



RESEARCH ABSTRACTS

TELEVISION

SEIBERT, W. F. *An Evaluation of Televised Instruction in College English Composition.* TVPR Report No. 5. Audio-Visual Center, Purdue University, Lafayette, Indiana. July 1958. 35 p.

Purpose: To determine whether the available facilities and personnel can be as effectively utilized in a program of televised college English composition instruction as they can be with normal instructional procedures.

Procedure: An experimental group of 82 students in college English attended three 50-minute class meetings per week for a semester. Two of the three sessions were televised. A control group of 72 students was taught by four other instructors. Achievement was measured by grades on 12 themes; scores on tests of grammar, punctuation, diction, and spelling; and five subtests of the *Purdue English Training Test*.

Results: The results suggested that this instruction is not readily adapted to television. Other research has arrived at the same conclusion. There were wide attitude variations but the average attitude was about neutral. Participation in the television lessons did not change student attitudes toward television classes. The attitude was unrelated to course achievement. Recommendations are given for a more definitive experiment.—*L. Twyford*

SEIBERT, W. F. *An Evaluation of Televised Instruction in College Freshman Mathematics.* TVPR Report No. 6. Audio-Visual Center, Purdue University, Lafayette, Indiana. July 1958. 16 p.

Purpose: To study the effectiveness of televised college mathematics and the attitudes toward the instruction when half of each lesson is televised.

Procedure: A control group of 80 students was taught for a semester. An experimental group of 80 students was taught the same material 25 minutes by television, followed by a 25-minute discussion and practice session under the direction of a graduate assistant. Six tests were given during the semester. The *Purdue Instructional Television Attitude Scale* was administered at the end of the semester. The same instructor taught both experimental and control groups.

Results: Student achievement was essentially the same for experimental and control sections. An average attitude toward the instruction was obtained. There was some evidence that student achievement and attitudes toward televised instruction are unrelated. Competent students did not suffer from being assigned to a televised class. This study supplements a previous study titled "Teaching Calculus by Closed-Circuit Television" by John Dyer-Bennet, William R. Fuller, Warren F. Seibert, and Merrill E. Shanks in the *American Mathematics Monthly*, June-July 1958.—*L. Twyford*

SEIBERT, W. F. *Cost Estimates and Comparisons for Televised and Conventional Instruction.* TVPR Report No. 7. Audio-Visual Center, Purdue University, Lafayette, Indiana. November 1958. 14 p.

Purpose: To analyze available data on conventional and television costs of instruction and to prepare charts for several parameters.

Procedure: The basic unit of cost decided upon was the direct instructional cost per student per semester hour of credit. For televised instruction, costs were divided into instructor's salary, instructor release time, costs of establishing and operating facilities, and salaries of assistants. It was assumed that normal load is 12 hours, there are 30 students in a class, housing costs are identical, and standard graduate assistant charges are made. Charts were prepared for instructor salaries of \$6000, \$7500, and \$9000, and for facility costs of \$20 and \$30 per hour of instruction.

Results: Estimated costs of instructing fewer than four student sections by means of television are higher than that of conventional instruction. Higher salaried instructors need teach fewer students to break even. An instructional cost advantage can be obtained by teaching 150 to 270 students. Six graphs are included.—*L. Twyford*

SEIBERT, W. F., and HONIG, J. M. *A Brief Study of Televised Laboratory Instruction.* TVPR Report No. 8. Purdue University, Lafayette, Indiana. February 1959. 28 p.

Purpose: Comparison of televised and conventional chemistry laboratory instruction for acquisition and retention of relevant knowledge and laboratory skills.

Procedure: Seventy subjects were assigned to five groups. The instruction consisted of two films and a lecture. It was presented to the television and the conventional groups. A third group received no instruction. Subjects were pretested, given an 18-item knowledge test, and a performance test. A retention test was given later.

Results: Considering several limitations of the study there is some evidence that televised chemistry laboratory instruction is as effective as regular instruction.—*L. Twyford*

MACOMBER, F. G., and SIEGEL, LAURENCE. *A Study of Load Credit for TV Teaching.* Experimental Study in Instructional Procedures. Miami University, Oxford, Ohio. October 1958. 6 p.

Purpose: The purpose of this study was to summarize current load practices at a number of colleges and universities offering television courses for credit, the teachers' reactions to these practices, their estimates of the amount of time required to teach a TV course, and their actual records of time expended in connection with several TV courses.

