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## International Communication

Since September, 1968, the Institute has been studying the effects of instructional television in El Salvador.

Typically television has been introduced into developing countries without any research being connected with it. By the time the sponsors have realized that these projects are worth studying, it has usually been too late to collect baseline data so as to measure the changes. The Samoa instructional television, for example, went along three years with no formal research or evaluation. Although in Samoa, as elsewhere, there is little doubt that children are learning a great deal from television, there is considerable uncertainty as to how much they are learning from it as compared to what they would learn from other sources, or how much from one way of using television as compared to another, or precisely what they are learning from television. Little is known, for example, about what happens to their patterns of thinking and problem solving, the way they look at their environment, and the kind of interaction that goes on in their classrooms, as a result of teaching by television.

School television broadcasts began in El Salvador in February, 1969. Television was introduced as a part of a broad curricular reform, accompanied by a considerable amount of special training for teachers in the new curriculum and in the use of ITV. Unlike some earlier projects,

this one is not imported and operated by foreign experts. U.S. AID and Unesco have furnished expert advisers, but every administrator and teacher in the program is Salvadoran, as are the curriculum planners, the producers and directors, and the supervisors. Thus the conditions are unusually favorable for studying an informed and realistic use of ITV by a developing country.

Six months before the first television classes, the Institute's field supervisor, McAnany, went to El Salvador. He has been supported by a local Salvadoran research staff and a backup team of faculty and advanced graduate students at Stanford. Baseline achievement tests were given (many of them made especially for this purpose by the Educational Testing Service), along with measures of attitudes toward learning by television, toward the school in general, and toward teachers. General ability and reading tests also were given, and as television got under way tests of cognitive effects -- concept formation, problem solving, etc. -- were made and administered. An observational measure of classroom interaction is being prepared. An experimental design, with random assignment of students, makes it possible to separate out the probable effects of television from other effects, and comparisons are also being made, with somewhat less rigor, of television students with students in the old curriculum and students in private schools.

At the same time a record is being kept of the process and problems involved in introducing a major technological innovation of this kind, and costs and certain other administrative items of interest to other developing countries will be recorded.

will become available after the end of the first full school year of television, in November, 1969. Reports are beginning to appear, however. One of the first of the quantitative reports has to do with the effects of a three-months course for teachers who were chosen to be in charge of the first television classrooms. Among other things it showed that they entered the project with a generally favorable, and not suspicious attitude toward ITV, but acquired a much more realistic idea of what it could do and of their role in connection with it, during the course.

A side benefit of this project has been the opportunity to give some advanced graduate students experience with communication research in a foreign culture. Five students have worked closely with it during the year, and each one has served a one- to two-months internship in El Salvador. One of them, Mayo, has now become assistant field supervisor, and next year the principal Salvadoran research assistant will come to Stanford for advanced training.

Funds for this project come from the Academy for Educational Development. Schramm is in charge of the work for the Institute.

Reports of the El Salvador Project (January-July, 1969):

Research Report No. 1 -- Design of the Project

Research Report No. 2 -- Results of the First Teacher  
Retraining Course

Administrative Report No. 1 -- Proceedings of the Advisory  
Committee and Plans for the Project

Administrative Report No. 2 -- The Use of Television in the  
El Salvador Program of Educational Reform

At the request of the Agency for International Development and of Unesco, Schramm and Nelson spent some time in East Africa in early 1969 and developed a prototype plan for the training of mass media personnel in that region. They found that the needs for trained African personnel, because of swift media development and Africanization of staffs, had far outgrown the resources of foreign fellowships and visiting experts to provide this training. Local training facilities are meager. They suggested a 15-year plan, which would begin by providing four training institutions of high quality -- respectively for broadcasting, journalism, film, and the use of modern communication by field workers and development staffs. These would be concentrated in the East African Community countries but be used by all the nations of the region. Within five years the countries would begin to establish their national facilities, at which time the regional facilities would take on more specialized functions. Within 15 years at least the larger countries should be self-sufficient in media training except for the most specialized skills. The report is now being studied.

Godwin Chu, now at the University of British Columbia, published an article in Rural Sociology, entitled "Impact of Mass Media on a Gemeinschaft-like Social Structure." His data were collected in Taiwan.

Mass Communication

Rivers is a contributor to and editor of The People and the Press, a survey of local press council experiences, which is to be published in 1970. Other contributors are William Blankenburg, the first Ph.D. in Public Affairs Communication at Stanford, who now teaches at the University of Wisconsin; Kenneth Starck of Southern Illinois University, and Earl Reeves, University of Missouri at Kansas City.

The Institute of Governmental Studies at the University of California, Berkeley, commissioned Rivers to write a monograph on the San Francisco Bay Area press. He took on David Rubin, a third-year Ph.D. candidate in Public Affairs Communication, as co-author. The monograph has grown to book-size -- 50,000 to 60,000 words -- and will be published soon by the Institute of Governmental Studies.

Rivers has completed a monograph, "The News Editor and the Future," which will be published by the RAND Corporation. The monograph is also to be part of a book on the future of mass communication which is being written by Ben Bagdikian.

The Rivers-Schramm edition of Responsibility in Mass Communication was issued by Harper and Row in April.

