TRAINING RESEARCH ABSTRACTS

Anderson, Richard C., Gerald W. Faust and Marianne C. Roderick

"Overprompting in Programmed Instruction"

Journal of Educational Psychology, Vol. 59, No. 2, 1968 (pp. 88-93)

"108 S's completed either the standard version or a Heavily-Prompted version of a 1,052-frame section of a psychology program. Half of the S's made constructive responses while the remainder were instructed to 'think' the answers that went into the blanks. As expected, those who received the Standard program scored higher on the post-test and took longer to complete the program than those who received the Heavily-Prompted version. Response mode made no difference. The results were interpreted as showing that arrangements of lesson material which permit the student to respond correctly without noticing the cue undermine performance."

Brown, George H. and Alfred I. Fiks

"Modern Approaches to Foreign Language Training: A Survey of Current Practices"

HumRRO, Technical Report 67-15, Dec. 1967, The George Washington University, Human Resources Research Office, 165 pp.

"This report presents detailed, non-evaluative descriptions of instructional methods used in a sample of outstanding language training centers. Included are 19 different training programs which together represent a student age range from sub-teens to adults, both intensive and non-intensive courses, military and civilian students, and governmental as well as nongovernmental programs. For each program surveyed, the report presents a fairly detailed description of such features as training objectives; methods of teaching phonology, grammar, and vocabulary; language laboratory activities; student evaluation procedures; and faculty characteristics. Of the language teaching programs, 15 out of 19 were characterized by their respective officials as adhering to the "audio-lingual" (A-L) methods. Two key features were shared by the training centers: primary emphasis on aural comprehension and speaking skills, and an inductive approach to grammar."

Connor, D. V.

"Teaching Engineering Students by Machine and Text"

Programmed Learning and Educational Technology, Vol. 5, No. 2, Apr., 1968, pp. 129-136

"This study makes an evaluation of the use of programmed instruction in teaching and learning at the tertiary level. In particular, it compares the use of teaching machine and programmed text, in terms of their effectiveness and efficiency. A group of sixty-two electrical engineering students were assigned at random to two groups, one of which worked a programmed text on Dynamic Equilibrium and the other used the Empirical Tutor to work through the identical material. The criteria for effectiveness of each treatment was an immediate post-test and the annual examination in the subject. The results showed that both experimental groups made significant gains on the post-test, but that there was no significant difference in performance between the "Booklet" and "Machine" group. Both these groups, however, performed significantly higher in the annual examinations than did a matched "control" group. Contrary to previous studies the experimental groups were equally efficient in terms of time taken to work through the material.

It was concluded that students can effectively learn aspects of Engineering Mechanics either by programmed text or teaching machine, and that a choice between the use of text and machine must be made on grounds other than the effectiveness and efficiency of the presentation medium per se."

GERALD H. WHITLOCK
Editor

GEORGE J. RUBIN
Assistant

Elliott, Thomas K.

"The Effect of Electronic Aptitude on Performance of Proceduralized Trouble-shooting Tasks"

AMRL-TR-67-154, Nov. 1967, Aerospace Medical Research Laboratories, Aerospace Medical Div., Air Force Systems Command, Wright-Patterson AFB, Ohio

"After twelve hours' training, twenty subjects with no prior training in electronics solved complete electronic equipment maintenance problems on a realistic equipment simulator, the MTS-2. Subjects selected were from two electronic aptitude groups (AQE-E1 — 60 and 80 — 95 percentiles). The problems were composed of equipment checkout, malfunctioning "black box" isolation (within-stage trouble-shooting), and repair tasks. In lieu of expensive conventional electronic training, subjects were aided in the performance of the above tasks by trouble-shooting guides which, given the result of previous checks, told subjects where to check next. Results of the study showed that aptitude had no effect on performance time, or errors in repair. A small but significant difference was noted in the ability of the two groups to isolate defective "black boxes" and pieceparts; high-aptitude subjects performed somewhat better on this dimension."

