SELECTED BIBLIOGRAPHY IN PROGRAMMED INSTRUCTION.

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This bibliography in programmed instruction represents an initial effort of the ERIC Clearinghouse for Linguistics in the direction of periodically supplying the educational community with bibliographies from the field of linguistics, related language sciences and uncommonly taught languages. It is a selected listing and as such does not include all publications in the field of programmed instruction.

The bibliography has been compiled for the ERIC Clearinghouse for Linguistics by Mrs. Ruth Spodak of the Clearinghouse for Self-Instructional Language Materials operated by the Education and Research Program of the Center for Applied Linguistics.

In the spring of 1967, abstracts of selected documents from this list will appear in a monthly bulletin published by the U.S. Office of Education. Copies of these documents will, for a nominal fee, be available in the form of microfiche or hard copy from Bell and Howell Company, ERIC Documentation Reproduction Service, Micro-Photo Division, 1700 Shaw Avenue, Cleveland, Ohio, 44112. In the meantime, all users of this bibliography are requested to cooperate with ERIC by sending relevant new material to: Adam G. Woyna, Project Manager, ERIC Clearinghouse for Linguistics, 1717 Massachusetts Avenue, N.W., Washington, D.C., 20036.

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1. PROGRAMMED INSTRUCTION

1.1. General References


Many of the papers are in English, including several on the state of programming activities and program use in different countries.


Discusses problems in present status of use of programmed instruction and offers possible approaches for solutions.


A collection of readings on programmed instruction, emphasizing the relationship between the psychology of learning and programmed instruction. Includes groups of papers on such subjects as stimulus factors, response mode, individual differences, and the function of knowledge of results in programmed learning. Also has several papers on the evaluation and use of programs in the schools.


A useful introduction to programming and teaching machines, which includes pictures and descriptions of several kinds of program presentation devices. Different chapters deal with program objectives, programming techniques, and a number of problems in program construction and evaluation. Also includes, in an appendix, Fry's detailed list of program characteristics, "Classification of variables in a programmed learning situation."


The successor volume to the Lumsdaine and Glaser book listed below, with papers on program development and research since 1960.


A collection of articles in the field of programmed instruction and computer-assisted instruction, with special sections on language laboratories and curricular considerations. Includes a list of available programs and university computing centers.

A very brief, clear summary of the field of programmed instruction.


Includes reprints or abstracts of most of the papers written on programmed instruction to 1960, including a number that are not available elsewhere.


A clearly written, useful introduction to programs and programming, organized in order of the steps taken in constructing a program. Meant to be used as an introduction both for those who plan to write programs and for those who wish to become familiar with programming methods in order to make effective use of programs written by others.


A program on programming. Discusses and utilizes linear, branching, and other styles of programming and includes a section on program editing, containing a number of practical problems for the student to work out. [The author is active in program writing (Dr. Markle has also written the junior high school vocabulary development program, *Words*, and other programs) and in the general field of programmed instruction.]


A collection of papers representing current theory in the field of programmed instruction.


A discussion of the application of the principles of programming to the analysis of complex intellectual behaviors and the development of techniques for shaping these behaviors from simpler ones.


There two papers by B.F. Skinner were central to the beginning of widespread interest and activity in programming in the past decade.


An examination of programs, programming principles, and teaching machines of different degrees of adaptability, in their relationship to various characteristics of the learner. Includes a chapter on research findings and an extensive bibliography.


Guidelines for program writing, developed by one of the most active program publishers.

1.2. Lists of Available Programs


Programs, '63, a list of 352 programs available at that time, gives information on publisher, price, program format, and other program characteristics, and includes a sample page or pages for each program.

This is a supplement to Programs, '63, cited above.


A collection of descriptions of existing programs in foreign languages, English as a foreign language, English as a native language, and reading (literacy). Makes no attempt at evaluation but presents information as to terminal objectives, student level, related research reports, etc. Supplements and revisions appear as necessary.


Lists individual programs and information on their cost, publisher, availability, etc., though no samples of programs are included. Also has information on publishers and program presentation devices. Supplements to this bibliography are issued periodically.

1.3. Reviews of the Literature and Research


An annotated bibliography including books, monographs and reports in fields relating to programmed instruction.

Holland, James G. Research on programming variables. In R. Glaser, ed. Teaching machines and programmed learning, Volume II: Data and directions, [Listed above, sec. 1.1.]

A review of the research on programming variables written by a colleague of B.F. Skinner's and the co-author with Skinner of the program, The analysis of behavior.

Summarizes published Soviet literature on programming activities and teaching machines, including reports on several foreign language programs and presentation devices. Includes bibliography of Soviet literature in the field.