Rivers and Grey have been involved in planning an interdisciplinary course in mass communication. The project, for which funding

has been sought through a formal proposal, includes development of seminars and research in which groups of faculty and students from Communication, Law, Business, Economics, Political Science, and Psychology would participate. Emphasis is on questions of public policy and on economic, social, political, and legal issues involved in the evolving institutions of the mass media.

Rivers and Grey joined Marc Franklin of the Law School in offering a three-week Press Law and Ethics Institute at Stanford in August, 1969. The Institute, for 25 young teachers of journalism and half a dozen young newsmen, emphasized morning lectures and discussion on the legal process by Franklin and evening seminars on press ethics and performance led by Rivers. The program was sponsored by a grant from the National Endowment for the Humanities.

Grey and James Rosse (Department of Economics) are now in their second year of a grant from the Brookings Institution, Washington, D.C., for a study of the economics of the mass media. A year-long Workshop in Economics of the Press was completed in June, with a short monograph and several articles pending. The interdisciplinary Workshop is continuing for 1969-70 with a \$20,000 renewal and with special attention to generating research projects by Communication graduate students through a year-long Seminar in Economics of the Mass Media.

Grey's book, The Supreme Court and the News Media, appeared Spring, 1968 (Evanston, Illinois: Northwestern University Press, \$5.95).

It is an analysis of the flow of information about the U.S. Supreme Court -- from the written communications of the Justices through especially the mass news media to various interested and uninterested publics.

Gary Lawrence and Grey completed an exploratory study in news accuracy in which both news sources and newsmen involved were interviewed about subjective-type inaccuracies reported to have appeared in local newspaper items. Results have been distributed through Vol. IV of the American Newspaper Publishers Association's News Research for Better Newspapers, a 1969 AEJ convention paper and an article submitted to Journalism Quarterly. The project is one of several in progress by Grey on applications of communication theory and methods in the teaching of news reporting, writing, and editing.

Schramm prepared an article for the International Encyclopedia of the Social Sciences, 1968 edition, entitled "Mass Communication: Control and Public Policy".

Schramm has been invited to give the first annual Japan Prize Lecture, in November 1969. This is in connection with the Japan Prizes for distinguished broadcasting by any country of the world, to which an annual lecture is being added this year for the first time. The lecturer is selected by the Japanese from among scholars throughout the world who have made contributions to knowledge of mass communication.

In the Public Opinion Quarterly, Summer 1969, "The Mass Media as Sources of Public Affairs, Science, and Health Knowledge," by Wade and Schramm, summed up their findings on the uses of the different media for different kinds of information by people of different backgrounds and interests.

Roberts and Schramm have started a revision of Schramm's The Process and Effects of Mass Communication. The new edition should be ready early in 1970.

Roberts rewrote an Institute report prepared last year, entitled Analyzing Letters in Mass Magazines as "Outcroppings" of Public Concern. The study, covering all issues of Time, Newsweek, Life, Look, and the Saturday Evening Post for 1966, found that public opinion poll data were corroborated by themes of concern found in cluster analyses of words in letters to the editors. Across all samples the Viet Nam War was the dominant theme. The condensed version will appear under the same title in a future issue of Journalism Quarterly.

#### Communication and Children

During the past year Ph.D. candidates specializing in developmental communication have conducted a number of research projects

DEVELOPMENTAL COMMUNICATION as part of their academic training and in connection with a year-long course in developmental communication. Research in this area has also been conducted by members of the Institute faculty. Collins examined developmental changes in the

learning of central and peripheral content of an entertainment film. Blackmer examined developmental aspects of the relative saliencies of various attributes of objects. McAnany and Roberts began a group of experiments on cognitive development and educational use of the media. Leifer, et al, completed a developmental study of memory for the sequence of events in an entertainment film and understanding of the feelings and motivations of the characters in the film.

For his developmental study of central and peripheral content learning, Collins showed boys and girls in the third, sixth, seventh, and ninth grades an episode from the television series "Father Knows Best". The viewing situation was relaxed and informal and students were told that they were to evaluate the film for a possible remake of the series. After the film all of the students were asked to answer questions about the film. These included questions about content that adults had agreed was essential to the plot (central content), questions about content that adults agreed was not essential to the plot (peripheral content), and questions about the students' enjoyment of the film, its relevance to them, and their involvement in it.

It was predicted that due to increasing memory ability, ability to attend selectively, and better knowledge of the more relevant or important aspects of a presentation older students would remember more of the central content, and that they would also learn more of the peripheral content up to adolescence at which time there would be a decrease in learning of this content. It was also predicted that those

students who enjoyed the film more and felt it was more relevant to them would learn more of the peripheral content than would other students.

The results entirely supported the predictions. Across the four ages tested older children remembered more of the central content than did younger children. From the third through the seventh grade students learned increasingly more of the peripheral content, but the ninth-grade students remembered less of this content than either the sixth- or seventh-grade students. Moreover, those students who liked the film better and felt it was more relevant to them remembered more of the peripheral content of the film than did the other students. However, there was no difference in the amount of central content remembered by these two groups of students. Apparently, children all pay attention to the information that is relevant to the plot of a media presentation, but will also remember the irrelevant information when they are quite involved in the presentation.