Gibbs, W. E., Donald L. Hunt, and William F. Fahrner

"A Comparative Study of Conventional and Programmed Instruction in Book-keeping"

The Journal of Educational Research, Vol. 61, No. 7, Mar., 1968, 320 — 323.

"A total of 107 high school bookkeeping students were divided into an experimental group and a control group. The groups were evenly matched in terms of IQ and pre-test scores. The students in the control group were taught in the traditional manner using conventional instructional materials. The students in the experimental group were taught by means of programmed instructional materials. Both groups were then given three identical post-tests. The scores of the experimental group were significantly greater on all three tests at the .025, .001, and .01 levels. The experimental group also experienced a reduction in learning time of 43 per cent. The study indicates that the use of programmed materials can individualize instruction in the classroom and can also be used effectively as homework."

Glass, Albert Allen

"Problem Solving Techniques and Troubleshooting Simulators in Training Electronic Repairmen"

Dissertation Abstracts, Vol. 28, Sep. — Oct. 1967, 1718-B

It has been the purpose of this project to study the practical and operational application of problem-solving concepts by introducing into the regular training of military electronic repairmen two experimental methods of teaching trouble-shooting and to evaluate their effectiveness in promoting success. These two experimental methods were used: 1. A series of recorded lectures dealing with problem-solving methods, and 2. A series of paper and pencil troubleshooting simulators to provide the opportunity to apply problem-solving techniques. There were two simulators, one commercial and the other custom built. Six groups of military subjects were selected by use of a standard selection battery. The main criteria for evaluation of the experimental variables were performance tests on actual electronic equipment. The conclusions were: 1. Subjects receiving problem-solving lectures were superior on performance tests to subjects not receiving them. 2. Subjects using simulators were superior on performance criteria tests to those not using the devices, but only when the custom-built device was used. 3. Subjects receiving a combination of lectures and devices were superior on

performance criteria tests to subjects not receiving the combination. 4. The use of the custom-built simulator produced superior performance criteria tests scores as compared to subjects using the commercial version, only when the lectures were used as well.

Hoehn, Arthur J.
"The Need for Innovative Approaches for Training in Inter-Cultural Interaction"
HumRRO, Professional Paper 9-68, Mar. 1968, The George Washington University, Human Resources Research Office, 10 pp.

"There is growing acceptance of the view that personnel being assigned overseas require some special preparation for the inter-cultural aspects of such assignments. At present such training generally takes the form of short pre-departure orientation programs designed to provide a fund of relevant information. This paper points to the limitations of such an approach, suggests some of the alternative objectives of inter-cultural training, describes some current efforts toward new techniques, and points to the need for empirical assessment of the training value of the new approaches and techniques."

Johnson, Kirk A.
"The Effect of Topic Distribution within Programmed Instructional Booklets"
The U.S. Government Research and Development Reports, Vol. 68, No. 6, 1968, p. 30. Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151

"Three experiments were done in which comparisons were made between programmed instructional booklets in which all the material on a given topic was concentrated at a single point within the program and alternative versions in which the material on a given topic was dispersed to varying degrees throughout the program. All comparisons were made between programs that had been constructed from the same set of frames. In all except one of the nine relevant comparisons the more dispersed arrangements of topics were found to be superior to the arrangements in which all material on a topic was presented at a single location within the program, though not all of these differences reached the usual levels of statistical reliability. The advantage of the more dispersed programs was greater after a delay of a week than it was on immediate tests. The more dispersed programs tended to require longer reading times."