Includes, in addition to the annotated bibliographic listings, an introduction summarizing the results of research on different program variables.


Reviews and summarizes the research on programming variables and the studies comparing programs with other methods of instruction. Also includes a discussion of trends and problems in the field of programming, as well as a bibliography.

1.4. Program Evaluation.


A comprehensive treatment of programmed instruction including an introductory section, guide to selecting a program, and a method to evaluate a program.


The 1962 Interim Report on the Joint Committee on Programed Instruction and Teaching Machines established by the American Educational Research Association, the American Psychological Association, and the Department of Audio-Visual Instruction, NEA. Provides guidelines for program selection by teachers and others not closely familiar with programmed instruction. Has been printed in a number of journals concerned with education.

This is a report of the Joint Committee, incorporating suggestions for program evaluation and review and for the reporting of program use data.


Provides recommendations for evaluating the effects produced by a given program.


Suggests information to be included and guidelines to be followed in preparing manuals for teachers and other users of programmed materials.


Gives recommendations for documentation of the effectiveness of programmed materials.


A list of questions to be asked by the reviewer of a program, illustrated by utilizing them in a review of A Programed Introduction to Linguistics, by Cynthia D. Buchanan.


"The attempt is made here to discuss major issues in a sufficiently simple, non-technical manner to be intelligible to the seriously interested nontechnical person concerned with program assessment, either as user or producer, while also trying to identify some of the more important technical problems involved." (p. 267-268).

"Twelve educators were asked to predict the effectiveness of seven self-instructional arrangements of anthropological information from simple inspection of the programs. The rank correlation between these predictions and observed effectiveness was -.75."[Journal abstract].

A replication of Rothkopf's experiment and a discussion of the significance of the results of both experiments can be found in the following: Markle, Susan M. It figgers. *NSPI Journal*, 1965, 4(2), 4-5.


Stresses the danger of unduly restricting programmed instruction by the adherence to rigid evaluative criteria based on presently available programs. Also emphasizes the need for basic research in the field and the importance of fitting programs into broader educational systems.


A series of suggested questions to be used by a program reviewer in discussing different features of a program. The NSPI Journal, in which the checklist appears, is attempting to publish one or more program reviews in each issue. The checklist also appeared in the December 1963 issue of the same journal.

2. Programmed Foreign Language Instruction

2.1. General Papers


A summary for foreign language instructors of the field of programmed instruction, with particular reference to problems of programming foreign languages. Includes extensive samples from two language programs, a list of research projects in progress, and a selected bibliography.

This paper is divided into two major sections: a general introduction to programmed instruction; and the application of programmed instruction to the teaching of foreign languages, including comments on several of the foreign language programs available, and a discussion of some problems faced in the development of programs and the use of programs in the schools.


This paper, written by a Skinnerian psychologist, includes a survey of the psychological and linguistic research on a variety of problems related to programmed instruction in foreign languages, such as discrimination training. The discussion is divided into two sections in which Lane, following Skinner's formulation, treats formal repertoires (in which the stimulus and response are directly related in a one-to-one fashion) and thematic repertoires (corresponding more closely to the ability to form meaningful utterances). A table summarizes available programs in foreign languages, characterizing them in the terms of this theoretical outlook. Also includes an extensive bibliography of research relating to programmed instruction in foreign languages.

2.2. Programming Principles, Research, and Development.


Report on the development and use in the Denver public schools of a program for teaching Spanish reading and writing to sixth grade students who had already completed a year of audio-lingual instruction in the language.


A discussion and summary of some of the work of the Denver-Stanford project using programmed texts in conjunction with televised Spanish instruction in the Denver public school system.

Describes equipment and procedures used in research on developing branching foreign language programs.


A report on the use of the Audio-Lingual Language Programming Project (ALLP) Spanish and Russian programs with twelve Arlington high school students in a summer session course.


Discusses development and usage of self-instructional program in 'neglected languages' designed to "lay foundation in oral competence... roughly equivalent to the first three semesters of formal instruction elsewhere."


Describes research with the Speech Auto-Instructional Device (SAID) at the University of Michigan.


A report on Carroll's development and use of a Mandarin Chinese program with his language program presentation device called the Audio-Visual Instructional Device.


The "Grafdrils" were developed from the Phonetic Script section of the Modern Language Aptitude Test and used in several experiments comparing their effectiveness with that of other methods of teaching the writing of Arabic script.

"Compares performance on MIA-Cooperative Tests of two groups of college students, one using Ellert program."


Supplementary report based on data gathered and reported in Modern Language Journal (listed above). Offers additional comments on results and plans for future research.