During the year Leifer and others conducted a developmental study of memory for the sequence of events in an entertainment film and understanding of the feelings and motivations of the characters in the film. In the mass media children today are exposed to much social interaction and have the opportunity to learn a great many sequences of behavior, reasons for behavior, and consequences of behavior. Whether or not the children's behavior or repertoire of possible behaviors is affected by this exposure depends at least

partially on how much children actually understand of and remember from media presentations. This study was carried out to investigate the amount of learning that occurred among four-, seven-, and ten-year-old boys and girls when they viewed an entertainment film. Each child's memory of the sequence of major events in the film was tested by having him put three, five, seven, and nine photographs of scenes from the film in the order in which they had occurred. Each child was also asked to answer eight questions about the feelings and motivations of the male and female characters in the film.

As one would predict, older children could do each of these tasks better than younger children could. However, the low level of performance by the four-year-olds is noteworthy. All of the seven- and ten-year-olds could put three photographs in the order in which they occurred while only 20 per cent of the four-year-olds could do so. All of the children made more errors as the number of photographs to be put in order increased. However, 75 per cent of the ten-year-olds could put even nine photographs in the correct order, while only 30 per cent of the seven-year-olds and none of the four-year-olds could do so. The four-year-olds could not report correctly the feelings and motivations of the characters, while the seven- and ten-year-olds understood most of the feelings and motivations of the characters. There was very little difference between the seven- and ten-year-olds in the amount they understood. They did not, however, understand as much as adults would.

A secondary hypothesis of this study was that children would

understand the feelings and experiences of the subjects better than those of the investigators. It was predicted that this difference in understanding would increase with age. The data gathered in the study gave us evidence which supports this hypothesis.

As one part of the Salvadoran project, Roberts and I have been carrying on their interest in developing reading materials. We spent most of May in Salvador preparing materials and conducting a series of experiments on cognitive development and reading. We conducted instructional techniques and curriculum planning in general, and Salvadoran situation. We are also interested in the development of and cross-cultural research. We have been able to isolate groups of children who have been in the classroom and groups who have not. Further, within each of these groups, we have been able to isolate rural environments are available.

The possibilities are over and over again. We have isolated three groups of children at the level. We have isolated three groups of children at the level.

- (1) urban children who have been exposed to reading materials and who use text and illustrated story books.
- (2) urban children who have been exposed to reading materials but who have little experience with books.
- (3) country children who have been exposed to reading materials and no experience with books.

exposure to television or movies and who have no schooling (or very little schooling) at all. Most of the experiments will be run developmentally, including children of first-, third-, sixth-, and seventh-grade age. Data have been collected from two experiments dealing with how children form equivalence groupings, one where they are asked to group pictures and one where they are asked to group verbal stimuli; two experiments dealing with information-seeking based on the old "20 questions" game, one where they have to find a specific picture in an array of 42 pictures and one where they have to discover the cause of some event; one experiment, limited to seventh graders, on problem-solving ability, asking children to generate a number of possible solutions to a problem; and one experiment looking at the effect of distance, both psychological and physical, from an object and the child's ability to generate possible uses of the object. The final experiment will be McAnany's dissertation study.

Preliminary analysis of the data from the pictorial equivalence data indicates a large difference in the way rural Salvadoran and urban U.S. children group objects. Salvadoran children are much less likely than U.S. children to form groupings based on functional attributes of the objects; they show a much greater propensity to group according to perceptual attributes, especially color.

Blackmer, in a developmental investigation of the relative saliencies of various attributes, used sameness judgments of three-and-a-half- to four-and-a-half-year-olds, four-and-a-half- to five-

and-a-half-year-olds, and adults to construct individual and group hierarchies of attributes. Six of the seven attributes had the same relative saliencies for each age; in order of importance they were shape, length, size, color, darkness, and position. Number became more salient with age. Each individual made 21 responses to pairs of dimensions, and these responses were highly consistent for individuals of all ages. The most agreement across individuals as to the relative orderings of the attributes was found in the four-and-a-half- to five-and-a-half-year group, and the least in the adult group.

Maccoby, Breitrose, and Roberts were participants in a round-table discussion of television violence and children produced by the Speak-Out program on KRON television.

Maccoby and Alberta Siegel of the Department of Psychiatry were interviewed on the KTVU Doctor's News Conference on television violence and children.

Maccoby attended a research planning conference covered by CBS on television violence and children.

Roberts and Schramm completed an article entitled "Children's Learning from the Mass Media" for the new edition of the Macmillan Encyclopedia of Education.

Attitude Research

Maccoby, Roberts, and Breitrose, with support from the Office of Naval Research's Group Psychology Branch, are continuing their investigation of counterarguing and persuasion. The focus of the work has been expanded somewhat to include examination of any sort of cognitive activity which might occur when a person is exposed to a persuasive method. The research thus far has combined use of the traditional attitude scales and content analysis. Subjects have been asked to list their thoughts, feelings, etc., while listening to persuasive messages. Content analyses of pre-test data have indicated that persuasibility is positively correlated with the generation of verbal statements which support the speaker's position, and that resistance to persuasion is correlated with the generation of arguments counter to the speaker's position. A full field experiment with 299 subjects and a four-cell design has been carried out and the data are currently being analyzed. The focus of this experiment is on the role of covert and overt rehearsal of arguments and the nature of these arguments and their role in attitude change and resistance to change. Jon Jecker, Dru Sherrod, and Susan Higley are also working on this project.