Johnson, Ronald
"Some Dimensions of the Drop-Out Problem in Apprenticeship Training"
Research in Education, Vol. 3, No. 1, 1968, p. 21. (For information on obtaining article in hard copy or microfiche see back cover of *Research in Education.)*

During the 1966 summer research program, the New Brunswick Department of Labor conducted a study of the high drop-out rate among the 2,673 apprentices in the province. The purpose was to find an adequate selection method for trainees. Data from existing files and from a questionnaire filled in by former employers and district supervisors were examined. It was found that apprentices completing training were significantly older, had more dependents, and had more preapprenticeship credit prior to indenture, but did not have more formal education. Although discrepancies appeared on the questionnaire filled in by employers and supervisors, it seemed that apprentices did not lack intelligence or adequate education, but did lack interest, which showed up in poor attendance, frequent illness, and tardiness. It was suggested that a battery of aptitude and interest tests be administered to all apprenticeship applicants prior to selection for training.

Klaus, David J., Lester D. Grant, and Robert Glaser

"Increasing Team Proficiency through Training, Supervisory Furnished Reinforcement in Team Training"

The U.S. Government Research and Development Reports, Vol. 67, No. 6, 1967, p. 22. Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151

"As a consequence of the reduced ratio of reinforcement in going from individual to subsequent team training, initial levels of team proficiency are far lower than predicted on the basis of the proficiencies of individual members. To overcome this decrement, experimental teams were provided with both individual and team reinforcement during the initial stages of team training. Results were obtained from 24 laboratory teams at varying levels of proficiency. The combined use of team and individual reinforcement produced team proficiency more rapidly than when team training was given without individual reinforcement. The experimental teams required almost as many trials to achieve the team proficiency criterion under team reinforcement alone after having once achieved it with combined team and individual reinforcement as did the control teams. The main conclusion is that the use of supervisory-furnished individual reinforcement on a regular basis during team training is satisfactory only if also provided later in the performance situation."

Kuhlen, Raymond G., Rolf H. Monge and Eric E. Gardner

"Learning and Cognitive Performance in Adults"

Adult Development Study, 910 Irving Avenue, Syracuse, N.Y., 1967, 102 p.

This publication contains an extensive bibliography of research in the field of adult learning and cognitive performance. It is divided into nine sections. Heavy emphasis is placed on the sections dealing with learning and cognitive behavior, intelligence and test behavior, and perception. Other sections include the following: reaction time, psycho-physiological research, achievement and productivity, education and industrial training, methodological problems in aging research and a section on books and literature reviews.
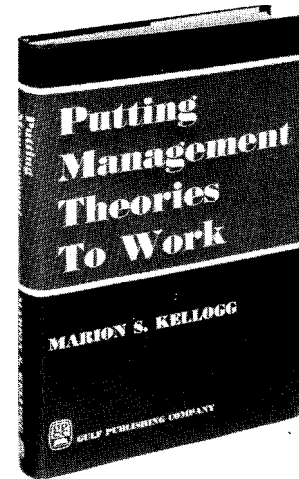
Lau, Alan W.

"A Comparison of Prompting versus Feedback in Verbal and Perceptual Learning"

The U.S. Government Research and Development Reports, Vol. 67, No. 8, p. 22. Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151

"The report reviews the literature on two general approaches to training — feedback and prompting. These techniques are examined in four interrelated areas: (1) Verbal learning, (2) Categorical perceptual identifications, (3) Comparative perceptual judgments, and (4) Monitoring. Following this review, suggestions for further research are made. In general, the review shows prompting to be as effective as, and sometimes more effective than, feedback in improving performance on both verbal and perceptual learning tasks, with substantially shorter time investments. The position that a response-contingent procedure is the most effective training procedure does not, at least in some kinds of learning, appear to be tenable. Apparently, the advantage of prompting over feedback lies in the achievement of greater temporal contiguity between the stimulus and its identification and also, to some degree, in the avoidance of requiring students to make incorrect overt responses. In some learning situations, prompting has the additional advantages of directing attention more effectively toward relevant stimulus characteristics and providing more information about these characteristics."