This paper, and those by Julyan Watts and Jerome B. White listed below, deal primarily with the development of four EFL programs by General Programmed Teaching Corporation-Europe for publication by Encyclopaedia Britannica. Egli's paper discusses the choice of content for the programs.

Estarellas, Juan & Regan, Timothy F. Effects of teaching sounds and letters simultaneously at the very beginning of a basic foreign language course. Unpublished paper. Department of Languages and Linguistics, Florida Atlantic University, 1965.

Gives the results of an experimental use of Professor Estarellas' Spanish program, From Sound to Letter.


A discussion of three experiments involving the use of a semi-automatic teaching machine for instruction in German and Vietnamese. Effects of reinforcement are discussed.


Detailed account of use of programs in four schools and implications for programmed instruction in general.

"To meet the need for a short, self-instruction tactical language course in a Far Eastern tonal type language of potential military significance, a course in Mandarin Chinese was developed, by adapting the methods described in Subtask CONTACT II... (Russian). The purpose of the course was to enable combat soldiers to acquire perishable tactical information from newly captured POWs. The course was programed in the format of the Russian model with a major change in the addition of tone-discrimination and tone-production lessons."


Discusses development of language programs in Greek, Latin and French using the New Testament as text material.


Discusses some of the principles of programming in relation to the programming of foreign languages, particularly English as a foreign language.


This is one of several publications by Fernand Marty about his development of Active French: Dialogues and Active French: Foundation Course. Discusses the programming principles he followed, some of the techniques used, and gives a description of the course materials developed to that time (these have since been revised).


Includes a statement of Morton's programming principles and a description of his 1953-54 experiment in elementary Spanish instruction at Harvard, which formed the basis, in content and procedure, of the ALLP Spanish program. Provides an introduction to Morton's work and that of the Audio-Lingual Language Programming Project.

A selection of papers presented at the April 1961 conference held at the University of Michigan. Includes papers by most of those active in foreign language programming at the time, several of whom have not published elsewhere. The most complete account of the field of foreign language programming in 1960-61.


Report of the use of Morton's ALLP Spanish program at Lindenwood College during the academic year 1964-65.


A detailed report on Mueller's use and revision at the University of Akron of the French program he developed under the Audio-Lingual Language Programming (ALLP) Project directed by F. Rand Morton.


The second report on Mueller's revision and use of the ALLP French program.


Compares performance of college students using F. Rand Morton's Revised ALLP French Program with that of students taught by traditional methods.


Describes use of ALLP French Program to retrain teachers taught by traditional methods.

On the development of a multi-media system for teaching foreign languages (Spanish) to elementary school students, emphasizing instruction in listening comprehension and a general audio-lingual approach.


A report of research conducted by System Development Corporation, in which a published Spanish program was used with seventh-grade students and systematically revised on the basis of student performance in order to increase the program's effectiveness. A series of remedial branches and fast tracks for the various language skills were developed, and students assigned to different branches on the basis of diagnostic tests administered at intervals through the program sequence.


Describes use of programmed instruction in four different situations: self-instruction; supplement to course; extra learning for marginal students; and research on an experimental basis.


A report on the development of the Contact I prototype program for teaching a limited amount of Russian for frontline questioning to members of the armed forces.


A discussion of some principles of program evaluation and a report on the final evaluative testing of the Contact II Russian program. These reports of the research on the development of the HumRRO Contact Russian and Chinese programs are summarized and updated in the following papers.


"To enable the combat soldier to obtain perishable, tactical information from newly captured prisoners of war, a brief, self-instructional Russian language course was developed and evaluated. Materials obtained from questionnaires administered to combat-experienced personnel were reviewed and refined, resulting in a final version of course content that covered areas of information likely to be used in any offensive or defensive questioning situation... The structure and questioning techniques seem effective in helping to elicit understandable answers from non-English-speaking personnel and may serve as a basis for development of similar courses in other languages."


Dr. Saltzman is an experimental psychologist active in foreign language programming. This paper discusses some of the research undertaken by Saltzman and his colleagues in developing their program, Beginning Russian.


A detailed report on the content, development, and underlying principles of the entirely self-instructional, one semester introductory Russian course being prepared by Saltzman and others at Indiana University.


Comparison of Ellert German, Sapon Spanish and Saltzman Russian programs in adult education courses.

Sapon, Stanley M. Programmed learning and the teacher of foreign languages. In the Final Report of the Seminar in Language and Language Learning, Department of Romance Languages and Literatures, University of Washington, 1962.

A brief discussion of some problems and issues in the development of foreign language programs and the training of foreign language teachers.

