | 8 | 9 | 20 | 15 | | | |
| | 7.5% | 18.3% | 11.6% | 13.4% | 7.9% | 10.9% | 2.15% | 3.6% | 4.8% | 5.5% | 12.2% | 9.1% | | | |
| Involved | 3 | 12 | 12 | 9 | 20 | 14 | 14 | 28 | 16 | 27 | 10 | 18 | 37.7 | 11 | .0000 |
| | 3.2% | 7.3% | 7.3% | 5.5% | 12.2% | 8.5% | 15% | 17% | 9.7% | 16.5% | 6% | 10.9% | | | |
| Bored | 8 | 23 | 22 | 52 | 15 | 17 | 11 | 25 | 21 | 16 | 21 | 15 | | | |
| | 8.6% | 12% | 13.4% | 31.7% | 9.1% | 10.4% | 11.8% | 15.2% | 12.8% | 9.7% | 12.8% | 9.1% | | | |

Each of the affective response measures differed significantly at the .0000 level, except the curious/indifferent category which was significantly different at the .0007 level.

In order to determine which direction (positive or negative) these differences culminated, a frequencies of the total response for each production technique was examined (Table 14).

Table 14. A frequency distribution of the total response for each production technique from the Production Feedback Questionnaire

| Affective Response Rating | Total Possible Response | Actual Positive Response | Actual Negative Response |
|---|---|---|---|
| 1. Clear/Confused | 1816 | 571 (31.4%) | 88 (4.8%) |
| 2. Content/Frustrated | 1816 | 179 (10%) | 77 (4.2%) |
| 3. Satisfied/Unfulfilled | 1816 | 261 (14.3%) | 131 (7.2%) |
| 4. Attracted/Put-off | 1816 | 199 (11%) | 164 (9%) |
| 5. Curious/Indifferent | 1816 | 236 (13%) | 169 (9.3%) |
| 6. Involved/Bored | 1816 | 183 (10%) | 246 (13.5%) |

In five of the six affective response categories the positive response relating to appeal was significantly higher than the negative response. In the sixth category the negative response was significantly higher than the positive response. Overall, appeal was significantly more positive than negative.

In order to identify the individual production techniques which rated higher in appeal, a relative frequencies breakdown appears in Table 15.

Table 15. A relative frequencies breakdown of total affective response based on total possible affective response to the production techniques presented in rank order

| Technique | Total Possible Response | Total Positive Response | Total Negative Response | Total N |
|---|---|---|---|---|
| 1. TTN-Newsbreak | 984 | 201 (20.4%) | 47 (4.7%) | 163 |
| 2. Problems, Problems - Humorous Drama | 984 | 186 (18.9%) | 85 (8.6%) | 163 |
| 3. We'd Like You to Know - PSA | 984 | 171 (17.3%) | 43 (4.3%) | 163 |
| *4. Advanced Organizer | 558 | 95 (17%) | 34 (6%) | 93 |
| *5. Viewdata in Review | 558 | 87 (15.6%) | 48 (8.6%) | 93 |
| 6. A Backwards Glance - PSA | 984 | 152 (15.4%) | 57 (5.7%) | 163 |
| 7. Station I.D.'s | 984 | 140 (14.2%) | 60 (6.1%) | 163 |
| 8. Closing Comments | 984 | 136 (13.8%) | 44 (4.4%) | 163 |
| 9. TTN-Tech Word | 984 | 132 (13.4%) | 84 (8.5%) | 163 |
| 10. Audio Analysts Game Show Promo | 984 | 131 (13.3%) | 88 (8.9%) | 163 |
| 11. Sound-Off - Interview | 984 | 100 (10.1%) | 160 (16.2%) | 163 |
| 12. Channel Selection | 984 | 99 (10%) | 129 (13.1%) | 163 |

* Experimental Group Only

Of the commercial techniques, the five techniques of highest appeal were (1) TTN-Newsbreak, (2) Problems, Problems, A Humorous Drama, (3) We'd Like You to Know and A Backwards Glance, P.S.A.'s, (4) Station I.D.'s with logo, and (5) Closing Comments. The Advanced Organizer and Viewdata were both favorably rated in terms of appeal by the experimental group.

Since different levels of appeal existed for each of the production techniques, the third hypothesis was accepted (see Tables 16-28).

Table 16. Affective Response Verbal Advanced Organizer

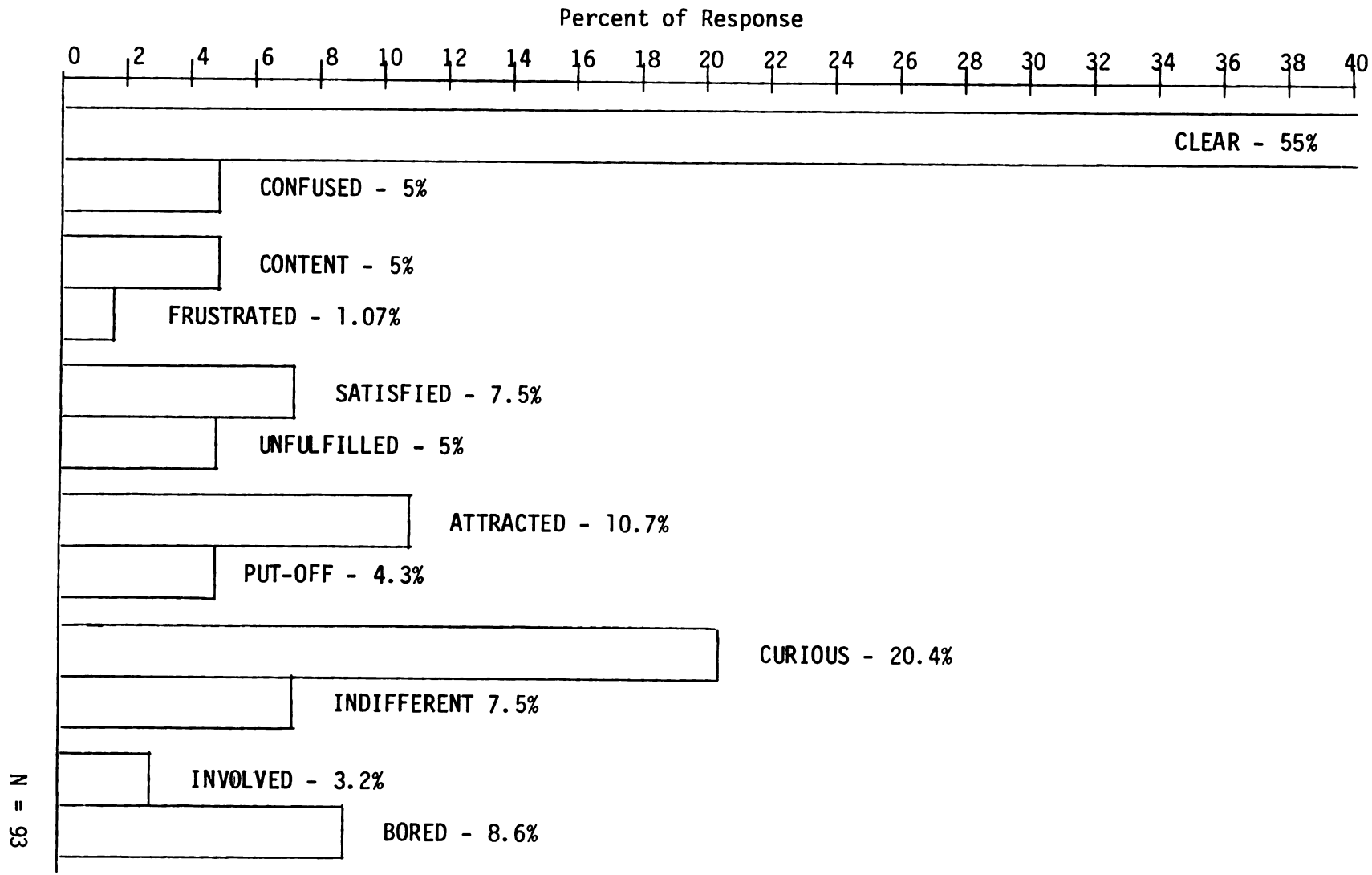


Table 17. Affective Response Channel Selection

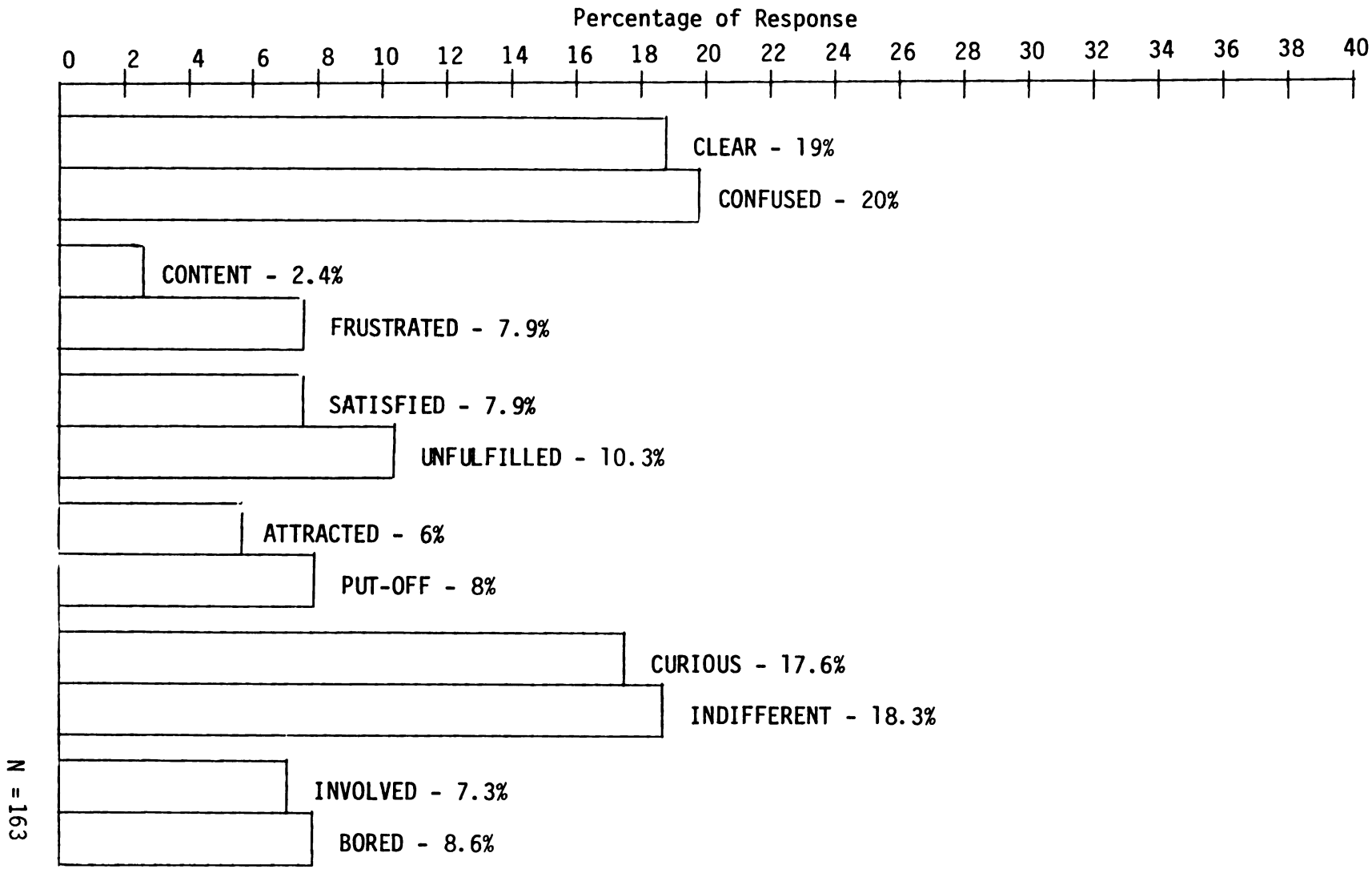


Table 18. Affective Response Interview Sound-Off

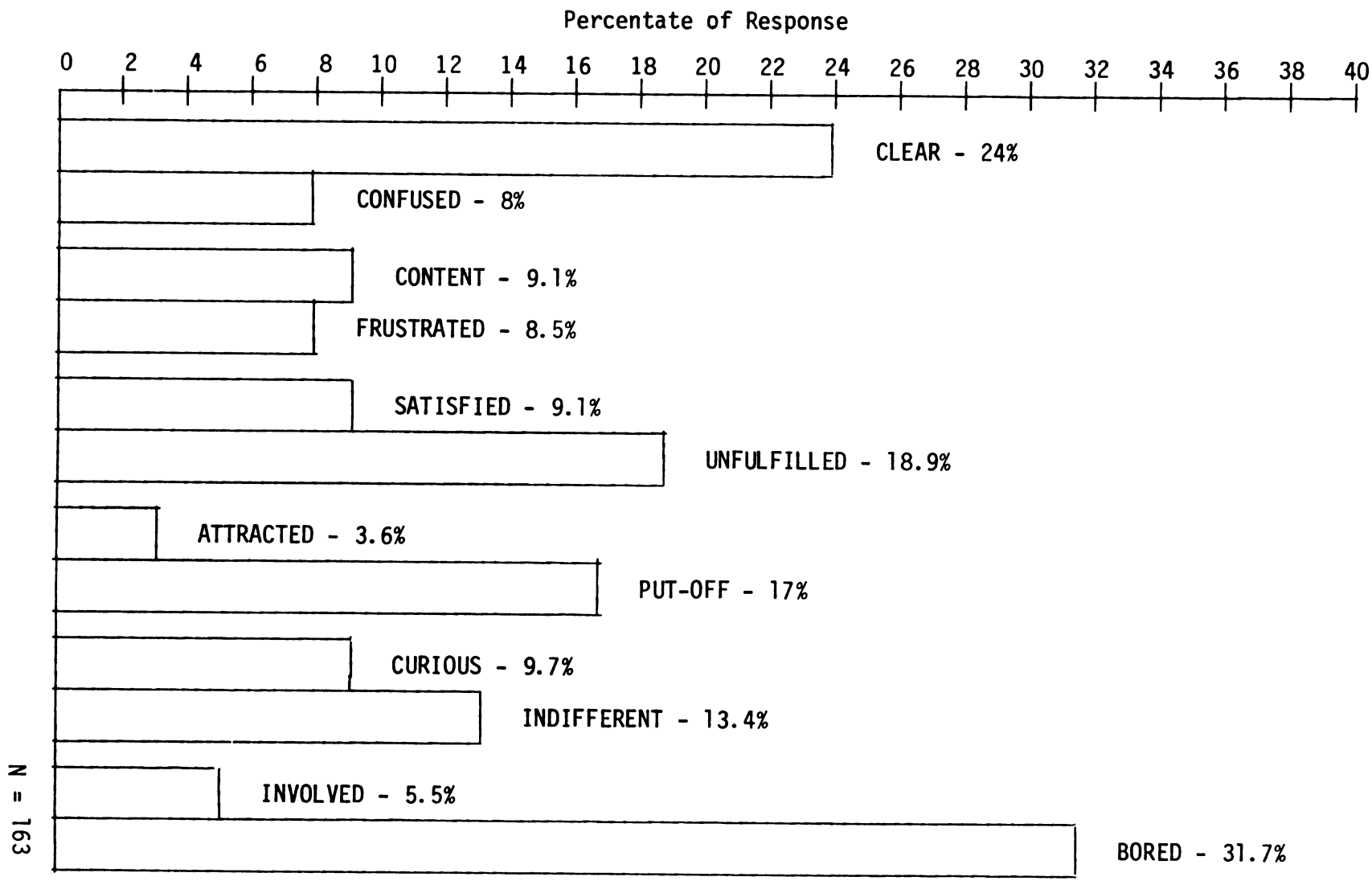


Table 19. Affective Response We'd Like You to Know -- Public Service Announcement