Procedure: A questionnaire concerning teaching load currently carried, load deemed desirable, and expenditure of time in connection with the TV course was mailed to a sample of college TV instructors. In addition, these instructors were requested to complete a sequence of 14 daily activity logs. Twenty-eight respondents completed the questionnaire and 19 kept all the daily logs.

Results: Only 3 of 18 closed-circuit teachers were relieved of other responsibilities before course presentation whereas 7 of the 10 open-circuit teachers got some relief. There was little correlation between the number of TV teaching hours and the teaching load. Closed-circuit teachers felt a TV course should count for a 70 percent credit the first year and 50 percent thereafter. Open-circuit teachers felt the credits should be 100 percent and 65 percent succeeding years. Teacher preparation time was 8 hours for a conventional 3-hour course, 15 hours for closed-circuit TV, and 35 hours for open-circuit TV. The logs confirmed the teachers' estimates. It was recommended that for the first year of teaching a course a closed-circuit TV course be counted as two regular courses and that an open-circuit course four or five regular courses.
—L. Twyford

BEATTS, PATRICK M. *Report on Instructional Closed Circuit Television for 1957.* IBM, Poughkeepsie, New York. February 1, 1958. 72 p.

Purpose: To study the use of closed-circuit television in teaching IBM machines to Customer Engineering students. Investigation of teaching effectiveness, student and teacher acceptance, technical operating problems, student participation, use of teaching aids, applicable training areas, course shortening, lab instruction, extent of use, and cost figures.

Procedure: Student responses were kept on carefully designed questionnaires. Instructors received a questionnaire and their opinions were obtained. Grades were compared with previous records. The effect on course length and content was measured. The extent of its use and cost factors were summarized.

Results: Courses were taught effectively using television; students and teachers increasingly accepted it. Student participation was possible and effective. The quality of instruction and its preparation improved; the use of teaching aids and materials increased. Courses were shortened 10 to 15 percent. The effectiveness of lab time was greatly increased. TV facilitated realistic trouble shooting. It was recommended that its use be expanded to other educational areas.—L. Twyford

EDUCATIONAL TELEVISION AND RADIO CENTER. *Educational Television Program Survey*. Research Report No. 581. Educational Television and Radio Center, 2320 Washtenaw Avenue, Ann Arbor, Michigan. July 31, 1958. 13 p.

Purpose: The purpose of this survey was to measure the growth of and identify changes in programming as reported for the week of April 13-19, 1958.

Procedure: Twenty-seven television stations supplied annotated logs of their educational programs. These were summarized and reported.

Results: The average program hours per station was 38 and ranged from 12 to 80 per week. The total number of program hours per week increased from 645 in 1957 to 1027 in 1958. The use of kinescope recordings increased from 24 percent in 1957 to 32 percent in 1958. Live and film programming decreased. St. Louis and New Orleans used kinescopes almost exclusively and Pittsburgh used them about half the time. The percentage of Center programs decreased slightly. Enrichment programs decreased while teaching programs rose greatly. The number of hours devoted to credit courses nearly doubled. The largest categories of programs included children's programs—35.9 percent; science, industry, and mathematics—8.6 percent; music and dance—8.5 percent; credit telecourses—8.1 percent; and national and world affairs—6.4 percent.—*L. Twyford*

KANNER, JOSEPH H.; KATZ, SANFORD; and GOLDSMITH, PETER B. *Evaluation of "Intensive" Television for Teaching Basic Electricity*. Television in Army Training, Army Pictorial Center, 35-11 35th Avenue, Long Island City 1, New York. January 1958. 37 p.

Purpose: To compare the effect upon learning of 38 hours of continuous television training over a five-day period with that of regular instruction. An additional objective was to study minimal television presentations and to determine the amount of training required for personnel to teach extensive segments of subject matter over television.

Procedure: Sixty-two trainees studied basic electricity over closed-circuit television and a similar number had regular instruction. Ten written tests covered the 38 hours of instruction. A retention test was given a month later. The same materials and instructors were used for each method, and no attempt was made to modify the classroom instruction for television presentation.