A report of an experiment to determine whether the presence of a written text and the use of translation at the start of foreign language instruction impair or facilitate learning of different foreign language skills, and the effect of different orders of presentation of translation and untranslanted materials on learning. The students were taught spoken Japanese, using a text printed in a modified phonetic script.


A description and report on Schaefer's German vocabulary program, in which an increasing number of German words and structures were substituted for English ones in Poe short stories. A discussion of the same research appears in the report of the Berlin Conference. [Listed above, sec. 1.1.]


See also the papers by Barcus and others on the research conducted by the Stanford University Institute for Communication Research and the Denver Public Schools.


An evaluation of progress made by average high school classes using Valdman's SEF materials.


A laboratory experiment on the learning of word order in a foreign language, comparing learning from pattern drills with learning of vocabulary plus grammar. Three types of Russian sentences and eleven form-classes of Russian words were used for the experimental material. (Note: This supersedes the earlier Progress Report, February 1965.)

TMC-Field tests, Some representative annotated case studies of the use of TMI-Grolier programmed materials during the 1961-62 school year.

Discusses several cases of use of programs for experimental purposes including one project (Case study IV) using the TMC Basic Spanish with 4-7th grade students.

Discussion of the content and use of the Multiple Credit Elementary French (MCEF) program developed by Valdman, Belasco, and Cintas at Indiana University.

--------. *The implementation and evaluation of a multiple-credit self-instructional elementary French course*. Final report to the U.S. Office of Education on research conducted under Contracts No. OE-4-14-009 and OE 5-14-002.

A report on the development and use at Indiana University of Valdman, Belasco and Cintas' MCEF and SEF programmed three-semester college French course.


This paper, like those by Elgi and White, describes the development of the GPTC-EB programs in English as a foreign language, Watts being primarily concerned with developmental testing of the programs. He includes a discussion of a formula for figuring pre-test to post-test gain scores, based on the ratio of actual gain to maximum potential gain.


This paper, like those by Egli and Watts, focuses on the development of the GPTC-EB EFL programs. It also includes some general remarks on foreign language programming and discussion of the other language programs developed by GPTC.

2.3. Reviews of Programs and Publications.


--------. *Sorcerer's apprentice at large*. *Contemporary Psychology*, 1964, 2, 188-90

A review of *Writing Russian Script*, by Irving J. Saltzman.

3. **Programmed Instruction in Reading and Literacy Training.**


Discusses development of one phase of English program to be used with Mexican and Yaqui students in Guadalupe. Some preliminary data is presented.

Brethower, Dale M. *Classroom management of a reading program: The teacher's role.*

Analyzes the role of the teacher using the *Michigan Successive Discrimination Language Program.*


Progress report of ten experiments using programmed instruction with tutoring to teach beginning reading to retarded children, slow learners and normal children.


Discusses present status and future plans for the use of programmed reading instruction at the elementary school level.


Report of research on use of *English 2600* and *English 3200* with high school students.

Reid, James M. *An adventure in programing literature.* The English Journal, 1963, 52(9), 659-673.

Describes the author's efforts in writing and testing programmed instruction in poetry and reading.

Although the report is not primarily concerned with programmed instruction, some possible applications of programming to literacy teaching are discussed in it.

Markle, Susan M. Programed instruction in English. In R. Glaser, ed. Teaching machines and programmed learning, Volume II: Data and directions, 546-583. [Listed above, sec. 1.1.]

Discussion of the feasibility of using programed materials for teaching English and brief review of some of the existing English programs.


Describes research on reading instruction utilizing computer-based typewriter.


A review of several reading programs and suggestions for teachers contemplating using them.


Includes summaries of several research projects relating to programmed reading instruction.

Silberman, Harry F. Reading and related verbal learning. In R. Glaser, ed. Teaching machines and programmed learning, Volume II: Data and directions, 509-545. [Listed above, sec. 1.1.]

Review of studies relevant to use of programmed materials for reading instruction.

These two papers describe the reading method and materials developed by Dr. Woolman for use with culturally deprived adolescents, and deprived or retarded young children. Some of the materials, entitled Reading in High Gear, are published by Science Research Associates.

4. Computer-Assisted Instruction (CAI) and Language Teaching


Basic book on computer-assisted instruction. The book contains several articles and is divided into three sections: Theory and experimentation in programmed learning; Computer-based instructional systems; and Computer technology in automated teaching.


Discussion of current status and problems of use of computers with programmed instruction.


Brief description of the major computer systems and projects using them for teaching purposes.


Describes a course designed to teach a reading knowledge of German, using a digital computer (IBM 650).


Describes a paired-associate drill phase of a computer-based German program.

Discusses a CAI system to teach formation of verb phrases in English which allows branching on the basis of responses constructed by the student.