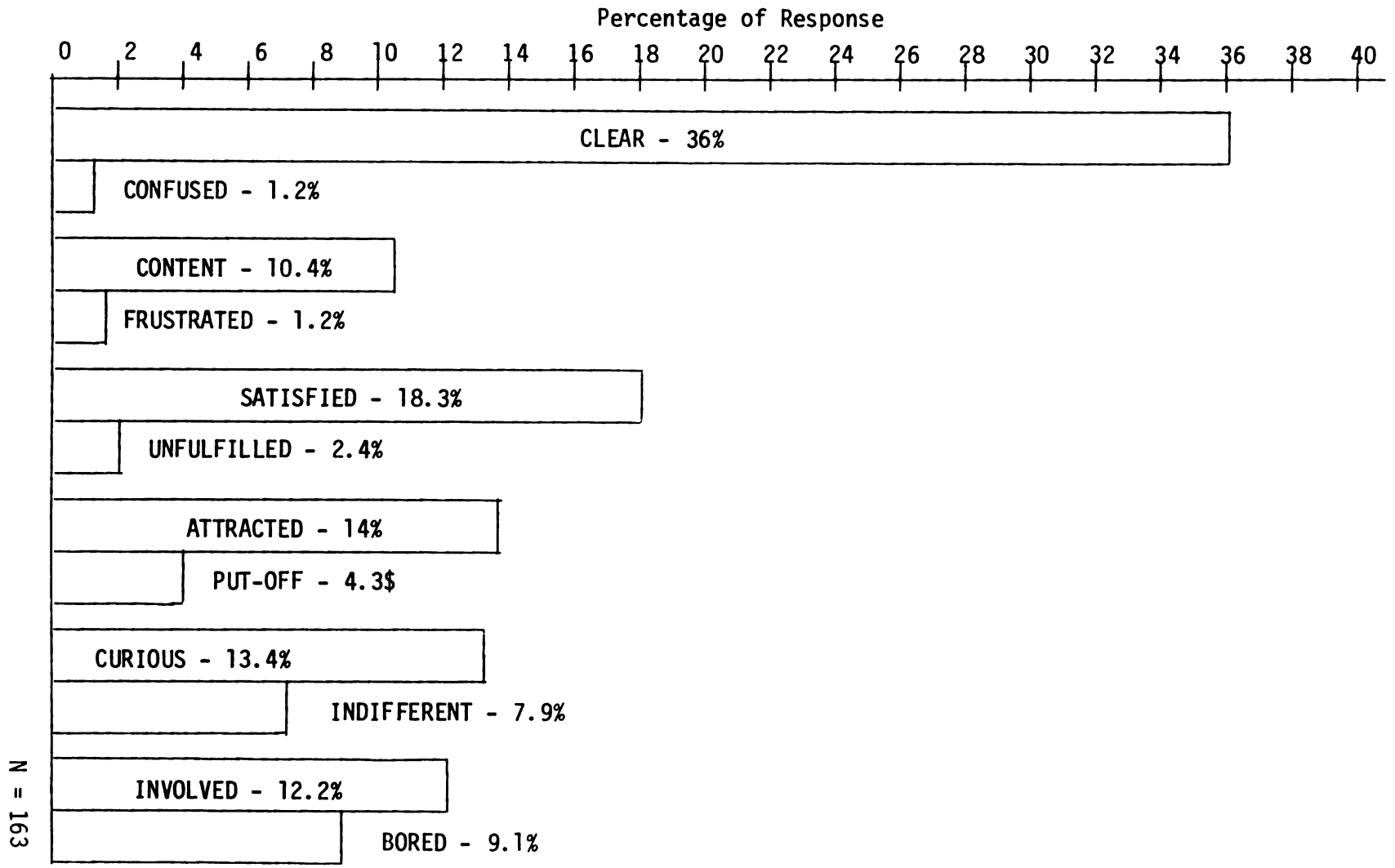


Table 20. Affective Response A Backwards Glance - Historical Moments, P.S.A.

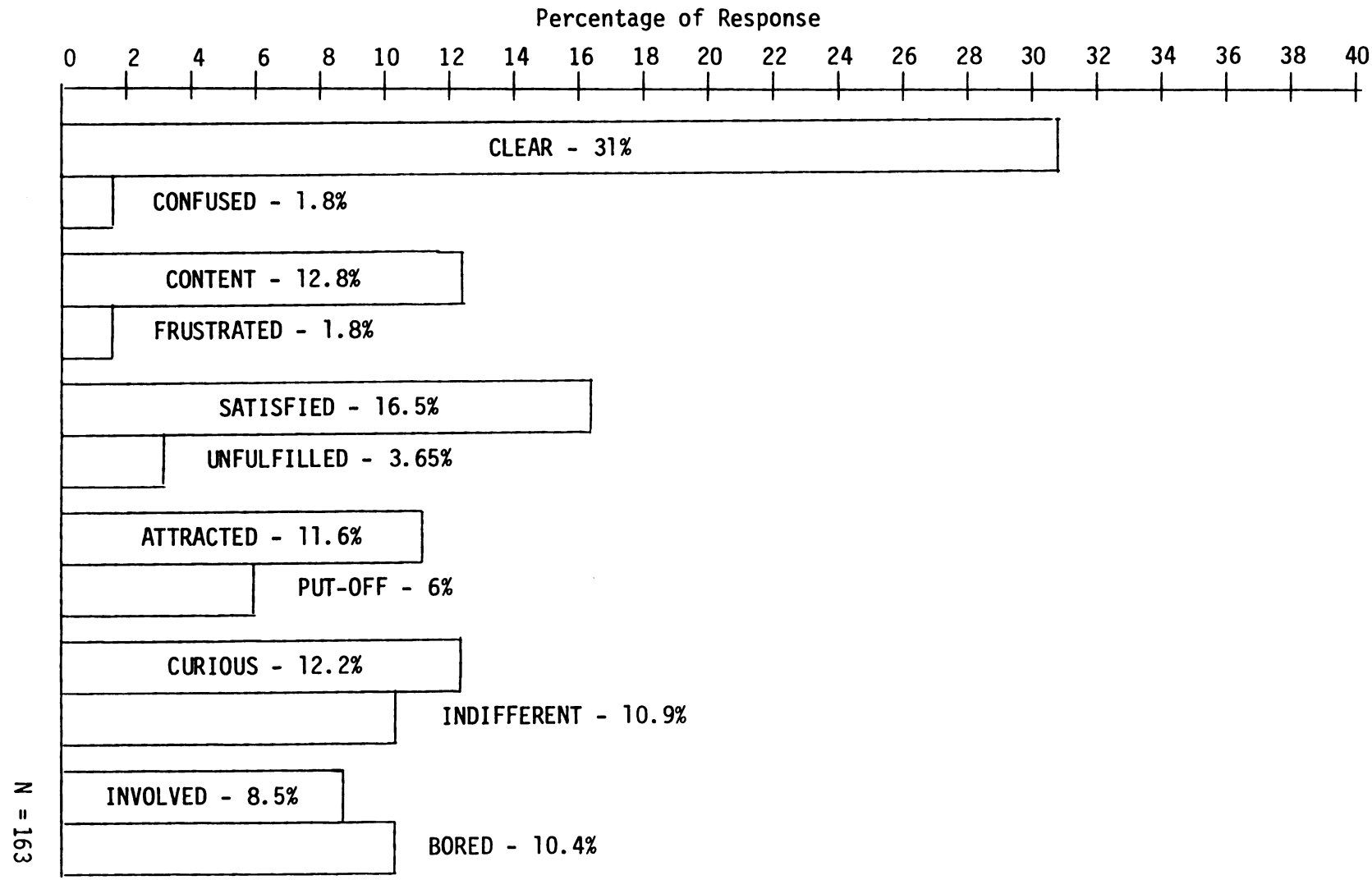


Table 21. Affective Response Station Identification

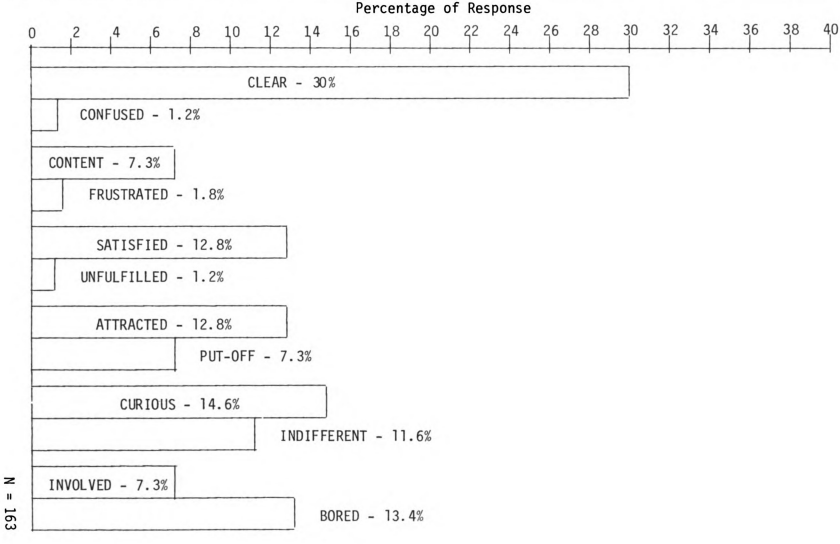


Table 22. Affective Response Viewdata in Review

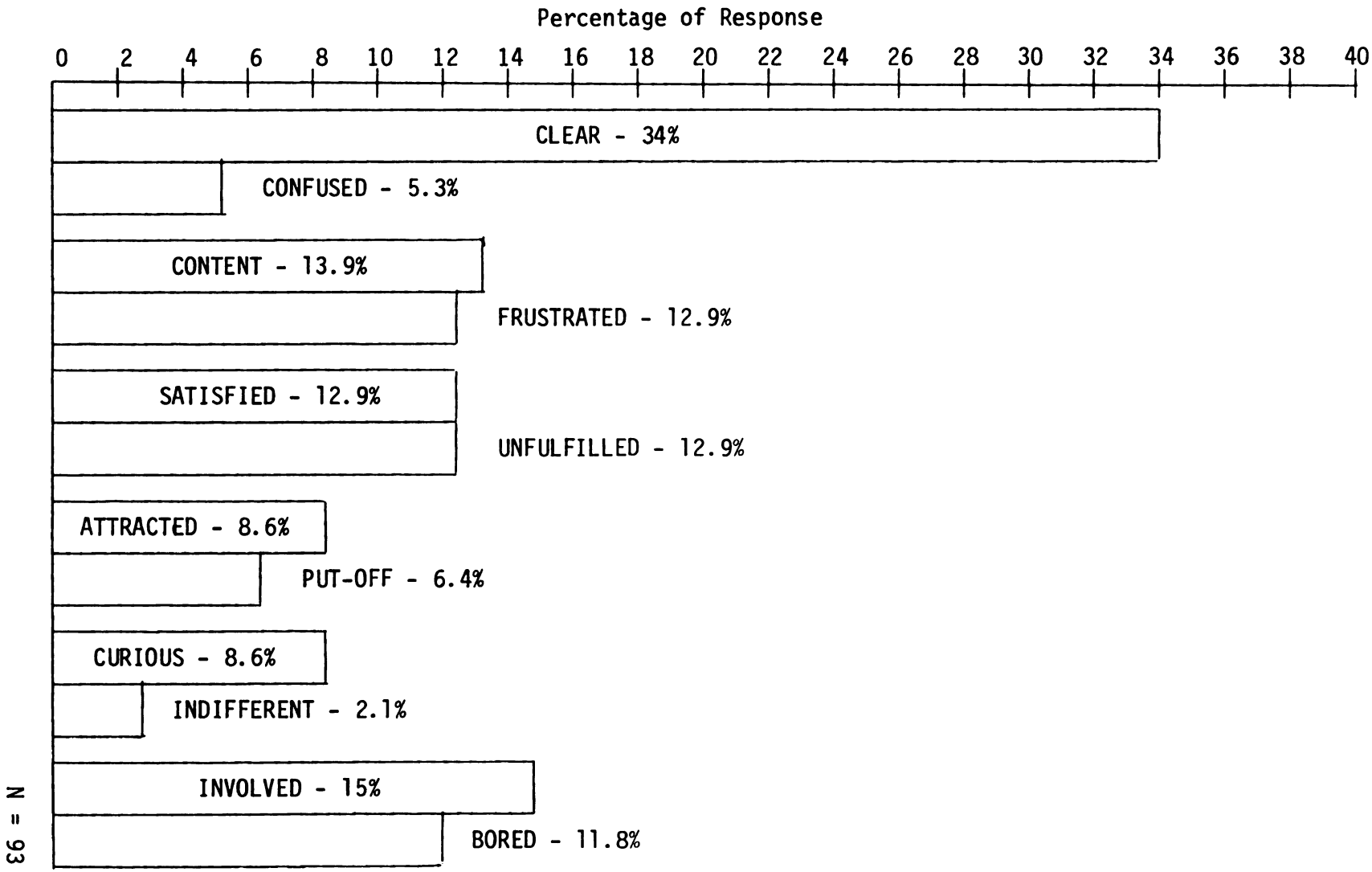


Table 23. Affective Response Problems, Problems - A Humorous Drama

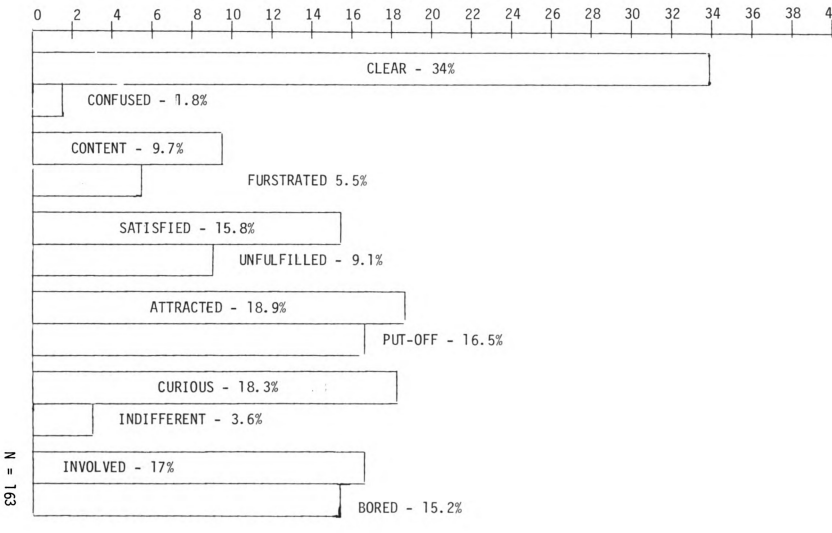


Table 24. Affective Response Audio Analysts - Game Show Promo.

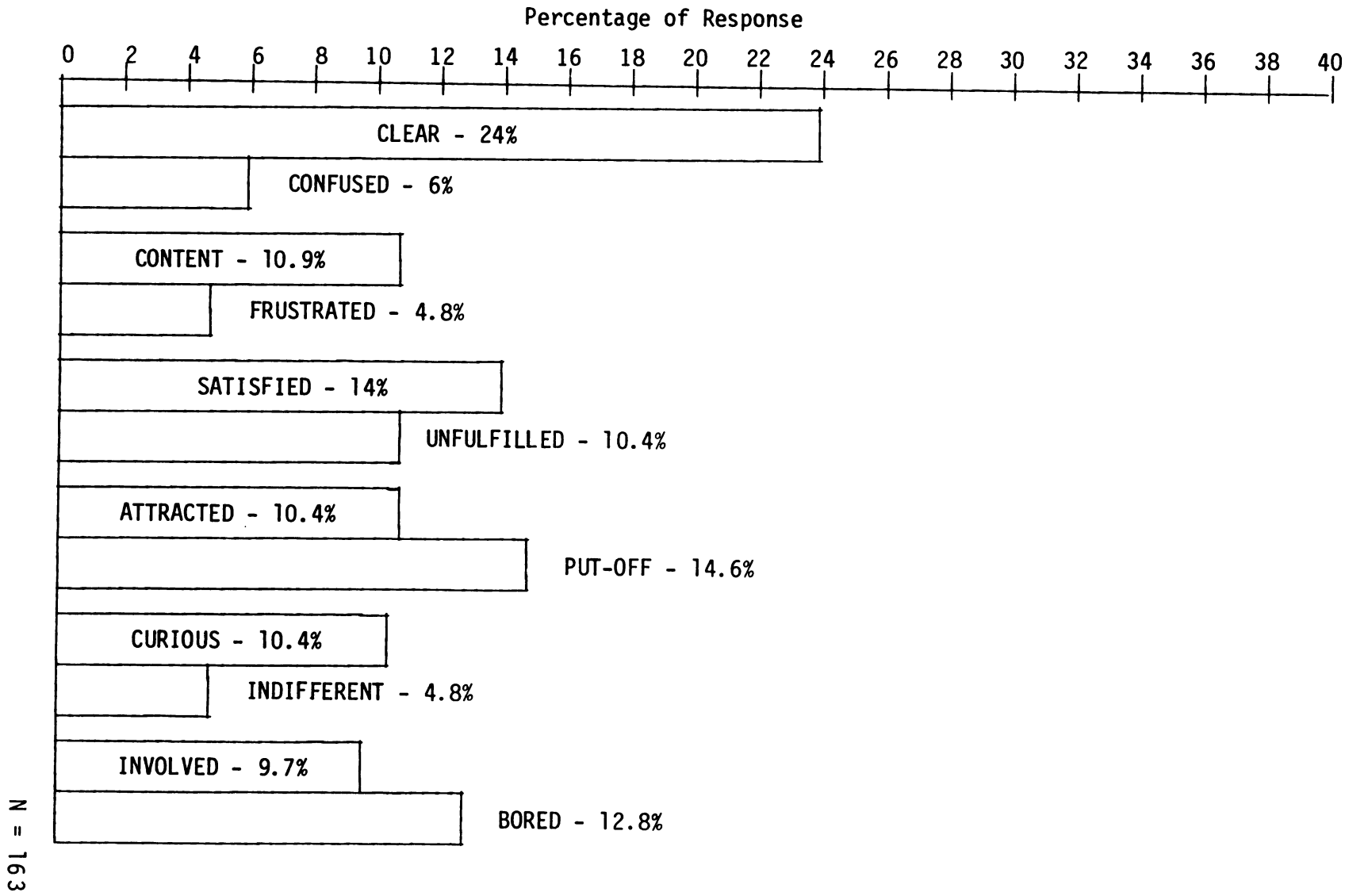


Table 25. Affective Response Newsbreak with Laural Thomas.