Results: There were no consistent differences between effectiveness scores for television and regular instruction. Immediate test scores were higher for regular instruction than for "minimal" television instruction but were the same on retention tests. Aptitude level proved to be more important than the instructional medium in determining test performance. It was concluded that televised instruction can continue for 38 hours without any greater decline in learning than is produced by regular instruction. While "minimal" television

may be less effective immediately, it was recommended that it be used in emergency periods or for initiating television training programs. The important role played by aptitude suggested the need for improvement in trainee selection.—*L. Twyford*

WESTLEY, BRUCE H. *Attitudes Toward Educational Television.* Bulletin No. 10. University of Wisconsin Television Laboratory, 600 N. Park St., Madison, Wisconsin. July 31, 1958. 241 p.

Purpose: To define and measure attitudes toward educational television in Madison, Wisconsin, where Channel 21 had been offering daily educational broadcast service since 1953.

Procedure: The data are based on 799 interviews with adults sampled in the viewing area.

Results: Sixty-two percent of the respondents favored full operation of the station. They wanted "useful" programs in contrast to academic programs. A significant negative relationship was found between amount of TV viewing and educational TV viewing. Reasons for liking programs were most frequently given in terms of program quality or special interests of the viewer. There did not appear to be a widespread evaluation of educational TV as dull or monotonous. Respondents preferred cooking, sewing, and handicrafts in contrast to enriching cultural experiences. Social class appeared to be the best predictor of attitude.—*L. Twyford*

KLAPPER, HOPE LUNIN. *Closed-Circuit Television as a Medium of Instruction at New York University, 1956-1957.* A Report on New York University's Second Year of Experimentation with Television in College Classrooms. New York University, New York. 1958. 69 p.

Purpose: To determine whether English Composition could be taught as successfully by television as by conventional methods. Do audio and visual aids increase the effectiveness of television teaching? How are student's attitudes affected by televised instruction?

Procedure: Three studies were conducted in three courses: College Composition, Man's Cultural Heritage, and History of Civilization. Programs were staged under professional studio conditions although scripts were not used.

Results: Television instruction was as effective for teaching English Composition as conventional instruction. The teacher was found to be far more important in providing learning than the medium employed. Attention to the television lecture was not related to degree of achievement. Students developed a strongly favorable attitude toward instruction which only showed the lecturer and the blackboard. More strongly favorable attitudes were held toward highly visualized lessons, but more learning occurred from lessons that were not visualized. Students are not always interested in or favorably

disposed toward the introduction of audio and visual aids. Faculty members found the experience stimulating but time-consuming. The additional time required for preparation produced tensions.—*L. Twyford*

THROOP, JOSEPH F.; ASSINI, LEWIS T.; and BOGUSLAVSKY, GEORGE W. *The Effectiveness of Laboratory Instruction in Strength of Materials by Closed-Circuit Television.* Rensselaer Polytechnic Institute, Troy, New York. November 8, 1958. 41 p.

Purpose: To evaluate the effectiveness of televised instruction as compared with conventional laboratory instruction of 12 Strength of Materials Laboratory experiments.

Procedure: The attainment of 234 engineering students taught over closed-circuit television was compared with that of 199 comparable students taught conventionally. The analyzed data included quiz scores, term paper grades, examination marks, and course grades. A questionnaire reported student opinion. Two industrial camera chains and five 21-inch monitors were acquired. A split-screen technique was developed. Laboratory machines and instruments were modified for improved visibility. A 20-minute live black-board presentation was followed by the televised experiment. The class and staff were in constant intercommunication. After the experiment the staff returned to the classroom to work with the students.

Results: The television method was as effective as the conventional method. Conventional instruction develops greater familiarization with machines. The television group favored television and thought it to be more efficient. Television instruction can be economically justified with 400 students each term. Its principal value is in making information, normally accessible to a few, available to many. Larger classrooms should be equipped for television.—*L. Twyford*

MARTIN, GAITHER LEE, and CRAM, DAVID D. *Instructional Television Pictorial Report Number 1.* Television Project Report from San Jose State College, San Jose, California. September 1958. 31 p.

Purpose: To explore the use of television in a wide variety of college instructional situations and to determine the techniques, personnel requirements, costs, and the technical and operational problems involved in its use.

Procedure: During early 1958 television equipment was installed for studio and mobile use. An instructional television studio was equipped to originate programs. A distribution system was installed on the campus and a cable connected to four high schools. Receivers were designed to specifications and were elevated by the use of special leg brackets. Telecasts from high schools were used in a teacher training program. Exploratory projects were

undertaken in direct teaching during the few months covered by this report. The instructional television services program is a part of the Division of Audio-Visual Services.