Sherrod completed a winning AAPOR paper, "A Balance Theory Approach to Candidate Perception," applying balance theory to the relationship between (1) a voter's opinion of a candidate, (2) his position on a particular issue, and (3) his perception of the

candidate's position on the issue. Sherrod hypothesized that inconsistency among these elements could be resolved by a voter's distorting his favored candidate's true opinion and substituting his own for the sake of consistency. When this was tested with data from the mail questionnaire used in the San Mateo study, significant distortion in the direction of consistency was found for eight of the fourteen candidate-issue combinations. Sherrod concludes that balance theory can be effective in predicting voters' perceptions of candidates' issue positions, given voters' own issue positions and candidate preferences. An Institute report of this and other analyses of questionnaire data is planned.

#### Flow of Information to the Public

The second phase of the National Science Foundation study on communicating specialized science information to lay audiences continued through the year. The object of this study, conducted by Maccoby and Funkhouser, is to determine the best methods of composing science writing so as to optimize information gain, audience enjoyment, attitudes toward the subject matter, and interest in reading more about the topic.

Phase One of the study identified the textual variables related to these audience effects, as measured on an audience of 773 college students. Phase Two involved preparing short articles about enzymology, polymer chemistry, and plasma physics with specific textual manipulations based on the findings of Phase One. Basic articles on

each science were written, and then alternate versions were written in which the content was not changed but sentences were made longer or shorter, vocabulary was made easier or harder, practical applications were emphasized or de-emphasized, and so forth.

The effects of these experimental articles are to be tested on audiences of junior college students, university students, professional scientists, and government policy makers. It is thought especially important to determine the best ways to communicate science information to government policy makers, as these people are more and more often being called upon to make policy decisions concerning technological matters (for example, DDT, or the ABM system). Obviously, the better informed they are, the better position they will be in to formulate science policy intelligently.

The junior college and university students are being tested because they are the educated and the well-educated, respectively, lay citizens of tomorrow. Given the ever-increasing importance of science in the life of the average man, it is important that he be as well informed on these matters as possible. The professional scientists are of interest as an audience for two reasons: (1) to find out what effects the stylistic differences have on readers who are well able to cope with the subject matter, and (2) to find out if scientists react in the same ways as nonscientists to material which is outside the range of their own specialty.

At present, all the experimental science articles and test materials have been written and reproduced. Testing has been

completed on more than 450 students at De Anza Junior College, and is in progress at Stanford. In the next few months audiences of professional scientists and government policy makers will be tested. Analysis is proceeding on the data already in hand.

The study by Funkhouser on predicting information diffusion to mass audiences by mathematical model has continued. The model uses the probabilities of audience exposure to news media over a series of time increments (e.g., consecutive hours) to predict the proportion of the audience which has heard of a particular news event at any point in time. It includes a factor which corrects for the fact that some news events are more interesting than others and that this difference in audience interest will affect the rate of news diffusion.

Using designs which incorporated improvements in the methodology of previous empirical tests of the model's predictiveness, Maxwell McCombs of the University of North Carolina conducted two replications. He traced the diffusion of two news events (discovery of the sunken Scorpion hull and Nixon's proposed lottery plan for the draft), each in a different community in North Carolina. In the former test the predictions conformed fairly closely to the actual pattern of diffusion, but in the latter the predictions were somewhat too high. In three previous tests (conducted in San Mateo county) the predictions had come quite close to the empirical data. It is anticipated that work in this area will be continued. A paper, "The

Rise and Fall of Information Diffusion," was presented at the convention of the Pacific chapter of the American Association for Public Opinion Research, Napa, California.

#### Flow of Information Among Scientists

With a grant from the American Educational Research Association, Harris conducted a readership study of the Review of Educational Research. Studying approval and use of 15 quarterly issues from June 1965 to June 1968, she found that the Review was used primarily for current awareness and for learning about areas peripheral to one's specialty. Readers advocated more frequent review of several topics, and some would prefer an annual review format (book form) rather than the present quarterly journal. Harris recommended changes in the format and content of the Review "so that each issue would appeal to specialists on the topic reviewed and also to a more general audience attracted by current awareness features designed especially for them.

Mick further analyzed data gathered by Parker, Paisley, and Garrett for an earlier Institute report (Bibliographic Citations as Unobtrusive Measures of Scientific Communication) in hopes of identifying "classic" articles in communication research. He concluded that communication research is a heterogeneous clustering of several areas of study in the behavioral sciences, including cognitive psychology, methodology, etc. His paper is entitled, "Identification and Analysis of Classic Articles in Communication Research from Incidence of Citation".

Paisley discussed the flow of scientific information in two invited papers. In November, participating in the AERA Colloquium on Improving the Social and Communication Mechanisms of Educational Research, he spoke on "The role of invisible colleges". In February he addressed Division E of the American Educational Research Association on "Perspectives on the utilization of knowledge".

Lingwood completed a dissertation on invisible colleges in educational research. He examined the relationship between a researcher's place in the scientific communication network and his productivity. Because the concept of scientific invisible colleges has been challenged in recent work by others, Lingwood first had to show that sociometric choices given and received among educational researchers did indeed form a network composed of cohesive subgroups.