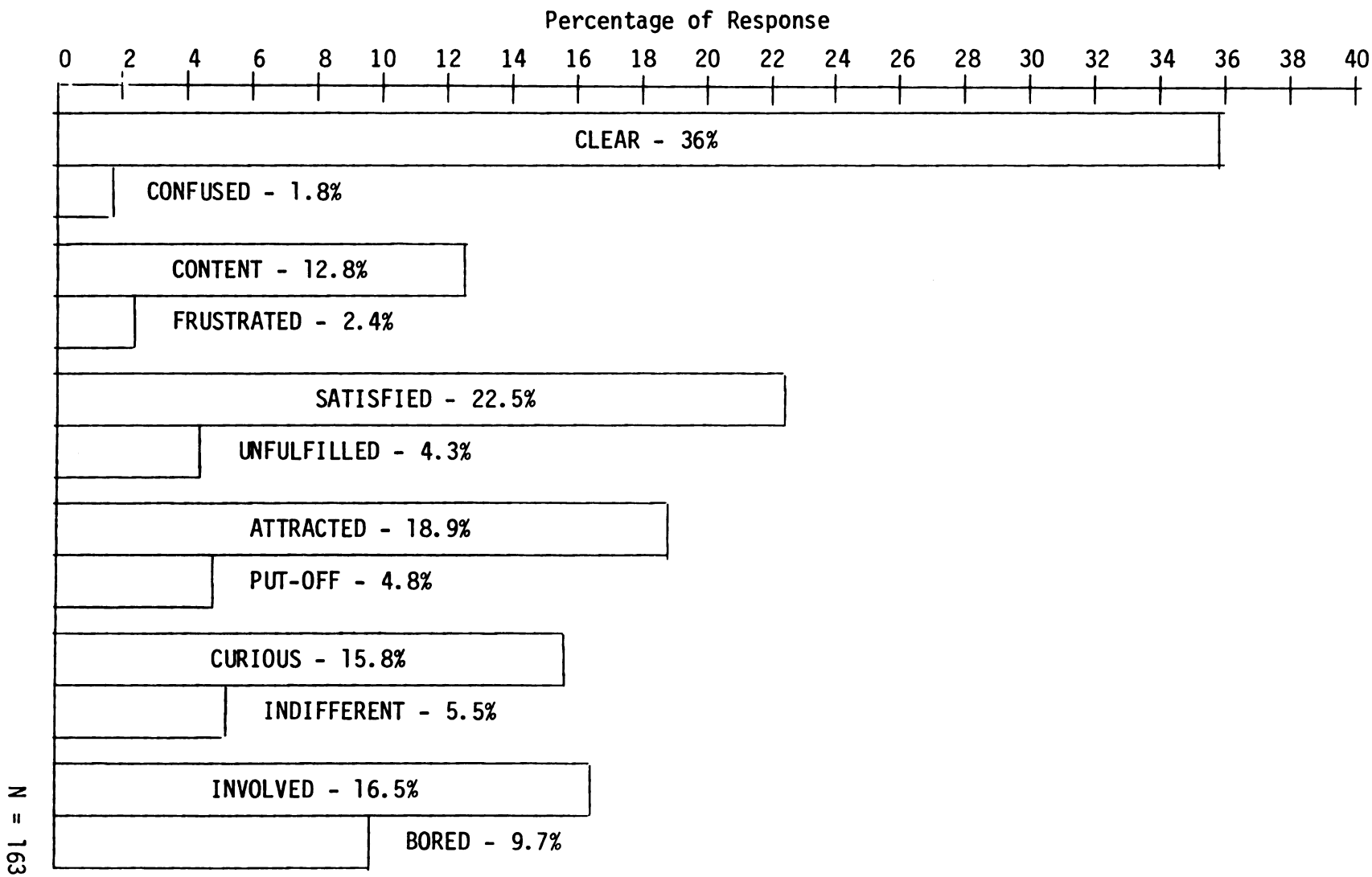


Table 26. Affective Response TTN - Tech Word

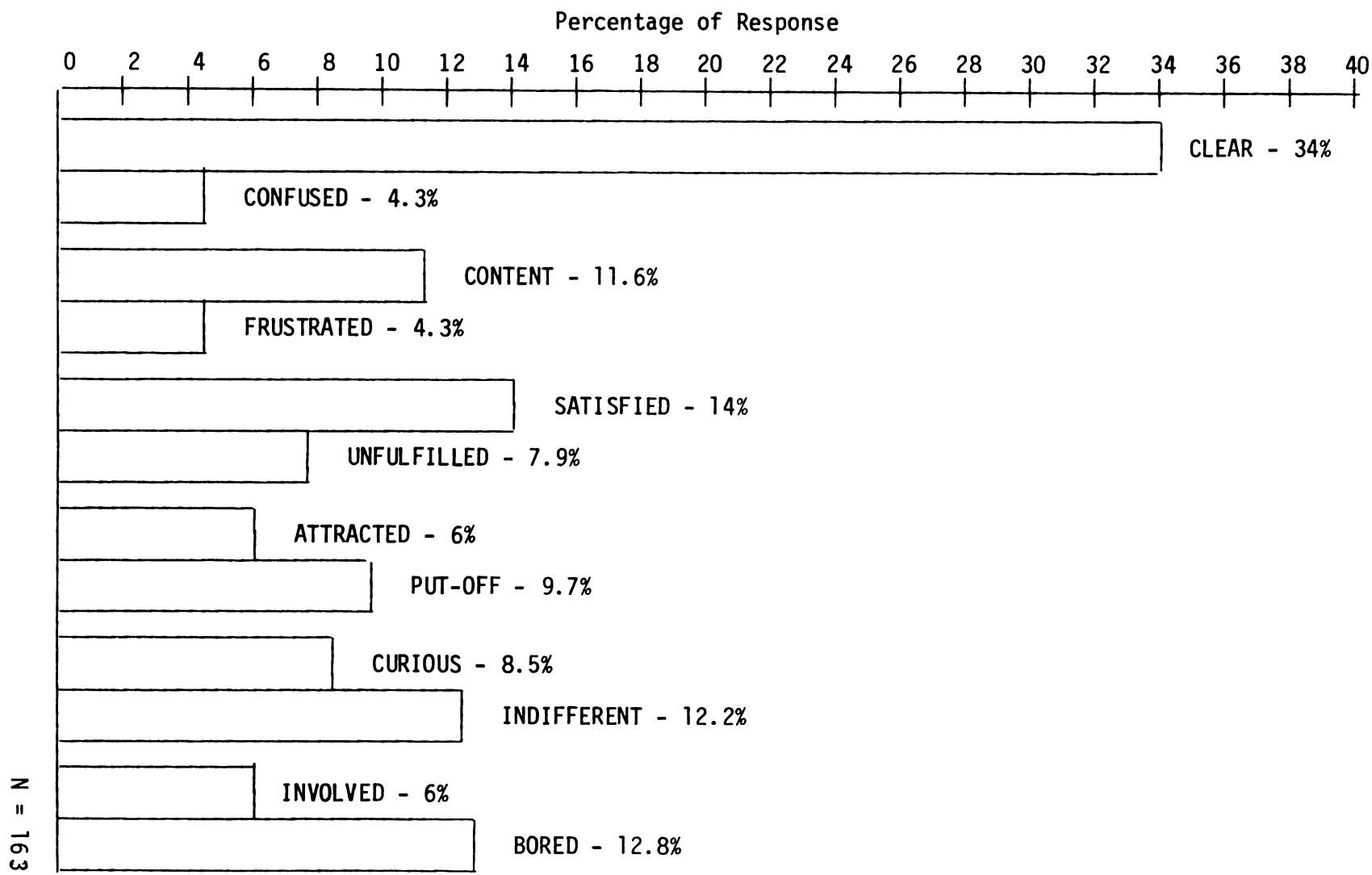
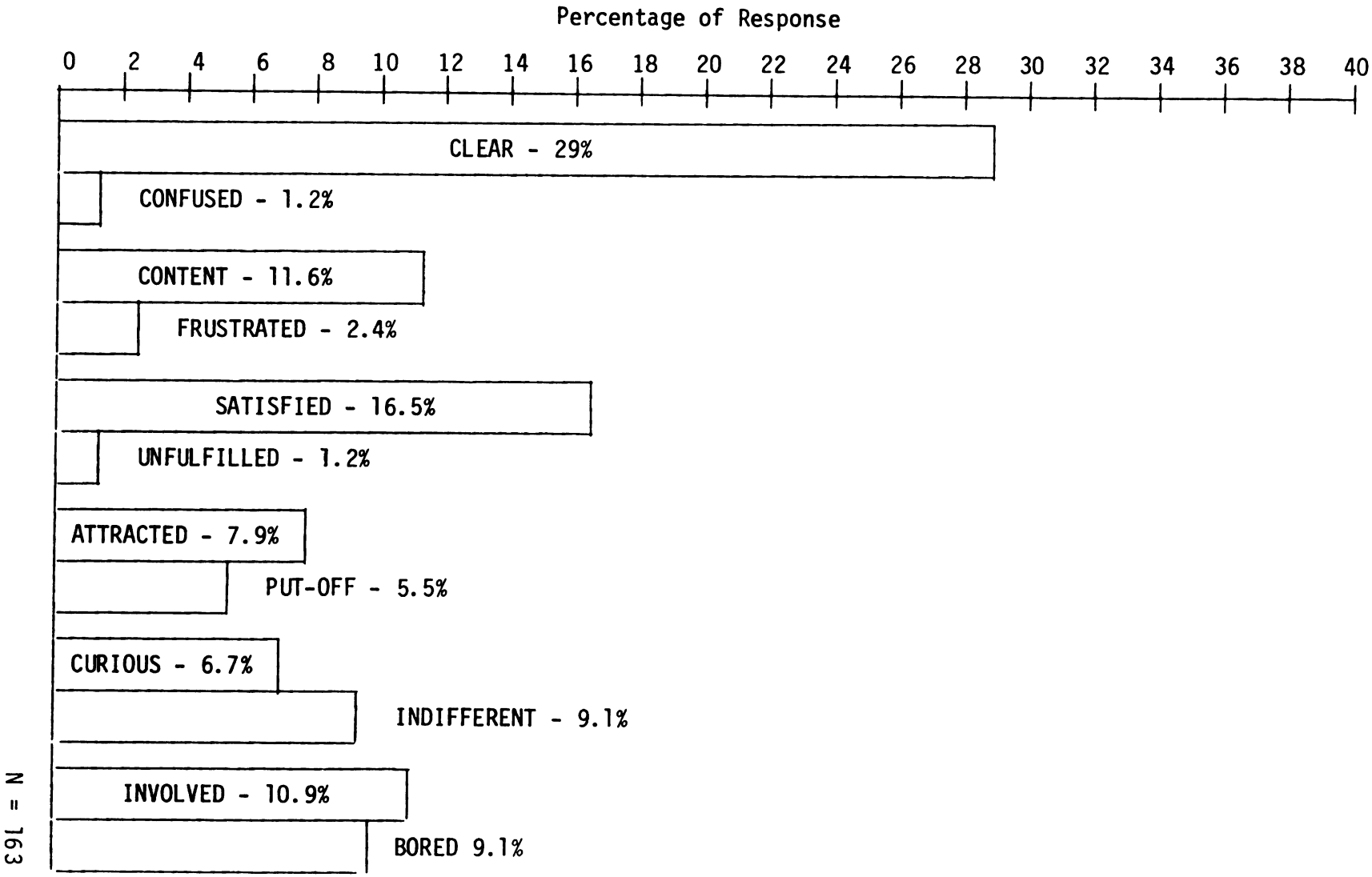


Table 27. Affective Response Closing Comments



# DISCUSSION

The results of the first assumption were interesting, but not totally unexpected. The commercial techniques chosen were specifically created to be entertaining as well as informative. The vignette, Problems, Problems, which included drama with humorous inserts was developed from previous research as a format that was effective, believable and appealing. The other techniques and formats were modeled after familiar commercial television examples, were paced somewhat fast and were made visually interesting to hold attention.

It was unexpected, however, that the experimental and control groups would achieve such high means on the multiple choice test for content. In addition, the mean test scores for both groups were relatively close (i.e. 83.2% correct for experimental groups and 80% for the control group). These means seem particularly high for information gained through an instructional television course. However, the measures of learning were administered almost immediately after the participants had finished viewing the program. A second test, administered two weeks after initial exposure, might provide a better look into the effectiveness of the program.

The results of testing the first hypothesis were surprising. According to previous findings, the introduction of the instructional

techniques, Viewdata in Review and the Advanced Organizer, should have increased the effectiveness of the program in terms of both learning and appeal. In this particular study, however, there was no significant difference between the two groups. In essence, receiving the information through the use of commercial production formats and techniques was just as effective as combining commercial and instructional techniques. The preview and instructions as to how the program was set up, the review of the major points to be learned allowing for note taking and the repetition of the material which were given to the experimental group did not increase the amount of learning.

These findings are contrary to the body of instructional television research. No attempt is made to generalize the findings of this study to all college-age students, but the findings do make more likely the conclusion that today's college students may have a greater capacity to process information from instructional television if it is presented in a form which is familiar to what most of them have been exposed to with commercial television. This particular conclusion has never been disproved, and the major body of research conducted on instructional television dealing with college-age participants was conducted prior to the 1970's. Perhaps the type of communication and the techniques which commercial television has presented in the past 15 years have become an expected and normal pattern for those individuals who have grown up watching it. This, however, is an area for further study and experimentation.

The results of testing the second hypothesis were somewhat unexpected, but were consistent with the results found in testing the first. A relationship between higher appeal and combining commercial with

instructional techniques was predicted on the basis of offering the experimental group an introduction to the program with three major sections of repetition, review and note taking. According to previous findings, this should have allowed students to view the material with a more relaxed state of mind and with the expectations of being entertained as well, predicting an increase in the effectiveness of the program. However, there was no significant difference between the two groups as reflected by the attitude scales. This finding may be another piece of evidence suggesting that today's college-age students have a faster and more efficient capacity to process information from a familiar form of televised expression. Again, however, no attempt is made to generalize these findings.

A closer look at selected attitude statements from the instructional television attitude scale yields some interesting opinions, even though no significant difference was found between the two groups. Both experimental and control groups agreed that the program designed for this study provided for a wider range of individual differences, provided greater motivation to learn, developed better listening skills and provided more confidence in the information presented when compared to conventional lecture-type instructional television programs (see Tables 7, 8, 11 and 12 in Results Section). This indicates that more research should be conducted in terms of utilizing familiar forms of commercial television production techniques for the purposes of presenting instructional content.

There are two possible reasons for the non-significant differences in two of the hypotheses. First, there is a possibility of a Hawthorn effect which may have raised the potential and actual scores of the

control group. Second, it may be that the level of ability to learn from any source, reaches its peak in college-age students. This type of study might be more applicable where a wider range of I.Q.'s are present (i.e. high school). It may be that the results of this study were affected by these two conditions.