Results: Tentative results indicated that faculty members who used television became more favorable toward it. The attitude of the class reflected the attitude of the instructor. Two-hour sessions were too long. There was a marked reduction in the cost of direct teaching on repeated presentations. The short period of actual operation has not permitted an evaluation of effectiveness.—*L. Twyford*

RADIO AND TELEVISION

WESTLEY, BRUCE H., and BARROW, LIONEL C. *Exploring the News: A Comparative Study of the Teaching Effectiveness of Radio and Television.* Research Bulletin No. 12. University of Wisconsin Television Laboratory, 600 N. Park St., Madison 6, Wisconsin. May 1959. 107 p.

Purpose: To study the effectiveness of comparable radio and television versions of a background-of-the-news program series.

Procedure: Four 15-minute programs on the news were prepared in both radio and television versions. These included information on the Presidency, issues before the 85th Congress, the Fuchs expedition to the South Pole, and the Caribbean and Venezuela. 228 sixth-graders in four public schools received the programs. An analysis of variance was performed to test the significance of differences for media, intelligence, programs, and the discussion variable.

Results: The television version was significantly more effective than the radio version in transmitting factual information. Six weeks later the difference was no longer significant. Visualized themes came to mind more often than nonvisualized content. The middle-intelligence group did not learn significantly more from television. Verbal intelligence was more effective than nonverbal intelligence in predicting learning of factual information. 8315 words were used in the radio version in contrast to 7540 in the television version.—*L. Twyford*

STILL PICTURES

FERGUSON, MARIAN NELSON. "A Comparison of the Chain Associations of Nursery School and Kindergarten Children to Action-Picture Stimuli." *Speech Monographs* 24: 56-64; March 1957.

Purpose: To determine evidence of the development and the complexity of verbal behavior of kindergarten and first-grade children by studying the language responses of both groups to photographs depicting action.

Procedure: Sixty children selected on the basis of accessibility in the nursery school and in the kindergarten were evenly divided between the two classes. Since previous studies have shown no significant sex differences between boys and girls in free association to pictures, this factor was obviated. A previous study by Albright and Albright used pictures of a horse, bed, train, hand, table, house, book, spoon, dog, and boy. The Albright pictures were static. This experiment used still photographs of similar subjects showing action. Each child was presented each picture as part of a "word game." Thirty seconds were adequate for nearly all the chain responses to each picture stimulus.

Results: The responses were classified quantitatively and qualitatively. The average length response for each kindergarten subject on all 10 pictures was 135 words, whereas the nursery school average was only 113 words. The combined average was 124 words as compared with the combined average response of only 50 words in the Albright study (using nonaction still pictures). The action pictures elicited roughly twice as many responses as nonaction pictures. The qualitative analysis classified words according to their grammatical categories such as nouns, verbs, adjectives, and so forth. The only grammatical category that was significantly different at the 1 percent level between the kindergarten and nursery groups was that of nouns. Of the 314 different noun responses used by both groups, only 118 were contained in Thorndike's list of the first 1000 words. The author's possible explanation of this is that Thorndike's list is based on written language rather than spoken.

Greater use of nouns by the kindergarten group (significant at the 1 percent level) quite possibly could be explained, according to the experimenter, by greater attention paid to details of the picture by the older group. The action pictures also elicited a larger number of verbs than the pictures used in the Albright study. The author feels this may be due to the fact that action pictures tend to elicit more complements and longer phrasal responses, and longer phrases do necessarily contain more verbs per phrase. There was also a tendency toward complete sentences.

In evaluating the psycholinguistic findings, the author finds that children who use more nouns were prone to give "descriptive responses" to the pictures, while those who concerned themselves with only a few central objects in the picture tended to give immediate associations which went beyond the immediate picture stimuli or, in other words, were more imaginative. This perhaps represents a higher level of thought than the descriptive associations.—*Paul Wendt*

TRAINING AIDS

MERRILL, I. R. *Application of Profile Techniques for Training Aid Evaluation.* Technical Report NAVTRADEVEN 602-11-1. U. S. Naval Training Devices Center, Port Washington, New York. January 6, 1959. 48 p.