#### Information Systems

Development of a campus computer-based information system continued under Parker's direction. Project SPIRES (for Stanford

PROJECT      Public Information RETrieval System) is receiving  
SPIRES        continued support through a National Science Foundation grant to the Institute, and an Office of Education grant to the Stanford Library. Operation of a prototype retrieval system (permitting up to 60 users to search simultaneously in several different files of bibliographic records) began in February 1969. Demonstrations have been conducted from several parts of the country (including

Washington, Atlantic City, Chapel Hill, and Santa Monica) via standard telephone connections. The system is currently available five days a week from 8:15 to 9:30 a.m. Self-service demonstrations can be arranged for those who have access to IBM 2741 typewriter terminals or who visit Stanford. User manuals are available on request. Files currently available for searching include a collection of high energy physics preprints, the Stanford Library's in-process file (for the acquisition and cataloging division), a specialized collection of geology documents, and a collection of African history documents. Other files (several of which had been operational in previous versions of the search system) are in the process of being added: a file of ERIC (Educational Resources Information Center) documents, an index to high energy physics documents (prepared in Hamburg, Germany), and Nuclear Science Abstracts. The file system is sufficiently general that non-bibliographic data (e.g., personnel files or inventory records) could be stored and retrieved interactively also.

The system is intended to make a major improvement in the quality of information services available to the Stanford campus community. It should serve as the local information "retailer" relative to the "wholesale" products of the developing national discipline-based systems (e.g., in physics, chemistry, medicine, etc.). The primary economic basis for supporting the new system is expected to be automation of technical processing in the Stanford University libraries.

The system is viewed as a forerunner of computer-based information media which when made available in homes and offices will permit users to select what information is to be sent to them. Such a user-controlled information channel would reverse the current situation where, in most media, the sender of the message controls its distribution over the available channels. (The New York Times has awarded contracts for the development and marketing of such a user-controlled information media. They expect to begin service in 1971.)

The 1968 SPIRES annual report is still available, and a brief report of SPIRES' progress appears in Parker's paper, "Developing a campus information retrieval system," in the Proceedings of the Stanford Conference on Collaborative Library System Development, October 4-5, 1968.

The ERIC Clearinghouse on Educational Media and Technology, which is part of the Institute, finished out its second year of organizing and disseminating relevant research. High ERIC CLEARINGHOUSE points of the year were the issuing of nine commissioned papers and the increasing variety of services offered to the clearinghouse's professional clientele.

Paisley succeeded Schramm as director of the clearinghouse, with Schramm becoming chairman of the advisory committee. Coombs became associate director of the clearinghouse.

More than 6,000 requests for service were received from the U.S. educational community during the 1968-69 year. Though the

majority asked only to be placed on the mailing list, a great many requested specific information on utilizing television, programmed instruction, computers, etc., in education and training. One proud, though perhaps not sensational, 1968-69 accomplishment was the elimination of the backlog of unanswered letters.

Included among the papers commissioned by the clearinghouse were:

A Basic Reference Shelf on Audio-Visual Instruction, by  
Edgar Dale and Gregory Trzebiatowski

A Basic Reference Shelf on Interactive Use of Computers  
for Instruction, by Karl L. Zinn

An Analysis of University Policy Statements on Instructional  
Recordings and Their Re-Use, by Fred S. Siebert

Media and the Disadvantaged -- A Review of the Literature,  
by Serena E. Wade, with Critique and Marginal Commentary  
by Adelaide Jablonsky

Ethnic Studies and Audiovisual Media: A Listing and Discussion  
by Harold A. Layer

Costs of Educational Media Systems, by Michael G. Sovereign

Routine document processing at the clearinghouse continued, but the staff concentrated more of its efforts on problems of information dissemination and utilization. Cooperative arrangements with seven different journals were completed during the year, so that the ERIC story -- and examples of ERIC research documents -- could be placed before researchers, teachers, administrators, and others in the educational community.

While the clearinghouse is funded by the U.S. Office of

Education to deal with audiovisual and educational technology research, in the process it serves as a laboratory for information analysis activities. User information needs were studied at summer media institutes in 1968, and readership and impact of certain journals were investigated on grants from the American Educational Research Association and the Office of Education.

The clearinghouse continued its involvement with automated information retrieval systems with the installation of the DIALOG system developed by Lockheed Missiles and Space Company. This system allows the entire 17,000 document ERIC file to be searched for specific information, and then relevant citations and abstracts can be viewed on a cathode ray tube, or printed off on a high-speed printer. DIALOG has proved to be a magnet for visitors, some of whom are participating in the evaluation of the system which the clearinghouse is conducting for the U.S. Office of Education.

The clearinghouse also is employing the Institute's own SPIRES information retrieval system, and is looking forward to having a file of 6,000 research citations coded for interactive SPIRES searching. The entire ERIC document file also will be searchable through SPIRES, as the DIALOG system is being maintained only on an experimental basis.

Other clearinghouse activities included the analysis of data for One Week of Educational TV No. 5, which was directed by Coombs. The final report was published by National Educational Television and by the National Instructional Television Center.