The results of testing the third hypothesis were expected. Common sense dictates that individual differences would be reflected in varied levels of appeal towards a large range of production techniques. What is interesting to note here, however, is that the top five commercial production techniques were the formats of a news break, a public service announcement and a humorous drama. The majority of these techniques or formats are well known for their communication of information in a very short time period. Again this points to the fast paced form of commercial television communication. More importantly, it points towards an area which might greatly increase the appeal of televised instruction for the college-age student where the capacity and creative potential of the medium may be realized. It is reasonable to assume, however, that most universities would tend to favor a method of program narration, production and distribution which promotes lower cost per student served. It is obvious that a creative use of the medium which utilized advanced techniques will be a more expensive endeavor.

In conclusion, this study has demonstrated that creative and effective use of the medium of television, pioneered by the commercial sector, can be used to enhance television instruction for college-age students. By using commercial techniques and formats, with or without instructional techniques and formats, learning objectives were effectively achieved and particular techniques and formats had higher appeal for the college-

age students who participated in this study. It is urged that more research be conducted in this area in order to more fully realize the poetntial of the medium of television for instructional purposes.

# APPENDIX A: Production Elements and Techniques

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Image Size

The Very Long Shot - establishes broad location and develops an atmosphere, or an impression of the environment.

The Long Shot - establishes location and atmosphere and is used to follow patterns or purpose of movement (can be used to introduce a specific scene, or a particular program).

Medium Shots - ranging from full length to mid-shot; the function allows for a bridge between the intimacy of a close-up and the surveillance allowed in the long shot. In medium shots, the larger bodily movements become more significant and expressive.

Close-up - concentrates the viewer's interest on a detail which is important to the course of action.

1. used to point out detail that is otherwise unnoticed, allowing for detailed inspection.

2. use of close-up can incorrectly show things out of context (it can put too much emphasis on a portion of the subject and the audience may see it detached from the whole).

3. it usually fails to sustain interest for long periods of time, and should be held just short of satisfying the viewers curiosity.

4. it should not be used to over emphasize detail which is obvious to the viewer.

5. large movement during a close-up, of the subject, should be discouraged. In this case, the close-up causes even the tensing of a facial muscle to be as pronounced as large bodily movements in the long shot.

6. the close-up forces the spectator into contact with screen images, so careful introduction is necessary to avoid shock, discomfort or loss of continuity.

7. by use of close-ups and the process of editing, a mass can be split up, and its elements can be examined in succession, to become synthesized into a whole. This allows for a more comprehensive understanding of a subject, object or situation.

8. a close-up arrests the outward signs of emotion (a glance at a restless foot or a contracted brow, expresses feelings in an indirect but effective manner).

Camera Angle

"The shooting angle is used to recognize an object and to grasp its physical properties as well as its essential nature." [1]

The Canted Shot - off vertical or tilted horizons.

1. suggest instability, uncertainty, abnormality, dynamism, power.

2. combined with a low angle shot, can suggest imminent action.

3. a right cant suggests active forcefulness, speed and unimpeded motion.

4. a left cant suggests impotent force, impeded motion and slowness.

Low Angle Shots

1. stronger and more imposing effect is felt about the subject.

2. depending on the plot, environment, and character of the individual, a person may become overpowering, ominous, threatening, pompous, authoritative, determined, or dignified, benevolent and paternal.

3. dialogue and movements become significant and dramatic; the larger the image size, the stronger these impressions.

High Angle Shots

1. gives the viewer a sense of strength and superiority which increases with distance.

2. the shot implies unimportance, inferiority and impotence.

Extreme High Angle Shots - emphasizes patterns, formations, congestion, and isolation.

a. gives an attitude of peering down to scrutinize.

b. a height of 10 to 20 feet above the subject usually causes surveillance to give way to complete detachment.

c. in overhead shots, vertical lines such as looking over the edge of a skyscraper, down to the streets below, can cause a feeling of tension and instability, but only if the vertical lines of the building appear on the bottom of the frame. No such feelings are evoked if the vertical lines are composed at the top of the frame.

Camera Movement

The Pan - left or right movement of the camera on its head.

1. it can be used to establish a connection between subjects.

2. repeated back and forth panning can reinforce the following:

   a. action - consequence
   b. action - reaction
   c. cause - effect

3. it can be used to associate a number of objects into a class, which already had something in common.

4. a pan can inspect parts of a subject progressively, without destroying the awareness of unity by cutting.

5. it can preserve unity by following an action.

6. used to establish connections not previously described (e.g., a box being loaded onto a ship which is sailing overseas).

7. a pan can reveal hidden areas of interest (e.g., a performer looks off screen to an area of interest and camera pans to show it to us).

8. anticipation can be developed when a new subject is being introduced.

9. in some cases, a slow pan can be used to create suspense.

10. Surveying Pan - (Panorama) - one in which we search the changing shot expectantly, looking at whatever happens to interest us.

    a. slowly - it is restful and anticipatory.
    b. rapidly - provides the viewer with an exciting transition between two spaced points.

11. Follow Pan - concentrates on a particular moving subject, while the background becomes incidental (generally held center frame).

12. Interrupted Pan - a long, smooth movement which is suddenly stopped, and occasionally reversed, to provide visual contrast. It is used to link isolated subjects together.

    a. Comic application - A group of sailors walk along sidewalk, a pretty girl passes. Camera stops with her. One sailor returns, grimaces to camera, motioning for it to hurry and catch up, and camera does.

b. Dramatic application - Escaped convicts making their way through treacherous marsh lands. One man falls, exhausted, but camera stays with group. A moment later, camera stops and looks back to see what last traces of the straggler now remain.

c. Introductory application - A panel (game show, press conference, talk show) where the camera pans and pauses on each subject while information about them is being spoken.

13. Whip Pan - (swish or zip pan) - rapid turn from one subject to the next. Space in between appears as a blur. The momentary excitment depends upon how the preceeding and following shots are developed. The implication is the added importance of the next shot.

    a. can be used to compare and contrast situations (e.g., wealth and poverty).

    b. a different interpretation of same subject can be emphasized.

    c. if shooting single camera, a swish pan can be edited in between two separate shots.

14. New shot angles must be related to the direction of the pan.

    a. a pan to the right symbolizes progress.

    b. a pan to the left symbolizes a past event.

Tilting - a movement of the camera up or down on its head.

1. a tilt can be used to emphasize height and depth of an object.

2. upward tilting becomes an act accompanied by rising interest and emotion, expectancy, hope and anticipation.

3. downward tilting becomes associated to lowering interest and emotion, disappointment and sadness.

NOTE: Pre-conditioning (by dialogue or action) can bring about more complicated or more modified responses.

    a. downward tilt can become an act of inquiry.

    b. upward tilt a gesture of dispair.

    c. if a subject no longer holds our interest, a downward tilt can bring relief and anticipation.

d. using a common background (such as columns of a building) revelations using tilts can be used, as well as for city skylines if tilting down from sky.

Zooms - increasing or decreasing image size by use of a variable focal length lens.

1. depth decreases with closer shots.

2. a zoom causes an artifical perspective change, as opposed to a dolly.

3. a zoom can be used as a dramatic effect, by bringing the subject closer to the viewer for examination.

4. Swoop-zoom - flings subject at viewer and effect can be either highly dramatic or highly disturbing.

5. a zoom can narrow attention rapidly to some detail which suddenly becomes important.

6. as the shot widens, intensity falls.

7. as the shot tightens, intensity rises.

Truck - Track - movement of the entire camera left or right.

1. seems to physically move the viewer left or right.

2. follows moving objects continuously allowing travel.

3. used to communicate the length and expanse of objects or areas.

Dolly - movement of the entire camera in towards or out-away from subject.

1. brings the viewer, as opposed to the object, in closer or further away from the object.

2. keeps normal perspective and spatial relationship as opposed to zooms.

3. the greater the movement of the camera, the stronger its impact will be.

4. varying the speed of the camera with the speed of the subject can bring about interesting effects.

Arc - movement of the entire camera in a semi-circular motion left or right.

1. can be used to battle visual monotony, while keeping the subject in view.

2. it can build interest or inform us about the specifics of the subject.

3. composition can be adjusted when subjects move their physical relationships, without having to abruptly cut, causing distractions from content.

4. the arc can also be used to eliminate unwanted material in the background.

Focus/Defocus

1. when shooting slightly out of focus, outlines appear slightly indistinct, giving special colors and softness or tenderness especially in scenes of a lyric character. There are no special or general applications.

2. Rack focus - pulling focus between subjects at different distances from the lens, moves the viewer's concentration from place to place (becomes distractive if over used).

3. Defocus and then focus - avoids cuts by releasing attention to one point and forcing change to another when focus reveals new location.

Subjective Camera Uses

1. camera can reinforce shooting a drunken man's condition, by swaying as though the camera were drunk also.

2. camera can become a subject (e.g., a runner tripping and falling, a cowboy being trampled in a stampede. Camera can become a rolling stone, a flying arrow, a diving airplane, a striking axe, a bird, a top, a bullet).

3. the viewpoint of an infant can be better expressed by shotting from a worm's eye view.

4. transference from character to audience (e.g., a man turns his head sharply and what he looks at is shown).

5. a certain persuasive appeal can be communicated by the camera (e.g., a girl coming home from her first ballroom dance, and the camera sways in waltz time).

Misleading Uses of the Camera

1. a soft focus on a group of dancers in a carnival makes them attractive and sexy -- then a sharp focus reveals wrinkles and ugliness.

2. through camera placement in a Laurel and Hardy film, Hardy looks as if he is strangling Laurel, but when we switch to another angle we see that Hardy was merely tying Laurel's tie.[2]

## Basic Methods of Transitions

"...when we see not only actual pictures of objects on the screen, but fades and dissolves, we are no longer facing only objective reproductions of things - here the narrator, director or creator himself is speaking to us."[3]

### The Fade

1. the maximum interruption of continuity, the end or beginning of an idea, concept, location, era or scene.

2. it has rhythmic significance, in that scenes which are carried out in slow tempo are usually ended using a fade (e.g., a man exhaustedly approaches an armchair and lowers himself into it, dropping his head into his hands as we fade out).

3. it can be used as a Leit-Motif (a reoccurring theme) or a flash-back device.

4. The Fade-out/Fade-in is the simplist method of ending an action, or a defined period of time. It is generally held, however, that six to eight times per hour of story is the limit of its effective use.

5. at all times it represents the passing of time.

### The Dissolve

1. the preceeding and succeeding shots may be superimposed for any length of time and with any degree of relative intensity.

2. a series of dissolves brings us closer to an object.

3. a series of dissolves emphasizes passage of time.

4. after a lengthy number of cuts, a dissolve can be used to alter the pace.

5. a dissolve can be used to represent a flash back as if imitating the birth of one idea from another.

6. long scenes changed by dissolves, render calm and slow rhythm and pace.

7. a dissolve is useful for preparing the viewer for the visual circumstance for which he/she may not always be prepared.

8. a dissolve is used between actions which occur in different times and different locations.

9. a dissolve is used between sequences which are presented in different modes such as seated and standing action.

10. one should dissolve to any subject which is not expected within the original time or place.

11. sometimes a dissolve from a long shot to a close-up is recommended to soften the impact of the close-up.

12. dissolves are not needed when the subject of the new shot is verbally introduced just before or coincident with the change (e.g., news story on video tape or an album or book cover).

13. consecutive dissolves are extremely convincing when used between close-ups because of the isolation of space allowed by the close-ups, and the development of a conceptual space by the use of consecutive change.

14. if two scenes are dissolved into one another, the figure which appears in both, provides the visual link.

Superimpositions

1. different levels of reality can be portrayed simultaneously.

2. time and space become mixed.

3. often used to portray thoughts, emotions and dreams.

4. when using a super, care should be taken not to have the new shot intrude on the present subject or object, unless a desired impression justifies it.

5. In Pudovkin's Deserter, he superimposed on the detailed work of riveting and hammering, an outline shot of the entire ship, in fast motion, coming to completion (a small part of the whole was used to typify the entire complex process).

6. Rhythm can be inhanced by simultaneous duplication (e.g., a dancer's routing can be enhanced by supering one or more views, different or the same, to produce an exciting and rhythmic presentation).

Wipes

1. a split screen can show simultaneous actions at the same time or show two aspects of the same subject.

2. a corner square wipe held still, can contain a commentator, while the remainder of the screen can show the material which is being discussed.

3. a lateral wipe can follow an exit of a person off one side of the screen as a new group enters from the opposite side to begin a new scene, with time passing evident.

4. as a subject recedes into the distance at center screen, a contracting circular wipe can keep the subject prominent until the last moment.

5. a wipe expanding from center screen may impart a feeling of growth and development to the beginning of a scene.

6. overuse of the wipe may detract from the message or presentation as a whole.

7. decorative use of wipes include the coverage of marching bands, sports events, dancers and demonstrations in a public auditorium.

8. a wipe can sometimes be used to change the cutting pace.

9. a wipe in drama tends to make the overall scene seem somewhat artificial and similar to turning the page of a book, as opposed to representing reality.

Cutting

1. the cut is imperceptable, and is only a logical abstraction of reality (the turning of a head, quick movement of the eyes).

2. the value of a cut is its virtual invisability, which allows for the impression of contrast between shots, to be more effective.

3. a cut can be used to eliminate unwanted space or to abbreviate and condense time.

4. cuts are most often used to follow conversation or to follow a glance or a gesture.

5. cutting can create space, which may or may not exist.

   A river and a water fall may be two separate bodies of water, but combined through appropriate cutting can become a connected whole.

NOTE: The juxtapositioning of shots through cutting are readily accepted because of the very nature of the cut being inperceptable.

6. cutting just after a subject has left the frame, and to a shot just before the subject has entered, becomes an acceptable short passing of time.

7. cuts can direct attention and reveal new aspects of the same subject, to emphasize a different point.

A new subject introduced in the present shot along with the former subject, can be cut to separately to allow for isolated scrutiny.

Other Methods of Transition

1. In Alfred Hitchcock's "The Thirty-nine Steps," we cut from a woman screaming to a train whistling.[4]

2. In Karel Reisz's "Saturday Night and Sunday Morning," Albert Finney bangs down a dustbin lid, angry at his girl friend's mother, and with the noise we cut to the clang of the factory where he works.[5]

3. In Bo Widerberg's "Rovens End," a series of transitions rely upon football jerseys. First we are shown them taken off the line, then ironed by the stars mother, then inside the locker-room, and finally on the football field. At all times we follow the jerseys.[6]

4. Similarity of Shape - In Eisenstein's "The General Line," we switch from the angular limbs of a grasshopper to those of a reaping machine.[7]

   a. a dissolve from the circular curvature of a face to the circular curvature of a football stadium.

   b. a defocused shot of a candle flame dissolve to a defocused shot of an electric light bulb.

5. In Torre Nilsson's "Homage at Siesta Time," a helicopter scene is followed by a vertical overhead shot of people sitting around a table. The transference from the helicopter to the scene in the restaurant is achieved by similarity of angle.[8]

6. cutting directly to a close-up of a new object, before being introduced, renders identification of the scene by the audience impossible, until the camera pulls out and the significance becomes apparent.

7. tilting up into the blue sky (or zooming and tilting up), then cutting to another shot of blue sky and tilting down (or zooming out and tilting down), into a new scene is an effective transitional method.

8. flashback techniques, including defocusing on a particular shot, and slowly dissolving to a new scene out of focus, and then sharpening focus (accompanied by some appropriate audio bed) effectively transmit the idea of remembering a former event.

Editing - "Editing is in actual fact a compulsory and deliberate guidance of the thoughts and associations of the spectator."[9]

1. Relational Editing - (an instrument impression)

   a. Contrast - to communicate the misery of a starving man, we could associate his dilemma with the senseless gluttony of a rich man (separate scenes and shots forcing the viewer to compare the two actions constantly).

   b. Parallelism - one person's actions with the same time actions of another event, or person.

   c. Symbolism - a group of commuters with shots of an ant colony intercut occasionally, to symbolize the insignificance of the individual.

   d. Simultaneity - the simultaneous rapid development of two actions, in which the outcome of one depends upon the outcome of the other. Creates tension, excitement and anticipation.

   e. Leit-Motif - re-emphasizing the basic story theme. In certain Russian films, the struggle of the working class was often intertwined with leit-motifs which illustrated the hypocracy of the Russian church, by showing church bells ringing, and supering titles which detected sayings of the church. Immediately proceeding and suceeding were scenes which depicted the Tzarist influence over the church and the contrary actions it took.

   f. Montage - "Montage is the association of ideas rendered visual. It gives the single shots their ultimate meaning."[10]

      "A selection of shots at points geographically remote from each other, to be combined into a new spatial framework by the viewer."[11]

      "A device used in film to fill the need for connected and sequential exposition of the theme, material, plot, action and movement within film sequences and the drama as a whole."[12]

      (1) juxtaposing shots creates new concepts, and we automatically combine the elements and reduce them to a unified whole.