Purpose: To apply the learning profile technique to training aid evaluation including synthetic training devices, visual training aids, audio-visual

training aids, and auditory training aids. Its practicability was to be investigated and a check made on its validity.

Procedure: 418 students rated instruction involving 86 different training aids. Each student turned a knob to indicate how much he felt he was learning. Electrical equipment summated the responses. Instructional content was recorded photographically and with a tape recorder. Learning was plotted against instructional time and sequences were visualized and related to peaks and valleys. A test was prepared for validating the profile. One set of profiles was made using summated responses of a continuous scale. The other set was plotted from individual responses in which the rater threw a switch to a *learn* or *not learn* position.

Results: Fourteen learning profiles and interpretations of the peaks and valleys were reported upon. The study demonstrated that graphic training aids such as transparencies and flat charts, when properly used, implement instruction. Major instructional points were represented by peaks on the *learn-not learn* profile. The profile was particularly sensitive to new information. In descending order learning occurred from (1) new information, (2) repetition and restatement by the instructor, (3) questions asked the class by the instructor, and (4) questions asked the instructor. Synthetic training devices exhibited a characteristic profile. The effect of most training aids appeared to be submerged within the instructional segment. The method of using the training aid did not appear to affect the profile shape. Under the conditions of an experiment which was to validate a profile, the subjects were unable to report accurately by means of the profile device their gain in learning as measured by the objective test.—*L. Twyford*

TEACHER TRAINING IN USE OF NEW MEDIA

ZIMMERMAN, HARRY. *An Evaluation of Pre-Service Audio-Visual Experiences in Selected Oklahoma Teacher Education Institutions Based on Reactions of Teachers and Supervisors.* Doctor's thesis. School of Education, University of Oklahoma, Norman, Oklahoma. 1958. 209 p. (Typewritten)

Purpose: This study was concerned with the evaluation of experiences provided pre-service teacher education students in developing audio-visual knowledges and competencies. It was designed to answer the following questions: (1) What audio-visual knowledges and competencies are needed when entering the teaching profession? (2) To what extent are these experiences offered in Oklahoma state-supported colleges and universities? (3) How well do graduates possess needed knowledges and competencies?

Procedure: A jury consisting of 36 members was selected. Each juror was asked to rate a series of characteristics concerning utilization of audio-visual materials in terms of their importance to a beginning teacher. Ratings thus obtained were used for establishing criteria and provided a basis for the development of a second and third questionnaire to determine: (1) extent

to which needed experiences were provided in selected colleges and universities and (2) extent to which 1956 teacher education graduates possessed needed knowledges and competencies.

Data received from 10 colleges and universities and from 216 graduates represented the total population as defined for the study.

The audio-visual characteristics in the questionnaire were grouped into seven major parts: (1) physical characteristics, (2) background knowledges, (3) educational value, (4) operation of equipment, (5) maintenance of equipment, (6) utilization, and (7) production, and were subdivided into 67 statements. An analysis of data pertinent to each item provided a basis for an evaluative statement concerning the related experience.

Results: Teacher graduates appeared weak in the degree of knowledge acquired in 60 of the characteristics examined and seemed to be strong in only seven characteristics. A majority of the institutions of higher learning offered opportunities to acquire adequate knowledges and competencies in audio-visual education. A larger number of graduates possessed knowledge of the theoretical concepts of utilization while fewer possessed competency in operation, maintenance, and production. In the majority of institutions planned experiences leading to acquisition of audio-visual knowledges and competencies were provided in a formal course which was offered on an elective or semi-elective basis.

These findings led to the following conclusions: (1) Correction of deficiencies in pre-service teacher preparation could improve greatly the extent of audio-visual knowledges and competencies possessed by practicing teachers. (2) Teacher education programs should require a course in audio-visual education or include planned experiences in all professional education courses. (3) A large number of employed teachers need in-service instruction in audio-visual education.

It was recommended that a basic course in audio-visual education should be required of all prospective teachers, or the professional sequence should be organized to include audio-visual experiences on an integrated basis. Audio-visual laboratories should be established which would provide prospective teachers opportunity to become competent in production of audio-visual materials and in the operation of equipment. Oklahoma institutions should cooperatively engage in the study of curricula changes which might well result in greater assurance that teacher education students receive needed audio-visual knowledges and competencies.