Communication Technology and Education

A reasonably quick and economical way of systematically evaluating the effectiveness of instructional films should provide

**EVALUATING**                    for a more enlightened film acquisition policy  
**EFFECTIVENESS**  
**OF FILMS**                    than was previously possible. Such a procedure hopefully would make for more efficient utilization of limited budgets, and most important, increased teaching effectiveness. In what has become a multi-million dollar industry which pervades all of education, surely it is not extreme to suggest that the choice of instructional film teaching materials should be made on the basis of some predictability of their meeting specified educational criteria, and the needs of the pupils who are presumed to be instructed by "instructional films".

A demonstration study was undertaken in which a good example of film currently in classroom use was employed. First, a detailed description of the objectives of this film, inferred from many viewings and much discussion of what the film actually contains was developed.

Then the visuals were analyzed as to their probable teaching effects accompanied as compared with unaccompanied by narration. Finally, an experiment was set up in which items testing shots in which visuals were expected to enhance students' learning were compared with those judged to be unaided or even hampered by the visuals. Results indicate that in many instances the criteria for prediction

of learning were observed. The results of the study indicated that such criteria were not met.

It is clear from this review that an instructional film can be successfully selected as a teaching tool. However, due to its adoption, the film must be carefully selected and evaluated. The first step in the selection process is the selection of the film. The second step is the evaluation of the film. The third step is the production of a teaching plan. The fourth step is the production of a teaching guide. The fifth step is the production of a teaching manual. The sixth step is the production of a teaching kit. The seventh step is the production of a teaching package. The eighth step is the production of a teaching system. The ninth step is the production of a teaching program. The tenth step is the production of a teaching course. The eleventh step is the production of a teaching unit. The twelfth step is the production of a teaching lesson. The thirteenth step is the production of a teaching activity. The fourteenth step is the production of a teaching exercise. The fifteenth step is the production of a teaching project. The sixteenth step is the production of a teaching assignment. The seventeenth step is the production of a teaching activity. The eighteenth step is the production of a teaching exercise. The nineteenth step is the production of a teaching project. The twentieth step is the production of a teaching assignment.

One Week of TV, the author states that the study revealed increasing time spent in watching television.

ONE WEEK OF TV states that the study revealed that the first time, when circuits were first introduced, Fixed Service programming. Other implications of the study were investigation of what viewers are programmed to expect of station personnel, and how to use the school-owned, college-owned, etc. circuits. The author states that stations, a census of 100,000 stations was not taken. The study of TVS broadcasting was not done. The author states that circuit operations was not done.

The basic trend in the TV industry is to make

were broadcasting more hours per week. The average programming per week was 56 hours, up from 39 in 1961 and 49 in 1966. Significant changes in the subject matter of instructional television were noted, such as more mathematics, less foreign language than in 1966. Local productions continued to decrease, and state networks were found to be the largest source of instructional programming. About 40 per cent of the stations originating programming had capacity for transmitting color, and 16 per cent could produce locally in color.

Nelson served on the Advisory Committee to U.S.O.E. on ETV grants and in late July served as a consultant on ETV to the University of Hawaii, doing a report for them on the subject.

Paisley has been named editor of the Britannica Review of Educational Technology. The first volume in this annual review series will appear in the spring of 1971, covering the year 1970.

Publications on educational communication and technology included:

In Essays on World Education (ed. by George Z. E. Bereday),  
"The New Educational Technology," by Schramm.

In Language Development: Selected Papers (Ford Foundation),  
"Implications of the New Technology for Language Teaching," by Schramm.

In The Schools and the Challenge of Innovation (Committee for Economic Development), "Instructional Television Here and Abroad," by Schramm.

In Communication in the Space Age (Unesco), "Some Possible Effects of Space Communication," by Schramm.

Published by U.S. Agency for International Development (1969),  
Communication Satellites for Education and Development --  
 The Case for India, by Schramm and Nelson.

In Research and Development toward the Improvement of Education  
 (University of Wisconsin), "Television around the World,"  
 by Schramm.

In Educational Broadcasting Review, "Satellites and Education,"  
 condensation of APA talk by Schramm.

In Pédagogie, "Satellites pour l'éducation," by Schramm.

In La Education, "La Nueva Tecnologia Educativa," by Schramm.

Schramm's book, Classroom-Out-of-Doors, a study of the San  
 Diego program of outdoor and conservation education written for the  
 Kellogg Foundation, was published in April.

#### Methodology

Collins completed an Institute report of his study, Idiosyn-  
 cratic Verbal Behavior of Interviewers. Interview schedules from  
 twin surveys were content analyzed to determine whether interviewers'  
 verbal habits in recording constituted systematic error in a completed  
 data set. Interviewers were found to be reliably idiosyncratic in  
 vocabulary (word choice) and verbosity (number of words used to record  
 responses). Statistical controls for situational and respondent fac-  
 tors did not remove the significant main effect of verbosity. Collins  
 concludes that systematic error from interviewers should be avoided by  
 more judicious use of free-response questions, better training pro-  
 cedures, and by specifying carefully what constitutes an adequate  
 recorded response. A paper on the study was given at the PAAPOR

meeting in Napa in February. A shorter version of the report has been accepted for publication in Public Opinion Quarterly.