      (2) gestault psychologhy says we react to organized wholes which are something more than the sum of the parts into which they can be analyzed. Montage is the enrichment of meaning by mental association.[13]

(a) Narrative Montage - putting individual shots together in chronological order to tell a story.

(b) Expressive Montage - putting shots together with the purpose of producing a particular, immediate effect by the clash of two images (e.g., character saying, "May lightening strike if I am lying," and showing a flash of a thunderbolt).

(c) Montage of Attractions - women gossipers and hens crackling; workers being shot down and oxen being slaughtered; wounded soldiers crawling and beetles crawling in the mud; soldiers being shot down and toy soldiers being knocked down by a child's hand.

(d) Vertical Montage - one in which the visual images relate to particular movements or notes in a muscial score.[14]

1. the imagery perceptions of music building expectations of what is to be seen next.

2. repetition of a particular musical passage beneath montage can create excitment, a blockade to overcome or momentary stifling of impending purpose or outcome.

(e) Sense Evoking Montages

1. touch - backs sweating like the stone walls of a steam bath, or hands slapping against flesh.

2. smell - the close-up reaction of actors to the stench of sewer systems, or the facial expression of one whom is smelling a freshly baked pie.

3. emotion - the close-up of challenging eyes.

4. touch and feel - close-ups of silk, or wrinkled skin, or dough being squeezed and moulded, with proper lighting.

(f) Metaphorical Montage - (e.g., Balazs) - A woman is being ruined by the "Yellow Press," and we are shown the technical plant of a newspaper. The immense machines are shot at angles where they become as tanks advancing to the attack. The rotaries throw papers like quick-firing guns their shells. The frightened face of the woman is supered in between the huge machines. The printing machines seem

to have wicked, malicious faces. The bundles of newspapers running towards us on the creepers seem an irresistable avalanche which finally buries the terrified helpless victim whom we see again and again, supered in between the raving machines, until at last the woman is lying limp under the rollers of the rotary.[15]

(g) Stirring Scenario Construction - shots representing a series of glances thrown rapidly from one spot to another.

Miscellaneous Visual Techniques

1. V.I. Pudovkin's "Plastic Material" - expressive visuals with little or no dialogue.

   a. (e.g. Pudovkin) - an escaped convict comes into view, a scoundrel. The task of the scenarist is to communicate his character.[16]

      (1) The convict, a degenerative brute, overgrown with bristles of beard is about to enter a house, but stops, his attention caught by something. We see a close-up of the convict watching something. We then see what he is looking at--a tiny, fluffy kitten sleeping in the sun. We see the convict again. He raises a heavy stone, with the transparent intention of obliterating the sleeping little beast. Only the casual push of another, just then carrying objects into the house, hinders him from carrying out his cruel intentions.

      (2) A man seated is waiting for a friend. He is smoking a cigarette, and in front of him an ash tray and a glass half empty, both filled with cigarette butts. Both the amount of time he was waiting and nervousness is evident.

Some Means of Focusing Attention (e.g. Gerald Millerson)[17]

1. By Subject Attitude - stirring emotional movement by performers, moving in front of scenic elements.

2. By Movement - changing direction during a movement, rather than carrying it through. Interrupting continuity of movement, rather than maintaining sustained action.

3. By Camera Control - concentrating interest by differential focusing, avoiding weak subject viewpoints (i.e., back view, profile) or weakening camera angles (high-angle shots, or long shots). In a right-handed world, attention is paid more often to the right portion of the screen, so composition can be manipulated.

4. Editing - sychronizing a movement with dialogue, music and effects gives it strength and draws attention to it. Matched cutting with areas of interest remaining constant.

## Some Theories of the Camera

1. Pudovkin - "There is a law in psychology that lays it down that if an emotion gives birth to a certain movement, by imitation of this movement, the corresponding emotion can be brought forth."[18]

2. Pudovkin - "If an event is split into its occurrances, with facial expression (emotional expression) given the longest exposure, and the mechanical or physical motions shortened, the audience will become more emotionally involved.[19]

3. Spottiswoode - "The camera watches a scene just like a spectator would do or would wish to, if present at the scene. The camera is the eye of the creator, and his interpretation of the event."[20]

4. Lewis - "Each spot must be communication of something, the overall whole, communicating the entire message."[21]

## Uses and Meanings of Colors

Depending on the situation, the plot, the character and other factors, color has meaning to the audience.

1. Violet - terrifying; using appropriate music and combined with yellow, can say that an unexpected event will soon occur.

2. Yellow - sin, mysticism, treason, cowardess, adultery, jealousy, envy, treachery; Golden Yellow - wise and good counsel; Blanchard Yellow - deceit and treachery.

3. Green - souls regenerated, wisdom, life, spring, rebirth, death, decay, slime, greed, envy, madness, moral degredation, shadows on a dead man's face.

4. Red - pressure, danger, intensity, retribution, hysteria, violence, revolution, warm attractiveness, passion.

5. Blue - heavenly, freedom, depression, villainous color, super-natural, friendish.

6. White - purity, sterility, devoid of emotion, goodness.

7. Black - mourning, sadness, evid, fearful, ignorant.

Lighting

1. Realism - normal expectations are seen

   a. Chiaroscuro - high contrast, low-key lighting.

      (1) Rembrandt - faces and hands are accentuated by light, clothing and background is usually dark or dim (quiet drama)

      (2) Cameo - subject is bright, background is dark. Can establish a mood of isolation, loneliness, etc.

      (3) Silhouette - background is lighted, foreground is not. Can produce a fear of the unknown, or intensity ordered, rhythmic movement such as dancing.

   b. Time or seasonal orientations - morning, noon or night are capable of being reproduced by angle of lighting instruments, length of cast shadows, and color of light. Seasons can be reproduced in the same manner (e.g., a winter sun is colder and strikes the earth from a much lower angle).

2. Expressionism

   a. Below-key-lighting - casts shadows in upward direction, gives feelings of unnaturalness, evil, unstable mind or power drawn from the underworld.

   b. Above-key-lighting - light coming from above gives angelic or inspirational effects (a ray of light, hope).

   c. Back lighting - in extreme, idealizes a subject, halo of saints, aura of a medium.

   d. Fontal light only - blurs faults, flattens lighting for simple illumination, softens modeling, makes the face more beautiful, but takes away its characters. Sometimes known as Notan lighting (emotionally lacks drama).

   e. Side - contrast of light and dark on face, gives relief, solidity to face, shows ugly lines and generally disfigures face.

   f. Background only or silhouette - can be used to show rhythm, grace or beauty and in some situations can represent a threat or fear of the unknown.

   g. Mood

      (1) low-key - a down mood; drama, soft love scenes, tragedy, and usually involves high-contrast in a low light level.

      (2) high-key - an up mood; warm and optimistic, low-contrast; if flat or Notan lighting is used, a sterile low emotional appeal is felt.

h. Predictive lighting - changes from high-key to low-key can indicate that an impending drama is about to occur.

(1) change from above-key to below-key reveals a change in attitude, a passionate or hateful emotion is taking control.

(2) change from below-key to above-key reveals a happy change of events, or a happy mood taking control of the subject (the famous ray of light).

Sound

"Sound is much more than mere accompaniment to the picture. Sound can be used to strengthen the picture's impact. It can form the focal point of our interest. The aural memory, although less retentive, is more imaginative than that of the eye. Most of us have a more perceptive discrimatory attitude towards what we see than towards what we hear. The ear can accept the unfamiliar and unrealistic more readily than the eye. Aural repetition is not recognized as much visual repetition."[22]

1. Factual Sound

a. speech present when subject present.

b. natural sound picked up (e.g., street conversation)

c. selective uses of natural sound to allow a particular source to dominate, or deliberately selecting certain natural sounds from all those present to create an atmospheric impression (e.g., foghorn suggests a ship in trouble).

d. use of silence for evocative drama.

e. commentative or narrator.

f. tonal use such as a foreign language used for its sound and emotional impact rather than for meaning.

g. dynamic use can be achieved by coordinating visuals and sound for rhythmic cutting.

h. contrastive use can be using a score to highlight and contrast the visuals to convey a very different impression.

2. Subjective/Objective Use of Sound

a. metaphoric - In George Roquier's "Farrebique," an impressive sound of a tree falling at the moment when an old farmer dies.[23]

b. interior monologue is when we see the subject and hear his thoughts.

c. In Pudovkin's "Life is very good," a mother mourns the loss of her grown-up son, but instead of hearing her sob, we hear a baby crying.[24]

d. looking at an empty nursery and hearing the sounds of children.

3. Fantasy or Abstract Uses of Sound

a. a Swannee whistle to suggest flight through the air.

b. music used to simulate pompous speech, such as the whine of the saxaphone.

c. electronic distortion for a ghost's voice.

d. an animal cry, for the agonizing sound of a murderer's dramatic shriek.

e. a bass instrument used for the voice of the father, and a soprano or alto instrument used for the voice of the child (e.g., bassoon and piccolo).

f. integration of sounds of a storm with that from a musical composition.

4. Music

a. use of an appropriate composition to establish mood.

b. contrast by playing happy birthday in a minor key over a happy scene, to indicate that something is wrong.

c. leit-motifs can be achieved by music, such as witnessing a murder at a carnival, with the carnival music present. Later in the film bring the same music back when the crime is being remembered.

d. reinforcing the noise of an angry crowd with angry music.

e. precise timing of composition to fit visuals and stress a rhythmic beat (e.g., a train or a galloping horse).

f. repetition of a particular segment of music many times, can develop excitment or tension.

g. music changes can signal to an audience that a scene is about to be interrupted somehow.

h. coupling two scenes together with music is a common use.

i. identifying an individual's characteristics by associating him with a particular tune, and using the theme to later express the presence of the person.

ENDNOTES--APPENDIX A

[1]Ralph Stephenson, The Camera as Art, (Middlesex, England: Penguin Books, Limited, 1965), p. 39.

[2]Ibid., p. 47.

[3]Bela Balazs, Theory of the Film, (New York: Ray Publishing, 1953), p. 146.

[4]Stephenson, p. 68.

[5]Ibid.

[6]Ibid.

[7]Ibid, p. 70.

[8]Ibid.

[9]V.I. Pudovkin, Film Technique and Film Acting, (London, England: Vision Press Limited, 1954), p. 45.

[10]Balazs, p. 119.

[11]Raymond Spottiswoode, A Grammer of the Film: An Analysis of Film Technique, (Los Angeles, California: University of California Press, 1951), p. 127.

[12]Sergi Eisenstein, The Film Sense, (New York: Harcort, Brace and Co., 1947), p. 3.

[13]Stephenson, p. 130.

[14]Eisenstein, p. 75.

[15]Ibid., p. 73

[16]Pudovkin, p. 26.

[17]Gerald Millerson, The Technique of Television Production, (New York: Hastings House, 1972) p. 271.

[18]Pudovkin, p. 45.

[19]Ibid, pp. 45-50.

[20]Spottiswoode, p. 155.

[21]Colby Lewis, The T.V. Director/Interpreter, (New York: Hastings House, 1953), p. 9.

[22]Millerson, p. 210.

[23]Stephenson, p. 196.

[24]Ibid., pp. 196-197.

[25]Herbert Zeltt, Sight, Sound and Motion: Applied Media Aesthetics, (Belmont, California: Wadsworth Publishing Co., 1971), pp. 17-46.

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# APPENDIX B

| VIDEO | AUDIO |
|---|---|
| * FADE TO VIDEO INTRO | This program is brought to you in an age of narrow casting made possible by cable television. |
| * CUT TO STATION ID | This channel is a special instructional channel, the Telecommunication Technology Network. Programs for this channel are developed to show as well as tell about |
| * CUT TO MONTAGE - FREEZE FRAMES (clips from formats) | technology. Some parts of the program will look like formats from commercial television--interviews, commercials, news, and drama. |
| * CUT TO VIEW DATA IN REVIEW<br>VIEW DATA IN REVIEW<br>Audio | Other parts will summarize the important concepts and facts presented in these formats. |
| * CUT TO MONTAGE-FREEZE FRAMES | We suggest that you use the formats to observe some of the practical illustrations and applications of the technology we will talk about, |
| * CUT TO VIEW DATA IN REVIEW | and that you use to view data in review to take notes. |
| * CUT TO MONTAGE-FREEZE FRAMES (audio footage) | Today's program explores some of the basic principles of audio. |
| * KEY TITLE (of this program) | |
| * CUT TO CG:<br>NATURE OF SOUND<br>(add) AUDIO TAPE<br>(add) MICROPHONES | It will present information about the nature of sound, the properties of audio tape and microphone pick-up patterns, and microphone generating elements. |

| VIDEO | | AUDIO |
|---|---|---|
| FADE UP TO MS LIVINGROOM | | (CLOCK-TICKING IN AND UNDER) |
| Cable Tuner on Couch | | (DOOR OPENS AND CLOSES OFF CAMERA) |
| CUT TO CU BOX | | (TV AUDIO FROM A STATION UP) |
| Hands reach to pick up and punch buttons | | (CLOCK TICKING DOWN AND OUT) |
| (Alternate cuts between box and TV screen) | | (CHANNEL CHANGES EIGHT TIMES) |
| | | (SYNTHESIZED SOUNDER UP AND UNDER) |
| FADE CUT TO LOGO: KEY C.G.'s | ANNCR: | Intra-com cable channel one-oh-eight, the Telecommunication Technology Network. Stay tuned for the nature of sound. |
| FADE TO BLACK | | |

* Did NOT appear in control group treatment.

| VIDEO | AUDIO | |
|---|---|---|
| FADE TO BLACK | | (SOUNDER UP AND OUT) |
| | | -XXX- |
| | | (VIOLIN ATTACK UP AND UNDER) |
| FADE TO LS SET - Backs & Cyc lights | ANNCR: | Welcome to Sound Off, the program |
| Key Title | | which looks into interesting aspects |
| LOSE KEY, ZOOM IN TO HOST, LIGHTS UP | | of the listening media. Now, here |
| | | is your host, Rudyard Klemm. |
| | | (MUSIC UP AND SLOWLY OUT) |
| STOP AT CS HOST | KLEMM: | (Good) evening. As you may remember, |
| KEY NAME | | last week we were discussing how |
| LOSE KEY AND SLOW ZOOM OUT TO 2-SHOT | | sound is actually a mechanical vibra- |
| | | tion, which causes periodic variations |
| | | in air pressure. This may seem a bit |
| | | theorhetical in nature, but we have |
| | | with us an expert in the area of |
| | | electro-magnetic radiation, Dr. Norman |
| | | Pierce. |
| | PIERCE: | (NODS AND SMILES) |
| CUT TO OSS GUEST | KLEMM: | (FACING PIERCE) Dr. Pierce, what is |
| | | actually meant by periodic variations |
| | | in air pressure? |
| ZOOM IN TO CS PIERCE | PIERCE: | Well, the simplest explanation would |
| | | be to say that sound occurs when an |
| | | object is struck, it vibrates. When |
| | | it does, the molecules in the air |
| | | vibrate with positive and negative |

| VIDEO | | AUDIO |
|---|---|---|
| | | variations. For example, when you throw a pebble into a calm pond, the pebble causes vibrations to be sent out into the water. But, the interesting idea to note here is that these vibrations and variations are orderly. That's what is meant by periodic variations. |
| ZOOM OUT TO OSS PIERCE | KLEMM: | I see...Can you give us an example of what this really is? |
| DISSOLVE TO MS PEBBLE HITS POND | PIERCE: | Yes. Let's go back to the pond. When the stone is thrown in, it creates ripples or waves that are |
| CU WAVES AROUND IMPACT POINT | | sent out in all directions. These waves have peaks that rise above and below the surface of the water, much like the grooves in a record. The top of the groove would be a positive variation or an increase in |
| DISSOLVE TO SS PIERCE | | air pressure. The bottom of the groove would be a negative variation or a decrease in air pressure. The surface of the water would be the equilibrium of our air. |
| REACTION SHOT/SS KLEMM | KLEMM: | (ACKNOWLEDGING) Uh huh, I see. |
| SS PIERCE | PIERCE: | Eventually, the waves expend their |

| VIDEO | AUDIO |
| --- | --- |
| | energy in the water, return into equilibrium and the pond becomes calm. That's why sound doesn't travel on forever. It is absorbed back into the medium's equilibrium or balance. |
| OSS KLEMM | KLEMM: Let me see if I understand. These waves are orderly, so all waves of sound are relatively the same size? |
| CS PIERCE | PIERCE: No, that's not the case. The intensity of the original vibration determines the size of the waves. If I were to throw a boulder into the |
| DISSOLVE TO BOULDER IN POND | pond with a greater force, the waves above and below the surface of the water would be greater in height. The distance from the surface of the |
| CU WAVES | water to the tip of both the positive and negative waves is called the amplitude. Generally, the more force exerted in the mechanical vibration, the greater the amplitude of the waves. |
| DISSOLVE TO SS PIERCE | Amplitude and amplify are from the same root word. |
| OSS KLEMM | KLEMM: I understand. So, if we hear a weather report on the radio concerning |