McGuigan, F. J., and Eugene F. MacCaslin

"A Comparison of Whole Versus Part Methods of Marksmanship Training"

The U.S. Government Research and Development Reports, Vol. 67, No. 15, p. 23 Clearinghouse for Federal Scientific and Technical Information, Springfield, Va., 22151

"The experiment tested two methods of M1 rifle instruction. One group of Infantry basic trainees was taught by the Army Training Program step-by-step method, another by a whole method. In the first period of whole method rifle instruction, the trainee saw a demonstration of the entire sequence of movements entering into the complete act of firing (use of the sling, firing positions, trigger squeeze, etc.). In each subsequent period, he practiced all these movements, including actual firing. The results show in general that the experimental whole method is more effective than the ATP method. On the average: (1) the trainees taught by the whole method made much higher scores for slow fire; they showed a 61% greater improvement over initial slow fire proficiency than did those taught by the ATP method; (2) the more intelligent trainees taught by the whole method made higher scores for sustained fire; and (3) these findings are consistent with further data from a firing test given nearly two months later, indicating that the superiority of the whole method lasts over a long period of time."

Rawls, James R., and Donna J. Rawls

"Evaluation of Closed-Circuit Television in Teaching Educational Psychology"

Psychological Reports, 1968, 22, 1041 — 1044

"Results indicated that there were no significant differences in achievement and retention of students taught by conventional and televised instruction. Students in general held highly unfavorable attitudes about television instruction and strongly preferred the conventional classroom approach. Although these unfavorable attitudes decreased among those who had taken previous telecourses and among those making high grades, even the majority of these preferred conventional instruction. Students paid little heed to the image on the screen and were observed looking in the direction of a T.V. set only 20% of the time; students in conventional classes looked at the lecturer 42% of the time. Suggestions for improving the course were discussed."

Rock, R. T., J. S. Duva, and J. E. Murray

"Training by Television, a Study in Learning and Retention"

The U.S. Government Research and Development Reports, Vol. 67, No. 1, p. 17. Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151

"The report presents the principal findings of a study of learning and retention by Army Field Force Reservists who were trained by television. Eight one-hour lessons were telecast at weekly intervals to more than 3000 Reservists. All reservists who saw the programs were tested immediately before and immediately after each televised lesson. The tests were designed to find out not only how much the men learned from the lesson they had just seen, but also how much they remembered from previous lessons. The test scores were analyzed statistically, and success in answering separate questions was studied in realation to teaching methods used in the telecasts."
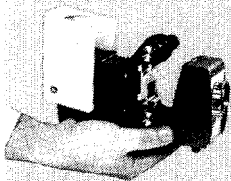
Rock, R. T., James S. Duva, and J. E. Murray

"Training by Television, the Comparative Effectiveness of Instruction by Television, Television Recordings, and Conventional Classroom Procedures"

The U.S. Government Research and Development Reports, Vol. 67, No. 1, p. 16. Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151

"The report is concerned with the evaluation of television as a medium for rapid, mass training. The principal findings of an experimental comparison of television training are presented along with other forms of training for Naval Air Reservists. Some groups of Naval Air Reservists were taught by television broadcasts. Comparable groups were shown film recording of these broadcasts or were taught in the conventional manner by instructors who gave lectures and used only standard training aids. All of the trainees were tested, and the results of these tests were compared and analyzed statistically to find the relative effectiveness of the three training methods used. The experimental program shows that television is an excellent training medium and that it can easily be made better than good classroom instruction."

Roeckelein, Jon E.

"Simulation of Organizations: An Annotated Bibliography"

HumRRO, Technical Report 67-14, Dec. 1967, The George Washington University, Human Resources Research Office, 57 pp.

"This bibliography contains 141 annotated references on the subject of the simulation of complex social organizations. It is part of a study whose goal is to determine the feasibility of using simulation methods to conduct research upon human factors that influence organizational effectiveness. It is divided into three principal areas: man-centered simulation, man-machine simulation, and machine-centered simulation. Within each of these areas, publications are separated into those directly concerned with the simulation of organizations, and those indirectly related to the subject. A general section covers reference works and bibliographies useful as source material. A KWIC index is provided."