Anderson proposed an analysis method to take account of response tendencies of survey respondents. He concludes that "response-style" indices may be used to interpret closed-ended responses in terms of more than their specific-option meanings. He presented the proposal in papers before sessions of PAAPOR, at Napa in February, and AAPOR, at Lake George, New York, in May.

#### The "San Mateo Project"

Institute members collaborated with researchers from the Graduate School of Business at Stanford in a multiple and unobtrusive measure field study of San Mateo County voters during the 1968 Presidential election. Seventeen measures from five data classes were utilized over a nine-month period to gauge political attitudes and behavior. The project was under the general chairmanship of Michael L. Ray of GSB. Those participating from the Institute were Collins, Hall, Grey, Mick, Paisley, Prentice, and Sherrod. A monograph of reports of various phases of the project is planned for early next year. Some reports of individual projects are available now.

One "San Mateo Project" product, a cognitive consistency study by Sherrod (described above under Attitude Research) won second place in the national AAPOR student paper competition. Another successful AAPOR entry (honorable mention) also came from this project. Hall's

"Political partisanship: an unobtrusive field experiment," involved dropping letters and postcards near cars in shopping centers (the idea was suggested by Eugene Webb, co-author of Unobtrusive Measures). Each letter or postcard, bearing a penciled "Found next to car," was addressed to the "Research Committee" of a candidate in the presidential or California senatorial elections. In addition, the postcards bore messages on the back that indicated support or opposition flowing back to the candidate from a fictitious respondent. Except for a control condition, all letters and postcards were dropped next to cars bearing partisan political bumper stickers from which the driver's political leanings could be inferred. Voters are more likely to return letters supportive of their own candidates or opposed to candidates they don't like than letters opposing their candidates or supporting his opponents.

Mick checked the feasibility of three archival records sources in a political campaign: sales of news magazines, water pressure, and long-distance telephone traffic. Although none of the three appeared to be especially sensitive, the latter two are promising enough for further research.

Another pending product of the "San Mateo Project" is an article on letters-to-the-editor, based on the PAAPOR report by Grey on themes found in letters columns of the Redwood City Tribune and the San Mateo Times during campaign months.

Other Studies

Because of the controversy within the Stanford community about the University's relationship with the Stanford Research Institute and

POLL ON THE SRI CONTROVERSY its research policies, President Pitzer decided to have a poll conducted. He appointed a committee under the chairmanship of Maccoby and including Funkhouser as well as John Meyer of Sociology and Mark Edwards, a graduate student, to conduct the survey. The questionnaire was put in the form of a plebescite, and contained items dealing with what sort of research, if any, should be restricted at SRI, and the relationship which should be maintained between Stanford and SRI. A ballot was sent to every faculty member and student at the University, as well as to senior staff members and to selected alumni leaders.

About 60 per cent of the faculty, 44 per cent of the students, and 30 per cent of the staff and alumni leaders responded. Of those responding, the students were the group most favoring most restrictions on research (chemical, biological and radiological warfare), and a majority of the faculty agreed. The students were the only group which predominantly favored bringing SRI into a closer relationship with the university in order to maintain tight controls over the research done there. The faculty were somewhat less restrictive of research, and were split as to the disposition of SRI, a bare majority (53 per cent) favoring selling SRI under one of three different conditions. The staff and alumni were the two least restrictive groups,

and favored divesting Stanford of SRI. (A poll taken of SRI staff by SRI indicated that the majority of them wanted divestment from Stanford, and wanted to determine their own research policy.)

As one aid to making their decision on the fate of SRI, the Stanford Board of Trustees used the results of these polls. Their final decision was to divest Stanford of SRI and to endorse a ban on chemical and biological warfare research contracts which had been enacted by the SRI administration

A paper summarizing and interpreting this poll as an instrument in policy making was presented at the convention of the American Association for Public Opinion Research, Lake George, New York.

Funkhouser conducted a study on the attitudes, beliefs, and knowledge of readers of Psychology Today concerning our society's legal system. The questionnaire was included as part of the February issue of Psychology Today, an issue devoted to exploring various aspects of the law, courts, crime, and corrections. Readers clipped out and mailed back answer sheets included in the magazine. To obviate problems of the low response rate characteristic of this sort of survey administration, a random sub-sample of 520 subscribers was sent a special appeal to return their questionnaire responses. A 60 per cent rate of return was received from the sub-sample, whose returns were taken as being

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more representative than the 5 per cent response rate of the overall readership. A report of the results of this study appeared in the November issue of Psychology Today.

Tankard's dissertation reported an experimental investigation of what is communicated through eye contact. Subjects responded to photographs of models who posed in three eye positions -- looking straight into the camera, looking to the side, and looking downward. Subjects were instructed to assume they were interviewing the models for jobs and to evaluate them with adjective scales and other questions. A hypothesis relating the downward gaze to perception of negative emotion was supported and a hypothesis relating the straight gaze to perception of attention was partially supported. Hypotheses suggesting three-way interactions of eye position, model sex, and subject sex were not supported. There was evidence that subjects were influenced in making their judgments by eye position cues without being aware of it.

Sherrod completed a preliminary study, "Eye-movements and Reactivity to Persuasion". Lateral eye-movements during consideration of the answer to a reflective question were found to be related to reactivity to a persuasive message. A predominance of left eye-movements is associated with significantly more reactivity (i.e., more extreme attitude change scores) than right eye-movements, which are associated with more moderate reactivity. These results are consistent with other findings of physiological, cognitive, and personality

correlates of eye-movements. Sherrod suggests that a possible, but highly speculative explanation, may be in terms of functional assymetry of the brain.