| VIDEO | | AUDIO |
|---|---|---|
| | | a lake or river, and the forecast is |
| ZOOM IN TO SS KLEMM | | for 10 foot waves, they are really saying the waves have an amplitude of 10 feet. And, when we relate that to sound waves, then we can say that the harder we make the mechanical vibration, the greater the amplitude of the waves, and then we have a louder sound. |
| | PIERCE: | Well, yes that's basically right. |
| CUT TO 2 SHOT | KLEMM: | This is very interesting, and I am |
| SLOW ZOOM TO LS SET | | sure the viewers at home agree. |
| KEY C.G.'s MOVE TO COME: | | (TURNS TO CAMERA) We will return to Sound Off with our guest Dr. Norman Pierce, after these messages. |
| | | (MUSIC IN AND UP) |
| LOSE KEY FADE TO BLACK | | |
| | | (MUSIC DOWN AND OUT) |
| FADE TO MS SET-KEY TITLE-WE'D LIKE YOU TO KNOW | | (MUSIC INTRO 5 secs) |
| | HAL: | What is it that humans have which is |
| LOSE KEY | | capable of traveling close to 700 miles per hour? When asked this question a number of people think |
| CUT TO JET PLANE | | of jet planes or rockets to outer |
| CUT TO SPACE SHUTTLE | | space...But, what is it that we have without our inventions which can |

| VIDEO | AUDIO |
|---|---|
| CUT TO 2-SHOT CONVERSATION | travel this fast? The sounds we make... |
| KEY TITLE-1130 ft/second | even with our voice. Sound travels close to 1130 feet per second, when the air is 70 degrees Farenhiet. |
| KEY TITLE-698 m.p.h. | That translates into 698 mph. This increases 1.1 feet per second for each degree higher than that. So |
| CUT TO HAL - CS | when we are talking to our friends or yelling to someone across the street, we are projecting our voice at the speed many airplanes travel. |
| ZOOM TO HS | So the next time you are pondering the wonders of man's inventions, just think about the wonders natural |
| KEY TITLE-WE'D LIKE YOU TO KNOW | inventions like the sound of the |
| FADE TO BLACK | human voice. Just a fact we like you to know. |
| | (MUSIC UP 5 SEC THEN OUT) |
| | (MUSIC IN AND UNDER) Harpsichord |
| FADE TO SLIDE OF HERTZ<br>KEY CARD-A backwards glance | ANNCR: The first person to create what we now call radio waves was German |
| DISSOLVE TO SLIDE: Equipment | physicist Hendrich Hertz. (In the) 1880's he projected rapid variations of electronic current into space in the form of waves similar to those |
| DISSOLVE TO SLIDE: Formulas | of heat. (This) proved the theories |

| VIDEO | | AUDIO |
|---|---|---|
| | | of James Maxwell, a Scottish physicist, who worked out the formulas which pre- |
| DISSOLVE TO SLIDE: Waves | | dicted (the) existence of electo-magnetic |
| DISSOLVE TO SLIDE: Hertz | | waves. (It is) Hertz' name that we now |
| KEY: FREQUENCY (cycles per second = Hertz) | | give to describe the number of cycles per second of waves, otherwise known as frequency. |
| FADE TO BLACK | | (MUSIC UP AND OUT) |
| | | (VIOLIN MUSIC UP AND UNDER) |
| FADE TO LS SET | KLEMM: | Welcome back to Sound Off. Our guest |
| SLOW ZOOM TO CS KLEMM | | today is Dr. Norman Pierce, and we are discussing the nature of sound. |
| | | (MUSIC OUT) |
| CUT TO OSS KLEMM | | (TURNING TO PIERCE Dr. Pierce, we left off in our discusstion of sound with amplitude, and we discovered that amplitude refers to the actual height of the waves, positive and negative. And that the greater the amplitude, the louder the sound. |
| CUT TO CS PIERCE | | What else should we know about waves and sound? |
| ZOOM TO WS PIERCE | PIERCE: | Well, as you can see, we have here a graphic of a SINESOIDAL or sine wave for short. All naturally occuring waves are called analogue and usually |

| VIDEO | AUDIO | |
|---|---|---|
| | | there are many waves with different characteristics forming a COMPLEX wave form. |
| CUT TO CS KLEMM | KLEMM: | You mean most sounds that we hear are made up of several different waves. |
| | PIERCE: | Precisely, but to simplify things here is one wave, and we would probably hear this type of sound (TONE UP FOR 10 SECS). This portion is the positive peak and this is the negative. This line here represents the equilibrium we spoke of. Each time the wave travels from the line to the positive peak, back down past this point to the negative, and back to the equilibrium line here, we call this one cycle. |
| CUT TO GRAPHIC | | |
| CUT TO OSS KLEMM | KLEMM: | A cycle....I see. |
| | PIERCE: | Yes, the frequency of a waves' cycles per second is something we use in describing all forms of radiation. |
| CUT TO CU GRAPHIC | | Another point to raise is if we measure the distance of one cycle, we call it the wave length. |
| CUT TO OSS KLEMM | KLEMM: | So, sound in the air occurs by natural or even man-made mechanical |

| VIDEO | AUDIO | |
|---|---|---|
| | | vibrations...and the result of positive and negative air pressure variations from that....We hear as sound. |
| | PIERCE: | Yes, that's basically correct. |
| | KLEMM: | And, we can also measure, describe and experiment with these waves using wave-length, frequency and amplitude? |
| CUT TO SS PIERCE | PIERCE: | Yes, using frequency counters, oscilliscopes or waveform-monitors and mathematical formulas, we can take closer observations of radiating energy, including sound waves. |
| CUT TO CS KLEMM | KLEMM: | But I understand that light, heat, radio and sound waves have many of the same characteritics and are measured by the same standards. So, I'm sure the viewers would be interested in the difference between sound and other forms of waves. |
| CUT TO CS PIERCE | PIERCE: | That's easy. The frequency is the key. The most extreme range of frequencies that the human ear can |
| KEY: 20 to 20,000 Hertz | | detect is from 20 to 20 thousand cycles per second. Generally, the ear is most sensitive to sounds |

| VIDEO | | AUDIO |
|---|---|---|
| LOSE KEY | | between (one) thousand and six thousand hertz. And, generally, the higher the frequency, the higher the tones of sound. |
| | | (MUSIC IN AND UNDER) |
| CUT TO CS KLEMM | KLEMM: | (TURNING TO CAMERA) Well, I want to thank Dr. Norman Pierce for taking the time to talk with us today on Sound Off. I am Rudyard Klemm, have a good evening. |
| SLOW ZOOM TO LS SET | | |
| | | (MUSIC UP SLIGHTLY) |
| LIGHTS DOWN AND Key credits | ANNCR: | Sound Off is produced in cooperation with TTN, the Society of Motion Picture and Television Engineers and Audiotronics Limited. |
| LOSE KEY, FADE TO BLACK | | (MUSIC UP AND OUT) |

XXX

| VIDEO | AUDIO |
|---|---|
| | (MUSIC UP AND UNDER) |
| * FADE TO BACKGROUND W/TITLE | ANNCR: Viewdata In Review. |
| * KEY C.G.'s-NATURE OF SOUND | This data transmission concerns the Nature of Sound. |
| * CHANGE PAGE SOUND:<br>Mechanical vibrations causing periodic variations in air pressure | --Sound is actually a mechanical vibration which causes periodic variations in air pressure. |
| * CHANGE PAGE VIBRATIONS<br>-orderly<br>-occurs sine waves | --These periodic variations are orderly and usually occur in the form of waves, called sine waves. |
| * CHANGE PAGE SOUNDWAVES:<br>-sent out from point of mechanical vibration | --Waves are sent outwards from the point of the mechanical vibration. |
| * CHANGE PAGE<br>-have positive and negative peaks | --All waves have positive and negative peaks. Those peaks above the equilibrium line are positive, and those below are negative. |
| * CHANGE PAGE<br>-return to equilibrium | --Eventually, all the waves are absorbed back into a state of equilibrium or calmness. This is why sounds do not travel forever. |
| * CHANGE PAGE AMPLITUDE<br>-measure of height of wave peaks<br>-increase with focal of mechanical vibrations | --The height of the wave peaks measured from the equilibrium line is called amplitude. |
| * CHANGE PAGE | --The more force used to cause the mechanical vibration, the greater the amplitude of the waves. |

* Did NOT appear in control group treatment.

| VIDEO | AUDIO |
|---|---|
| * CHANGE PAGE | Amplitude and amplify come from the same root word, and the greater the amplitude the louder the sound seems to be. |
| * CHANGE PAGE WAVELENGTH<br>-distance traveled in one cycle | --Wavelength is the distance a wave travels during one cycle. |
| * CHANGE PAGE ONE CYCLE:<br>-positive and negative peaks of one wave, beginning and ending at equilibrium line | ANNCR: One cycle occurs when the wave travels from the equilibrium line to the top of the positive peak, down past the line again to the bottom of the negative peak, and back up to the line. |
| * CHANGE PAGE FREQUENCY<br>-cycles per second<br>-called Hertz<br>-100 cps=100 hertz | --Frequency is the number of cycles that occur each second. Cycles per second is called hertz in honor of Heindrich Hertz. So, 100 cycles per second = 100 hertz. |
| * CHANGE PAGE SOUNDWAVES<br>-identified by frequency | --Light, heat, radio and sound waves are all forms of radiating energy. Sound waves are identified by their frequency. |
| * CHANGE PAGE<br>-high frequency means high pitch | --Generally, the higher the frequency, the higher the pitch or tone of sound is heard. |

* Did NOT appear in control group treatment

| VIDEO | AUDIO |
|---|---|
| * CHANGE PAGE | --The most extreme range of sounds that the human ear can detect is from 20 to 20,000 cycles per second |
| * CHANGE PAGE | or hertz. The most sensitive frequencies to our ears are between 1,000 and 6,000 hertz. |
| FADE TO BLACK | XXX |
| | (SOUND UP AND UNDER) |
| FADE UP TO ID | ANNCR: Intra-comm cable channel one-oh-eight, the Telecommunication Technology Network. Stay tuned for audio recording and microphone pick-up patterns. |

* Did NOT appear in control group treatment.

| VIDEO | AUDIO | |
|---|---|---|
| Defocused | | |
| FADE TO LS AUDIO ROOM | | (MUSIC UP AND UNDER) |
| KEY: PROBLEMS, PROBLEMS | ANNCR: | Problems, Problems<br>The ongoing drama of Mike Nichols as he trys to conquer audio production.<br>(MUSIC DOWN AND OUT) |
| SLOW ZOOM TO DOOR OF AUDIO LAB | | (MIKE TAKES OFF HEAD PHONES DISGUSTED AND THROWS HIS REEL-TO-REEL TAPE ON THE FLOOR) |
| | MIKE: | (MUTTERING TO HIMSELF) This equipment is crap. It never works.<br>(LOOKS UP AT CLOCK) |
| TAKE CU OF CLOCK | MIKE: | (TO HIMSELF) Only 20 minutes left, I'll never finish this stupid public service announcement. |
| CUT TO DOORWAY: T.A. STANDING | T.A.: | Are you still here! (STOOPS DOWN, PICKS UP REEL OF TAPE) Not having much luck eh? |
| CUT TO CS MIKE | MIKE: | Naw, this equipment is junk. If you had a real studio here I'd be doing great. |
| CUT TO OSS T.A. | T.A.: | Uh, right (LOOKS DISGUSTED) Why don't we listen to what you have and I might be able to make a suggestion. |
| CUT TO OSS MIKE | MIKE: | OK, but I don't see how you can make this junk work any better. |

| VIDEO | AUDIO | |
|---|---|---|
| CUT TO 2-SHOT | T.A.: | (CROSSING TO REEL MACHINE) Let's see, maybe I can. Tell me what the problem is while I thread this up. |
| CU MIKE | MIKE: | (LOOKING ANGRY) - I had my music, sound effects and voice timed perfectly. I rolled the reel to record and brought in the music cart and finished in exactly 60 seconds. |
| CUTAWAY T.A.'s FACE | | It took me 4 trials just to get that worked out. Then when I played the tape back the audio kept coming in and out. This junk is worthless. |
| 2-SHOT | T.A.: | There now, lets listen to it. (ROLLS TAPE AND BRINGS IT UP ON BOARD) |
| CU TAPE | | (AUDIO - UP AND OUT, UP AND OUT, UP AND OUT) |
| CUT TO DISGUSTED LOOK OF MIKE | | |
| CUT TO T.A. SMILING | MIKE: | See, junk. |
| | T.A.: | Mike, I think it's junk all right but it's not the equipment. It's your tape. |
| CUT TO MIKE | MIKE: | What do you mean, my tape? |
| CUT TO WS T.A. | T.A.: | This stuff is so old it's got drop-out everywhere. |
| | MIKE: | Dropout, what's that? |

| VIDEO | AUDIO | |
|---|---|---|
| ZOOM OUT TO 2-SHOT | T.A.: | Throwing your tape on the ground didn't help it much either. You see, the tape is made of plastic, but there are particles of metal glued to the tape. When the glue gets brittle, it's usually because the tape is old or it got really hot and started melting. |
| CUT TO SS MIKE | MIKE: | Well I got the tape from my dad. He used it when he had lectures to record and stuff. |
| CUT TO CS T.A. | T.A.: | Well, you should start with a new tape. The record head in these |
| CU OF HEADS ON REEL MACHINE | | machines are just electro magnets. And if there isn't any metal particle on the tape to magnetize, you won't have any sound when you play it back. |
| CUT TO SS MIKE | MIKE: | Dropout, huh? |
| CUT TO SS T.A. | T.A.: | Yeah |
| CUT TO SS MIKE | MIKE: | (SHEEPISHLY) Oh. |
| CUT TO TABLE TOP | T.A.: | Mike come over here and let me show you something. (PICKS UP SHEET OF |
| CUT TO OSS MIKE | | PAPER, IRON FILINGS AND BAR MAGNET.) This is how audio tape and the record- ing head works. Let's say this is |
| OSS T.A. | | the plastic backing. (HOLDS UP SHEET OF PAPER) Audio tape has thousands |

| VIDEO | AUDIO |
|---|---|
| | of small metal particles that are held to the tape surface by an adhesive or glue. When it is threaded up into a machine like the reel-to-reel, it |
| DRAWS 3-HEAD CONFIGURATION | comes into contact with three tape heads - the erase, record and play heads. Each tape head is actually a small electro-magnet. The erase head |
| CUT PAPER AND FILINGS | spreads the particles randomly over the tape surface, which erases any previously recorded audio, (POURS |
| BAR MAGNET UNDERNEATH PAPER | PARTICLES ON TO PAPER). Next, the tape passes the record head. This time the electro-magnet pulses with varying intensity according to the |
| HS MIKE | sound that is being sent into the machine for recording. The particles are charged to simulate sound waves, |
| CU PAPER | frequencies, amplitude and since they are in adhesive, the pattern of parti- |
| OSS T.A. | cles remain until erased or remagne- tized. When the tape passes the play head, just the reverse happens. The heads senses the patterns and are turned into voltages which are |

| VIDEO | AUDIO | |
|---|---|---|
| | | amplified and sent back through to a speaker, and the sound becomes audible. |
| CS MIKE | MIKE: | That sounds fine except when the equipment is junk. |
| CS T.A. | T.A.: | What I'm trying to tell you is that your tape has drop-out because of its age. There are places on this tape where the particles have fallen or worn off. The sound drops out when the tape doesn't have the metal particles to magnetize. |
| SS MIKE | MIKE: | Oh....I understand now - Uh, say, you don't have another tape around that I could use do ya? |
| T.A. PICKS UP TAPE AND HANDS TO MIKE | T.A.: | Here -- you've got to hurry, you only have ten minutes before your studio time is up. |
| T.A. LEAVES AND DOOR CLOSES | MIKE: | Gotscha! |
| | | (BRING MUSIC UP FULL: THEME FROM SUPERMAN) |
| EDITED MONTAGE OF PRODUCTION PROCESS | | |
| (Meters, reel, carts, head phones, hands on pots, cueing reel etc.) | | (FADE MUSIC UNDER) |
| DEFOCUS LAST SHOT MONTAGE | | |
| MS T.A. AT DESK DEFOCUSED AND FOCUSED UP--CUT TO KNEE SHOT MIKE | MIKE: | (HANDS TAPE TO T.A.) 4 point city! And thanks for your help. |