Seidel, Robert J., and Harold G. Hunter

"The Application of Theoretical Factors in Teaching Problem Solving by Programmed Instruction"

The U.S. Government Research and Development Reports, Vol. 68, No. 14, July 25, 1968, p. 24. Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151

"In continuing research into the technology of training, a study was undertaken to devise guidelines for applying programmed instruction to training courses that involve the learning of principles and rules for use in problem solving. As the research vehicle, a portion of the material in the Army's ADPS Programming Specialist Course was programmed to explore several different factors in using automated instruction to teach computer programming. Experimental versions of the course were administered to over 900 subjects in various experimental groupings. Criterion and retention tests based on actual job problems were used to measure subjects' performance, along with in-training measures. Results in a series of prompting/confirmation variations indicated that giving subjects extensive stimulus support during training helps motivate them and improves scores during training, but hampers them in using what they have learned. Requiring subjects to fully write out rules during training hindered them in developing problem-solving skills applying these rules; however, using only mnemonics (using only the names of rules) during training aided subjects in retaining what they had learned, particularly for more complex material. Working with a variety of practice problems facilitated the learning of problem-solving skills."

Senter, R. J.

"Automated Readability Index"

AMRL-TR-66-220, Nov. 1967, Aerospace Medical Research Laboratories, Aerospace Medical Div., Air Force Systems Command, Wright-Patterson AFB, Ohio

"Inasmuch as the utility of technical manuals is influenced to a marked extent by their reading difficulty or readability, the Automated Readability Index was devised to provide an easy, automated method of collecting data from which textual material can be evaluated in terms of readability. Whereas most readability formulas include separate factors related to (1) word difficulty and (2) sentence difficulty, the Automated Readability Index provides for the mechanical tabulation of the required data on passages as they are typed on a standard typewriter. Impulses from the typewriter activate counters which record the number of letters, words and sentences contained in the passage. From this, the average word length and average sentence length are computed. Appropriate weightings of these factors result in an index reflecting the readability of the passage. This index is in close agreement with other indices of readability."

Whitmore, Paul G., John A. Cox, and Don J. Friel

"A Classroom Method of Training Aircraft Recognition"

HumRRO, Technical Report 68-1, Jan. 1968, The George Washington University, Human Resources Research Office, 36 pp.

"A prototype classroom training program was developed to train observers to recognize 16 jet fighter/attack aircraft to a criterion performance level of 95% correct recognition at five-second exposures. Previously developed experimental 35mm color slides were used for training. The training method placed emphasis on recognition feature learning, discrimination learning by means of similarity groupings of aircraft and simultaneous paired comparisons, cumulative practice and review, periodic testing, and remedial training. The 95% level was reached during the 16th 50-minute session, an average of one aircraft per session. On a transfer test using degraded images the class averaged 61% — three times higher than a traditionally trained class in a previous pilot study. Most of this gain, however, may be due to increased training time. There was a substantial correlation between the transfer test and achievement, indicating that the recognition skill acquired during training would transfer to some other image condition. There are suggestions for improvement of the prototype program."

"Training of Adult Education Personnel, No. 1: Current Information Sources"

ERIC Clearinghouse on Adult Education, Syracuse, N.Y., Feb. 68, 22p.

This bibliography is the first in another series of Current Information Sources on various aspects of adult education published by the ERIC Clearinghouse on Adult Education. It contains 44 indexed and abstracted entries on the training of adult education personnel, including evaluation studies, training programs, surveys, and bibliographies.

"Programmed Instruction in Adult Education (Current Information Sources, 15)"

ERIC Clearinghouse on Adult Education, Syracuse, N.Y., Feb. 68, 25p.

"This annotated bibliography contains 39 indexed and abstracted entries on programmed instruction in adult education, including research and evaluation studies, testing, programs, textbooks, and bibliographies. The documents processed, with few exceptions, are all dated 1966 or 1967."