### Personnel and Organization

The Institute for Communication Research is a division of the Department of Communication, of which the Executive Head is Lyle M. Nelson. The Department also includes divisions responsible for training in journalism, broadcasting, and film, and mid-career training for professional journalists. It offers a B.A., M.A., and a Ph.D. in Mass Communication Research and in Public Affairs Communication. The teaching in the Ph.D. sequence is done mostly by members of the Institute and members of the related faculties, and research experience required for the degree is gained in the Institute. A brochure about the Institute, outlining what it is and what it does, is available on request.

Members of the senior Institute staff include Wilbur Schramm (director), Nathan Maccoby, Edwin Parker, William Rivers, and William Paisley. Chilton R. Bush is an emeritus member of the senior staff.

Research associates, serving as study directors, this year were Don Coombs, G. Ray Funkhouser, Jon Jecker, Aimee Leifer, Emile G. McAnany, and Donald F. Roberts.

Systems programmers for the SPIRES project included Don Burwell, Nick Fortis, James Marsheck, Tom Martin, Hilma Mortell, and

John Schroeder. Technical writer for the project was Jean Tinsley, and Richard Bielsker served as consultant.

Among research assistants were: Kent Anderson, Lewis Andrews, Betsy Blackmer, Jesse Caton, Andy Collins, Clark Crane, Richard Farr, Generoso Gil, Barbara Gross, Douglas Hall, Susan Higley, Henry Ingle, Tom Ireland, Nat Katzman, John Mayo, Colin Mick, Bernadette Nelson, Jaime Ong, William Riddle, Dru Sherrod, Ken Siberz, Judy Strasser, James Tankard, and Dell Washington.

For the ERIC project the document processing staff included Marguerite Fischer, Leonard Schwarz, Michele Timbie, Joann George, Gabriel Oni-Okpaku, Jaclyn Caselli, and Charlotte Doudell.

The secretarial staff included Hester Berson, Alice Chamberlain, Carolyn Collins, Libby Jenkins, Violet Lofgren, and Linda Miller.

Twenty different persons worked for varying lengths of time as statistical clerks, tabulators, and interviewers.

Publications Available

For these books see your bookseller or write to the publisher:

Television in the Lives of Our Children (Schramm-Lyle-Parker).  
Stanford University Press, \$7.50, cloth; \$2.95, paper

One Day in the World's Press (Schramm). Stanford University  
Press, \$10.00

The People Look at Educational Television (Schramm-Lyle-Pool).  
Stanford University Press, \$5.50

The Science of Human Communication (Schramm, Maccoby, Festinger,  
others). Basic Books, Inc., \$4.50

∟ Mass Media and National Development (Schramm). Stanford  
University Press, \$7.50

The Kennedy Assassination and the American Public: Social  
Communication in Crisis (Greenberg-Parker). Stanford  
University Press, \$8.95

The Opinionmakers (Rivers). Beacon Press, \$4.95

Communication and Change in the Developing Countries (Lerner  
and Schramm). East-West Center Press, \$9.50

The Supreme Court and the News Media (Grey). Northwestern  
University Press, \$5.95

Responsibility in Mass Communication (revised edition, Rivers  
and Schramm). Harper and Row, \$8.50

A limited number of the following bound volumes is available from the  
Institute for a nominal handling charge of \$1.00:

Case Studies in Utilization of Behavioral Science, vol. I  
vol. II (out of print)

Bibliographic Citations as Unobtrusive Measures of Scientific  
Communication (Parker)

∟ Criteria for the Production and Selection of Film for the Class-  
room: A Preliminary Study (Maccoby, Jecker, and Breitrose)

A General Mathematical Model of Information Diffusion (Funkhouser)

Idiosyncratic Verbal Behavior of Interviewers (Collins)

The following volumes can now be obtained at low cost by writing to Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402:

New Teaching Aids for the American Classroom

Educational Television: The Next Ten Years

< The Research on Programed Instruction: An Annotated Bibliography

< Research in Instructional Television and Film (Reid and MacLennan)

The National Association of Educational Broadcasters, 1346 Connecticut Avenue, N.W., Washington, D.C., 20036, has published the following volume:

Learning from Television: What the Research Says (Chu and Schramm)

To obtain the following volume, write The Fund for the Advancement of Education, 477 Madison Avenue, New York, New York, 10022

Four Case Studies of Programed Instruction

For the following documents, write Department of Mass Communication, Unesco, Place de Fontenoy, Paris 7, France:

The Influence of Television on Children and Adolescents

Communication Satellites for Education, Science, and Culture

For the following documents, write the International Institute for Educational Planning, 7 rue Eugène-Delacroix, Paris 16, France. They are also available from the UNESCO Publications Center, 317 East 34th Street, New York, New York, 10016:

The New Media: Memo to Educational Planners (Schramm, P. H. Coombs, F. Kahnert, J. Lyle)

The New Media in Action: Case Studies, Volumes I, II, III

A limited number of selected Peace Corps ETV Program in Colombia reports is still available.