| VIDEO | AUDIO |
|---|---|
| CUT TO CS T.A.-SLOW ZOOM TO LS | T.A.: No problem. |
| | ANNCR: Be sure to follow the continuing adventures of Mike Nichols and his conquest of the field of Audio, on Problems, Problems. |
| KEY: PROBLEMS, PROBLEMS | |
| FADE TO BLACK | (MUSIC DOWN AND OUT) |
| | XXX |

| VIDEO | | AUDIO |
|---|---|---|
| | | (GAME SHOW MUSIC UP) |
| FADE TO EFX- $\frac{\text{C.G.}}{\text{VTR}}$ KEY | | (SFX: RYTHMIC CLAPPING) |
| MONTAGE OF FREEZE FRAMED ACTION | ANNCR: | Audio Analysts -- The amazing new game show where the zaniest, wackiest and funniest things can happen. Where contestants battle wits for cash and prizes. Where knowledge counts and quickness is king. |
| | | (MUSIC UNDER - SFX CLAPPING OUT) |
| CUT TO MS SET ZOOM TO CS-MATT | MATT: | Audio Analysts is the ultimate challenge. Here's a look at the fast pace and quick action... |
| CUT TO LS SET | MATT: | All right contestants, here is your first area. Here are four microphone |
| CUT TO QUAD SPLIT OF PATTERNS | | pick-up patterns. Each answer judged correct wins you one thousand dollars. |
| CUT TO SLOW PAN OF 3 CONTESTANTS | | Here is the first clue. This microphone pattern picks up sounds in a 360 degree or circular area and |
| CUT TO WS MATT | | sounds from any direction are received. (BUZZER RINGS) Yes, Sandra! |
| CUT TO SS SANDRA | SANDRA: | It must be an OMNI-directional pick-up pattern, because omni means all. |
| SIMULTANEOUS CUTTING BETWEEN | MATT: | That's exactly correct. (MUSIC ATTACK |
| 3 CAMERAS WHICH ZOOM IN AND OUT | | AND APPLAUSE, CHEERING CROWD). |

| VIDEO | | AUDIO |
|---|---|---|
| KEY: $1,000.00 FLASHING | | |
| CUT TO QUAD SPLIT AND DISSOLVE TO OMNI PATTERN & KEY "OMNI" | | (MUSIC DOWN, APPLAUSE OUT) |
| DISSOLVE TO WS MATT | MATT: | Name the pick-up pattern of a micro-phone which picks up sound from the front and sides, but not from the back. It's known by its heart shaped pattern. (BUZZER) |
| CUT TO 3 SHOT-ZOOM IN TO ALBERT | MATT: | Yes...Albert. |
| | ALBERT: | If the pattern doesn't pick up sounds from behind, and it has a heart shaped pattern...it must be a Cardioid pick-up pattern. |
| CUT TO QUAD SPLIT | MATT: | Correct! |
| DISSOLVE TO CARDIOID PATTERN AND KEY CARDIOID<br>CUT TO 3 COM ZOOM W/KEY | | (MUSIC AND APPLAUSE UP)<br>(TIC TOCS IN) |
| CUT TO EFX-CIRCLE WIPE OF FRAN LOWER CORNER OF MS SHOTGUN MIKE | FRAN: | The first pattern would be a type of cardioid called hyper-cardioid -- directional because it has a very narrow field of pick-up and must be pointed directly at the sound source. |
| TAKE SLIDE WITH WIPE CONTINUED OF OLD RADIO PERFORMERS | | The second pattern would be a Bi-directional microphone pick-up pattern because it only picks up sound from |

| VIDEO | | AUDIO |
|---|---|---|
| SIMULTANEOUS CUTTING OF 3 CAMERAS ZOOMING IN AND OUT<br>KEY: Flash 3,000.00 | | the right and left sides, not the front or rear, sometimes called a Figure 8. |
| CUT TO BI/CUT TO HYPER-CARDIOID | | (MUSIC AND APPLAUSE)<br>(SOUND EFFECTS AND MUSIC DOWN THEN SFX OUT)<br>(MUSIC CONTINUES UNDER) |
| WS MATT-ZOOM TO MS SET | MATT: | Be sure to watch audio anaysts and pick-up the action. (MUSIC UP SLIGHTLY) |
| | ANNCR: | Weekdays at 1:00 p.m. eastern on TTN |
| FADE TO BLACK | | (MUSIC DOWN AND OUT) |

XXX

| VIDEO | AUDIO |
|---|---|
| FADE UP TO EFX-C.G./BKD-ROLL | (MUSIC: SYNTHESIZED SOUNDER UP AND UNDER) |
| C.G. VIEWDATA IN REVIEW<br>-Magnetic | ANNCR: Viewdata in review. This data transmission concerns magnetic audio tape and microphone pick-up patterns.<br>--Audiotape is made up of plastic and metallic particles. One side of the tape contains thousands of these particles held by an adhesive.<br>--The tape heads in all audio tape machines are really just small electro-magnets.<br>--The erase head randomly magnetises all the particles over the tapes surface, to remove any previously recorded audio.<br>--The record head responds to the voltages sent to it from sound waves which were converted to electric pulses by a microphone turn-table, or another tape source.<br>--The record head magnetises the metal particles according to the audio input into a pattern or code simulating wave-lengths, frequencies and amplitudes. |

| VIDEO | AUDIO |
| --- | --- |
| * KEY: CHYRON - ROLL | --When the tape passes the play head, the reverse of the record process happens. The patterns on the tape cause a series of electro-magnetic voltages which are sent back through the machine amplified and then to speakers as sound.<br>Drop-out occurs when audio tape has lost particles which have fallen or worn off. This happens when the tape gets old, or when stored in hot areas.<br>--You've seen four microphone pick-up patterns. Omni-directional, Bi-directional, Cardioid and hyper-cardioid.<br>--An Omni-directional mike picks up sound in a three-hundred-and-sixty degree or circular fashion. Omni means all directions.<br>--A Bi-directional pattern picks up sound from the left and right sides, but not the front or back of the microphone. Bi- means two directions.<br>--A Hyper-cardioid mike has a very narrow pick-up pattern and must be pointed directly towards the sound source. |

| VIDEO | AUDIO |
|---|---|
| | --A Cardioid pick-up pattern picks up sound from the front and both sides of the microphone, but not from the back. Cardioid refers to a heart-shaped pattern. |
| * ROLL OFF | |
| * FADE TO BLACK | (MUSIC-SYNTHESIZED SOUNDER UNDER AND OUT) |
| | XXX |
| FADE TO LOGO: KEY TITLE | (SOUNDER UP AND UNDER) |
| | ANNCR: Intra-comm cable channel one-oh-eight, The Telecommunication Technology Network. Stay tuned for microphone generating elements. |
| FADE TO BLACK | (SOUNDER UP AND OUT) |

| VIDEO | | AUDIO |
|---|---|---|
| FADER TO MS NEWS SET | | (SOUNDER IN AND UNDER) |
| KEY TTN - NEWSBREAK | ANNCR: | TTN-Newsbreak with Laurel Thomas. |
| | | (SOUNDER DOWN AND OUT) |
| ZOOM-IN TO EFX POSITION | LAUREL: | Good Evening. AT&T announced plans |
| DISSOLVE IN SQUARE WIPE UPPER RIGHT (Graphic AT&T) | | to discontinue the use of carbon element microphones, in a press |
| TAKE CU OF TELEPHONE with disassemble receiver | | conference this afternoon. The conventional telephone voice-transmission device is basically identical to the microphone invented by |
| GRAPHIC: ALEXANDER BELL | | Alexander Graham Bell in 1876. The quality of the sound is considered poor, and AT&T has decided to implement the use of an Electret condensor element. The new element has a much greater frequency response, and reproduces a higher quality of sound. The Corporation feels the change will complement its installation of the videophone. Both of the microphones require power sources, but a spokesman for AT&T says the electret element uses less electricity and should save the corporation up to 5% in operating costs over a one year period. More news after this. |
| CU ELECTRET CONDENSOR | | |
| DISSOLVE AND CENTER | | |
| KEY: LAUREL THOMAS-TTN NEWS | | |
| LOSE KEY | | |
| FADE TO BLACK | | |

| VIDEO | | AUDIO |
|---|---|---|
| FADE TO RED BACKGROUND | | (MUSIC IN, UP AND UNDER) |
| KEY: TTN TECH WORD - TRANSDUCER | ANNCR: | TTN's Tech-word of the day is: Transducer. A transducer is a device that is put into action by power from one system. A transducer then converts this power into another form and supplies it to a different system. A microphone is the most common form of transducer. |
| LOSE KEY-CUT TO CU OF MOVING COIL DYNAMIC | | |
| SS PERSON SPEAKING<br>CU MOUTH MOVING<br>KEY: OSCILLOSCOPE WAVES<br>CUT TO MICROPHONE WITHOUT TOP COVER | | For example...A microphone element is put into action by sound waves striking it. Using magnets and a moving coil, the dynamic microphone diaphragm vibrates with variations of air pressure, to convert sound waves into electrical energy. The electrical energy is then supplied to either an audio console or a recording device. The dynamic microphone is the most common mike found in audio and video recording studios, because of its ruggedness and good sound reproduction quality. |
| ALTER OSCILLOSCOPE WAVES | | |
| PAN ALONG MIKE CABLE-LOSE OSCILLOSCOPE KEY | | |
| CU OF V/U METER-ZOOM OUT TO OSS CONSOLE | | |
| CUT TO CU REEL-TO-REEL ROLLING | | |
| CUT TO MS EV 635A DYNAMIC MIKE | | |
| TAKE BACKGROUND KEY: TEXT | | Transducer--TTN's Tech-word of the day is brought to you by Audiotronics, Inc. |
| FADE TO BLACK | | (MUSIC UP THEN OUT) |

XXX

| VIDEO | AUDIO |
|---|---|
| FADE TO CS - LAUREL<br>KEY: LAUREL THOMAS<br>TTN-NEWSBREAK | LAUREL: Host Johnny Carson threatened to resign from NBC's evening program, The Tonite Show, after producer Fred DeCoradova told Carson he could no longer use the Ribbon Microphone which sits on his desk. Carson says he likes having the ribbon mike, sometimes called a velocity mike, because it brings out the rich tones of his voice. In his earlier career as a radio disc-jockey in Lincoln, Nebraska, Carson says he became attached to the microphone because it made him less nervous while on-the-air. DeCoradova wants the microphone removed because it is extremely delicate and expensive. He says that each time Carson's character, KARNACK the magnificent, appears on the program, the network must purchase a new ribbon microphone. (MUSIC IN AND UNDER) |
| LOSE KEY | |
| CUT TO CARSON FOOTAGE | |
| CUT TO SLIDE OF EARLY DAYS | |
| NEXT SLIDE | |
| CUT TO CARSON FOOTAGE | |
| CUT TO CS LAUREL | |
| DISSOLVE TO MS SET-KEY TTN NEWSBREAK | ANNCR: TTN-NEWSBREAK is a service of the Telecommunication Technology Network. (MUSIC DOWN AND OUT) |
| FADE TO BLACK | |

| VIDEO | AUDIO |
| --- | --- |
| | (MUSIC: SYNTHESIZED SOUNDER UP AND UNDER) |
| * FADE TO BKND: KEY C.G AND ROLL | |
| | ANNCR: Viewdata in review. This data transmission concerns microphone generating elements. |
| | --A transducer takes power from one source and converts it into another form to supply a second source. |
| | --A microphone element is the most common form of transducer. |
| | --In audio, a transducer picks up sound waves and the diaphragm vibrates creating electrical voltages. |
| | --These voltages are supplied to an audio console or a tape machine for recording purposes. |
| | --A carbon microphone is found in telephone receivers. It is not much different from the element invented by Alexander Graham Bell in 1876. |
| | --The sound quality of the carbon mike is poor. The Electret condenser microphone uses less voltage to operate than the carbon. It has a much higher frequency response and sound reproduction quality. |

| VIDEO | | AUDIO |
|---|---|---|
| | | --The moving coil dynamic microphone is extremely rugged, and produces good sound quality. It is one of the most common mikes found in audio and video recording studios. |
| * ADD RIBBON OR VELOCITY | | --The Ribbon or Velocity microphone has strips of metal ribbon in its element. This type of microphone is known for its high quality sound reproduction of rich voice tones. --It is also extremely delicate. |
| FADE UP FILMCHAIN/VIDEO MONTAGE OF AUDIO USED IN OPEN | ANNCR: | This ends today's transmission from TTN--The Telecommunication Technology Network. |
| KEY C.G.: NATURE OF SOUND AUDIO TAPE MICROPHONES | | Covering the topics of the nature of sound audio tape and microphones. We hope you have enjoyed this program and have found it informative. Further information on these topics is outlined on your schedule of readings. |
| CUT TO LOGO | | (MUSIC UP) |
| FADE TO BLACK | | (MUSIC DOWN AND OUT) |

# APPENDIX C

PART ONE--CONTENT QUESTIONNAIRE

CIRCLE CORRECT RESPONSE

1. Sound occurs when a mechanical vibration_____.

   1) causes periodic variations in air pressure.
   2) increases in intensity over a period of time.
   3) decreases in intensity over a period of time.
   4) expends its energy and return to equilibrium.

2. Sound occurs in the form of _____.

   1) cousine waves.
   2) square waves.
   3) complex sine waves.
   4) sawtooth waves.

3. Sound waves have _____ and _____ peaks.

   1) proton, electron
   2) inner, outer
   3) positive, negative
   4) sine, tangent

4. When sound waves expend their energy, eventually they are _____.

   1) increased in amplitude.
   2) increased in longitude.
   3) absorbed back into equilibrium or calmness.
   4) increased in temperature.

5. Amplitude is the _____ of the wave peaks.

   1) thickness
   2) frequency
   3) height
   4) length

6. The _____ the initial force of the vibration, the greater the resulting amplitude of the waves.

   1) weaker 2) greater 3) longer 4) shorter

7. The distance traveled by one cycle in one second is called _____.

   1) frequency 2) amplitude 3) wavelength 4) complex wave form.

8. One complete cycle occurs when _____.

   1) both peaks are present.
   2) the wave travels from equilibrium to positive and negative peaks and back to equilibrium.
   3) amplitude and frequency are equal.
   4) a stone enters a pond and creates ripples.

9. Sound waves are distinghished from other analogue waves by their _____.

   1) pitch 2) amplitudes 3) frequencies 4) color temperature

10. In general, higher frequencies produce _____ pitch or tones.

    1) higher 2) lower 3) intermediate 4) 1,000 to 6,000 hertz

11. Theoretically, the range of human hearing is between _____.

    1) 20 to 20,000 Hertz.
    2) 2,000 to 20,000 Hertz.
    3) 20 to 20,000 Hertz.
    4) none of the above

12. The more sensitive range of human hearing is between _____.

    1) 6 to 6,000 Hertz.
    2) 1,000 to 6,000 Hertz.
    3) 20 to 20,000 Hertz.
    4) none of the above.

13. At 70 degrees Fahrenheit, the speed of sound is _____.

    1) 182,000 ft/second.
    2) 1,130 ft/second
    3) .50 ft/second.
    4) 500 ft/second.

14. Hertz is the name we give to _____.

    1) cycles per second.
    2) cycles per minute.
    3) cycles per wavelength.
    4) wavelength.

15. Audio tape is made up of a strip of plastic with particles of _____ bonded to one side.

    1) glass 2) plastic 3) metal 4) crystals

16. Audio tape heads are really just small _____.

    1) metal hold punchers
    2) electromagnets
    3) radiators
    4) pressure guages

17. The tape head which randomly magnetizes the particles is the _____.

    1) play head. 2) record head. 3) erase head. 4) emmiter head.

18. The tape head which responds to inputs by magnetizing the particles and forming magnetic patterns or codes is the _____.

    1) play head. 2) record head. 3) erase head. 4) emitter head.

19. The tape head which senses these codes and converts them to voltages to be amplified and onverted into sound waves again, is called _____.

    1) play head. 2) record head. 3) erase head. 4) emitter head.

20. _____is a term which describes portions of audio tape where the particles have worn off.

    1) Fade out 2) Drop out 3) Sound out 4) Quasars

21. The microphone pick-up pattern which picks up sound from a circular area or all directions is called _____.

    1) bi-directional.
    2) hyper-cardioid.
    3) cardioid.
    4) omni-directional.

22. The microphone pick-up pattern which picks up sounds from the front and sides, but not the back, and has a heart-shape pattern is called _____.

    1) bi-directional.
    2) hyper-cardioid.
    3) cardioid.
    4) omni-directional.

23. The microphone pick-up pattern which picks up sounds from the side, but not the front or back, commonly called the figure eight, is the _____ pattern.

    1) bi-directional
    2) hyper-cardioid.
    3) cardioid
    4) omni-directional

24. The microphone pick-up pattern which picks up sound in a very narrow pattern, and must be pointed directly at the sound source, is called _____.

    1) bi-directional.
    2) hyper-cardioid.
    3) cardioid.
    4) omni-directional.

25. _____ generating elements are low quality, and used in telephones, which require line voltage to operate.

    1) Electret condenser
    2) Carbon
    3) Moving-coil dynamic
    4) Ribbon

26. _____ generating elements produce higher quality sound and require only a small amount of voltage to operate.

1) Electret condenser
2) Carbon
3) Moving-coil dynamic
4) Ribbon

27. _____ generating elements are rugged and produce good quality sound. They are very common in audio and video studios.

1) Electret condenser
2) Carbon
3) Moving-coil dynamic
4) Ribbon

28. _____ generating elements are delicate, expensive and produce rich vocal tones.

1) Electret condenser
2) Carbon
3) Moving-coil dynamic
4) Ribbon

29. A microphone is the most common form of _____.

1) transducer. 2) transmitter. 3) collecter. 4) generator.

30. In audio, a transducer picks up sound waves and _____.

1) creates voltage when its diaphragm vibrates, and supplies it to an audio console or recording device.
2) converts them into radio waves between 1,000 and 6,000 Hertz.
3) powers an external generator which sends out carrier waves.
4) limits the amount of frequency capable of entering a recording device.

## PART TWO--ATTITUDE SCALE

Please answer the following questions on a scale from 1 to 5. 1 = strongly agree; 2 = agree; 3 = undecided; 4 = disagree; 5 = strongly disagree.

Please answer these questions in relation to the "TNN" program. When the question refers to CONVENTIONAL INSTRUCTIONAL TELEVISION classes, this is a program where the instructor generally lectures on screen, and we occasionally see slides.

1. Have you ever taken a conventional instructional television course?

Yes _____ No _____

2. Courses on television provide higher quality instruction than face-to-face classroom instruction.

1 2 3 4 5

3. This type of instructional television (TTN) is effective in providing for a wide range of individual differences.

1 2 3 4 5

4. Instructional programs like "TTN" provide greater motivation than regular or conventional televised instruction.

1 2 3 4 5

5. Instructional television classes are more entertaining than educational.

1 2 3 4 5

6. Instructional television courses like "TTN" have better subject matter content than conventional televised instruction.

1 2 3 4 5

7. Instructional television courses like "TTN" would tend to improve study skills and study habits.

1 2 3 4 5

8. Instructional television programs like "TTN" are better organized than conventional televised instruction.

1 2 3 4 5

9. Critical thinking and problem-solving abilities are developed to a greater extent in programs like "TTN" than in conventional televised instruction.

1 2 3 4 5

10. The effectiveness of courses using programs like "TTN" is limited by the lack of opportunity for discussion and clarification between students and instructor

1 2 3 4 5

11. Instructional programs such as "TTN" provide little that could not be provided through films and other visuals in a conventional classroom.

1 2 3 4 5

12. Instructional television programs like "TTN" promote listening skills.

1 2 3 4 5

13. A good course presented on instructional television is more effective than the same course presented by an instructor on conventional televised instruction.

1 2 3 4 5

14. It is not easy to watch and concentrate on this television presentation "TTN."

1 2 3 4 5

15. It is easier to learn from programs like "TTN" than from conventional televised instruction.

1 2 3 4 5

16. Television teaching does not stimulate interest in doing individual projects.

1 2 3 4 5

17. In courses requiring much explanation and illustration, the use of programs like "TTN" result in learning less.

1 2 3 4 5

18. Courses on television tend to be too factual.

1 2 3 4 5

19. It is hard to have confidence in the information presented on programs like "TTN."

1 2 3 4 5

20. If I had a choice, I would not take courses offering programs like "TTN" for instruction.

1 2 3 4 5

21. It is easy to take notes and still follow the presentation on programs like "TTN."

1 2 3 4 5

PRODUCTION FEEDBACK QUESTIONNAIRE

Experimental Group Version

Please complete the statement on the left for each sequence of the program by checking as many of the responses as you feel are appropriate.

| When I watched this part of the program, I felt: | CLEAR | CONFUSED | CONTENT | FRUSTRATED | SATISFIED | UNFULFILLED | ATTRACTED | PUT-OFF | CURIOUS | INDIFFERENT | INVOLVED | BORED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VERBAL INTRODUCTION TO PROGRAM | | | | | | | | | | | | |
| CHANNEL SELECTION SEQUENCE | | | | | | | | | | | | |
| STATION I.D. AND STAY TUNED FOR | | | | | | | | | | | | |
| SOUND OFF (INTER-VIEW) | | | | | | | | | | | | |
| WE'D LIKE YOU TO KNOW (PSA) | | | | | | | | | | | | |
| A BACKWARDS GLANCE (PSA) | | | | | | | | | | | | |
| VIEWDATA IN REVIEW | | | | | | | | | | | | |
| PROBLEMS, PROBLEMS | | | | | | | | | | | | |
| AUDIO ANALYSTS | | | | | | | | | | | | |
| TTN-NEWSBREAK | | | | | | | | | | | | |
| TTN-TECHWORD | | | | | | | | | | | | |
| CLOSING COMMENTS | | | | | | | | | | | | |

# PRODUCTION FEEDBACK QUESTIONNAIRE

## Control Group Version

Please complete the statement on the left for each sequence of the program, by checking as many of the responses as you feel are appropriate.

| When I watched this part of the program, I felt: | CLEAR | CONFUSED | CONTENT | FRUSTRATED | SATISFIED | UNFULFILLED | ATTRACTED | PUT-OFF | CURIOUS | INDIFFERENT | INVOLVED | BORED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CHANNEL SELECTION | | | | | | | | | | | | |
| STATION I.D. AND STAY TUNED FOR SECTION | | | | | | | | | | | | |
| SOUND OFF | | | | | | | | | | | | |
| WE'D LIKE YOU TO KNOW | | | | | | | | | | | | |
| A BACKWARDS GLANCE | | | | | | | | | | | | |
| PROBLEMS, PROBLEMS | | | | | | | | | | | | |
| AUDIO ANALYSTS | | | | | | | | | | | | |
| TTN-NEWSBREAK | | | | | | | | | | | | |
| TTN-TECHWORD | | | | | | | | | | | | |
| CLOSING COMMENTS | | | | | | | | | | | | |

# APPENDIX D

MULTIPLE CHOICE TEST SCORES - ANALYSIS

| Experimental | Control |
|---|---|
| N = 93 | N = 70 |
| Mean = 24.978 | Mean = 24.000 |
| Variance = 20.608 | Variance = 18.696 |
| Minimum = 4.000 | Minimum = 11.000 |
| Maximum = 30.000 | Maximum = 30.000 |
| Standard Error = .471 | Standard Error = .517 |
| Standard Deviation = 4.54 | Standard Deviation = 4.324 |
| Confidence Interval = .95 | Confidence Interval = .95 |
| Between 24.044 and 25.913 | Between 22.969 and 25.031 |
| Skewness = -1.632 | Skewness = -.925 |

T-TEST BETWEEN EXPERIMENTAL AND CONTROL GROUPS ON MULTIPE CHOICE SCORES

| Pooled Variance Estimate | Separate Variance Estimate |
|---|---|
| T = 1.39 | T = 1.40 |
| Degree of Freedom = 161 | Degree of Freedom = 152.34 |
| 2-tailed probability = .165 | 2-tailed probability = .164 |
| 1-tailed probability = .083 | 1-tailed probability = .082 |

ATTITUDE SCALE RATINGS ANALYSIS

| | N | Mean | S.D. | S.E. |
|---|---|---|---|---|
| Experimental | 93 | 41.8925 | 9.314 | .966 |
| Control | 70 | 42.8429 | 10.478 | 1.252 |

T-TEST OF RESPONSES TO ATTITUDE SCALE QUESTIONNAIRE

| Pooled Variance Estimate | Separate Variance Estimate |
|---|---|
| t = -.61 | t = -.60 |
| Degree of Freedom = 161 | Degree of Freedom = 138.69 |
| 2-tailed probability = .542 | 2-tailed probability = .549 |
| 1-tailed probability = .271 | 1-tailed probability = .275 |

T-TEST OF RESPINSES TO ATTITUDE SCALES USING ONLY STATEMENTS DEALING WITH CONVENTIONAL OR GENERAL INSTRUCTIONAL TELEVISION

| Pooled Variance Estimate | Separate Variance Estimate |
|---|---|
| t = 1.41 | t = 1.39 |
| Degree of Freedom = 161 | Degree of Freedom = 141.11 |
| 2-tailed probability = .161 | 2-tailed probability = .167 |
| 1-tailed probabioity = .0805 | 1-tailed probability = .0835 |

T-TEST ON RESPONSES OF ATTITUDE SCALES BETWEEN ONLY THOSE RESPONDENTS WHO HAVE PREVIOUS INSTRUCTIONAL TELEVISION EXPERIENCE, AND ONLY ON ATTITUDE STATEMENTS CONCERNING THE "TTN" PROGRAM

| Pooled Variance Estimate | Separate Variance Estimate |
|---|---|
| t = -.82 | t = -.74 |
| Degree of Freedom = 92 | Degree of Freedom = 43 |
| 2-tailed probability = .414 | 2-tailed probability = .463 |
| 1-tailed probability = .207 | 1-tailed probability = .2315 |

T-TEST ON RESPONSES TO ATTITUDE SCALES BETWEEN ONLY THOSE RESPONDENTS WHO HAVE NO PREVIOUS INSTRUCTIONAL TELEVISION EXPERIENCE AND ONLY ON ATTITUDE STATEMENTS CONCERNING THE "TTN"

| Pooled Variance Estimate | Separate Variance Estimate |
|---|---|
| t = -.30 | t = -.30 |
| Degree of Freedom = 67 | Degree of Freedom = 57.44 |
| 2-tailed probability = .763 | 2-tailed probability = .763 |
| 1-tailed probability = .381 | 1-tailed probability = .384 |

DETAILED RELATIVE FREQUENCIES BREAKDOWN OF RESPONSES TO EACH ATTITUDE STATEMENT FROM THE INSTRUCTIONAL TELEVISION ATTITUDE SCALE

1. Courses on television provide higher quality instruction than face-to-face instruction.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 2.2% | 4.3% |
| Agree | 14.1% | 15.7% |
| Undecided | 40.4% | 32.9% |
| Disagree | 41.3% | 34.3% |
| Strongly Disagree | 12.0% | 12.9% |

2. This type of instructional television (TTN) is effective in providing for a wide range of individual differences.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 4.3% | 7.1% |
| Agree | 39.1% | 50% |
| Undecided | 40.2% | 22.9% |
| Disagree | 14.1% | 14.3% |
| Strongly Disagree | 2.2% | 5.7% |

3. Instructional programs like "TTN" provide greater motivation than regular or conventional televised instruction.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 4.3% | 12.9% |
| Agree | 48.9% | 37.1% |
| Undecided | 25% | 17.1% |
| Disagree | 15.2% | 22.9% |
| Strongly Disagree | 6.5% | 10.0% |

4. Instructional television classes are more entertaining than educational.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 9.8% | 13% |
| Agree | 32.6% | 31.9% |
| Undecided | 25% | 21.7% |
| Disagree | 28.3% | 30.4% |
| Strongly Disagree | 4.3% | 2.9% |

5. Instructional television courses like "TTN" have better subject matter content than conventional televised instruction.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 7.6% | 12.9% |
| Agree | 37% | 31.4% |
| Undecided | 34.8% | 32.9% |
| Disagree | 14.1% | 18.6% |
| Strongly Disagree | 6.5% | 4.3% |

6. Instructional television courses like "TTN" would tend to improve study skills and study habits.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 7.5% | 5.7% |
| Agree | 34.4% | 20% |
| Undecided | 34.4% | 34.3% |
| Disagree | 16.1% | 25.7% |
| Strongly Disagree | 7.5% | 14.3% |

7. Instructional television programs like "TTN" are better organized than conventional televised instruction.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 14% | 10.1% |
| Agree | 35.5% | 33.3% |
| Undecided | 34.4% | 30.4% |
| Disagree | 14% | 18.8% |
| Strongly Disagree | 2.1% | 7.4% |

8. Critical thinking and problem-solving abilities are developed to a greater extent in programs like "TTN" than in conventional televised instruction.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 5.4% | 7.2% |
| Agree | 35.5% | 33.3% |
| Undecided | 34.4% | 37.7% |
| Disagree | 21.5% | 11.6% |
| Strongly Disagree | 3.2% | 10.1% |

9. The effectiveness of courses using programs like "TTN" is limited by the lack of opportunity for discussion and clarification between students and instructor.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 36.6% | 34.8% |
| Agree | 39.8% | 34.8% |
| Undecided | 9.7% | 14.5% |
| Disagree | 9.7% | 10.1% |
| Strongly Disagree | 4.3% | 5.8% |

10. Instructional programs such as "TTN" provide little that could not be provided through films and other visuals in a conventional classroom.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 1.1% | 7.1% |
| Agree | 35.5% | 35.7% |
| Undecided | 24.7% | 20% |
| Disagree | 30.1% | 27.1% |
| Strongly Disagree | 8.6% | 10% |

11. Instructional television programs like "TTN" promote listening skills.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 12.9% | 11.4% |
| Agree | 67.7% | 60% |
| Undecided | 10.8% | 15.7% |
| Disagree | 7.5% | 11.4% |
| Strongly Disagree | 1.1% | 1.4% |

12. A good course presented on instructional television is more effective than the same course presented by an instructor on conventional televised instruction.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 6.5% | 5.8% |
| Agree | 29.3% | 31.9% |
| Undecided | 38% | 31.9% |
| Disagree | 20.7% | 23.3% |
| Strongly Disagree | 5.4% | 7.2% |

13. It is not easy to watch and concerntrate on this television presentation (TTN).

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 8.6% | 11.4% |
| Agree | 17.2% | 18.6% |
| Undecided | 21.5% | 38.6% |
| Disagree | 43% | 38.5% |
| Strongly Disagree | 9.7% | 17.1% |

14. It is easier to learn from programs like "TTN" than from conventional televised instruction.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 6.5% | 13% |
| Agree | 49.5% | 27.5% |
| Undecided | 26.9% | 34.8% |
| Disagree | 14% | 15.9% |
| Strongly Disagree | 3.2% | 8.7% |

15. Television teaching does not stimulate interest in doing individual projects.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 6.6% | 8.6% |
| Agree | 31.9% | 21.4% |
| Undecided | 46.2% | 40% |
| Disagree | 11% | 24.3% |
| Strongly Disagree | 4.4% | 5.7% |

16. In courses requiring much explanation and illustration, the use of programs like "TTN" result in learning less.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 7.6% | 10.1% |
| Agree | 23.9% | 27.5% |
| Undecided | 19.6% | 23.2% |
| Disagree | 40.2% | 36.2% |
| Strongly Disagree | 8.7% | 2.9% |

17. Courses on television tend to be too factual.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 7.6% | 4.3% |
| Agree | 30.4% | 8.7% |
| Undecided | 22.8% | 34.8% |
| Disagree | 37% | 43.5% |
| Strongly Disagree | 2.2% | 8.7% |

18. It is hard to have confidence in the information presented on programs like "TTN."

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 3.3% | 2.9% |
| Agree | 16.3% | 23.2% |
| Undecided | 20.7% | 8.7% |
| Disagree | 45.7% | 43.5% |
| Strongly Disagree | 14.1% | 21.7% |

19. It I had a choice, I would not take courses offering programs like "TTN" for instruction.

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 14.1% | 16.2% |
| Agree | 15.2% | 25% |
| Undecided | 31.5% | 17.6% |
| Disagree | 38.3% | 32.4% |
| Strongly Disagree | 10.9% | 8.8% |

20. It is easy to take notes and still follow the presentation on programs like "TTN."

| | Experimental | Control |
|---|---|---|
| Strongly Agree | 8.7% | 8.7% |
| Agree | 28.3% | 37.7% |
| Undecided | 16.3% | 11.6% |
| Disagree | 27.2% | 24.6% |
| Strongly Disagree | 19.6% | 17.4% |

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