OE FORM 6000, 2/69

ERIC REPORT RESUME

ERIC ACC. NO. ED 034 909				IS DOCUMENT COPYRIGHTED?	YES ☐ NO ☒

CH ACC. NO. AA 000 474	P.A.	PUBL. DATE Dec 69	ISSUE RIEMAY70	ERIC REPRODUCTION RELEASE? YES ☐ NO ☒ LEVEL OF AVAILABILITY I ☒ II ☐ III ☐

AUTHOR

TITLE
Exceptional Children Conference Papers: Curriculum, Methods, and Materials in Early Childhood Education Programs.

SOURCE CODE FGK19725	INSTITUTION (SOURCE) Council for Exceptional Children, Arlington, Virginia

SP. AG. CODE	SPONSORING AGENCY

EDRS PRICE 0.75;8.85	CONTRACT NO.	GRANT NO.

REPORT NO.	BUREAU NO.

AVAILABILITY

JOURNAL CITATION

DESCRIPTIVE NOTE 175p.; Papers presented at the Special Conference on Early Childhood Education, New Orleans, Louisiana, December 10-13, 1969.

DESCRIPTORS *Exceptional Child Education; *Early Childhood Education; *Curriculum; *Educational Programs; *Early Experience; Visually Handicapped; Speech Handicapped; Speech Therapy; Cerebral Palsy; Sequential Approach; Preschool Children; Curriculum Development; Classroom Observation Techniques; Student Behavior; Student Evaluation; Parent Participation; Cleft Palate; Conference Reports

IDENTIFIERS

ABSTRACT Thirteen papers on early childhood education are presented on the following topics: stimulation and cognitive development of infants and younger children, curriculum development for young handicapped children, a rationale for sequencing instructional activities for preschool handicapped children, observation of educational activities and children's behavior in a nursery school, materials and procedures for assessing cognitive development in preschool children, a preschool program for young cerebral palsied children, the British Infant School Program, the program of the Human Development Training Institute (San Diego), two papers on the young visually impaired dealing with age ranges from birth to 3 years, and 3 to 6 years, and a service for parents and visually handicapped preschoolers in a metropolitan area. Also included are discussions of a demonstration project of speech therapy for preschoolers with cleft palate and new techniques in speech therapy for young children. (RJ)

OE FORM 6000, 2/69

ERIC REPORT RESUME

ERIC ACC. NO. ED 034 912				IS DOCUMENT COPYRIGHTED? YES ☐ NO ☒

CH ACC. NO. AA 000 477	P.A.	PUBL. DATE Sep 69	ISSUE RIEMAY70	ERIC REPRODUCTION RELEASE? YES ☐ NO ☒
				LEVEL OF AVAILABILITY I ☒ II ☐ III ☐

AUTHOR
Blosser, Patricia E.

TITLE
Science Education Information Reports, Occasional Paper Series, Science Paper 1, Inservice Education for Teachers of Secondary School Science.

SOURCE CODE RUF67410	INSTITUTION (SOURCE) Ohio State University, Columbus, ERIC Information Analysis Center for Science Education
SP. AG. CODE	SPONSORING AGENCY

EDRS PRICE 0.25;2.75	CONTRACT NO.	GRANT NO.
REPORT NO.		BUREAU NO.

AVAILABILITY

JOURNAL CITATION

DESCRIPTIVE NOTE
53p.

DESCRIPTORS

*Inservice Teacher Education; Program Descriptions; *Research Reviews (Publication); Research Needs; Research Utilization; Secondary School Science; *Science Teachers; Science Institutes

IDENTIFIERS

ABSTRACT

This paper is the first of a series of occasional papers to be released through the ERIC Center for Science Education designed to report to the profession on various aspects of science education. The author reviewed three document types dealing with inservice education for secondary school science teachers. These were (1) published descriptions of inservice programs, (2) evaluative reports and studies of inservice programs, (3) research studies relevant to inservice education for science teachers. The documents reviewed were all published since 1960. The reports and studies reviewed can be classified into four general groups: National Science Foundation (NSF) institute programs, locally developed programs, cooperative college-school programs, and research and/or evaluative studies. The author summarized the studies reviewed and made some recommendations on the topics of (1) local inservice programs, (2) teacher attitudes, behaviors, and characteristics, (3) areas of needed research, and (4) research designs and evaluation. (RR)

SCIENCE EDUCATION INFORMATION

REPORTS

OCCASIONAL PAPER SERIES - SCIENCE
PAPER 1 - INSERVICE EDUCATION
FOR TEACHERS OF SECONDARY SCHOOL SCIENCE

by

Patricia E. Blosser
Research Associate
ERIC Center for Science Education

September, 1969

SCIENCE EDUCATION INFORMATION REPORTS

The Science Education Information Reports are being developed to disseminate
information concerning documents analyzed at the ERIC Center for Science
Education. The Reports include five types of publications. General Bibliographies
are being issued to announce most documents processed by the Center for Science
Education. These bibliographies are categorized by topics and indicate the
availability of the document and the major ideas included in the document.
Special Bibliographies are being developed to announce availability of documents
in selected interest areas. These bibliographies will list most significant
documents that have been published in the interest area. Guides to Resource
Literature for Science Teachers are bibliographies that identify references for
the professional growth of teachers at all levels of science teaching. This
series will include six separate publications. Occasional Papers will be
issued periodically to indicate implications of research for science and
mathematics teaching. Research Reviews will be issued to analyze and synthesize
research related to science and mathematics education over a period of several
years.

The Science Education Information Reports will be announced in the SEIAC
Newsletter as they become available.

Occasional Paper Series - Science

The Occasional Paper Series (Science) is designed to review literature related to specific topics or educational programs related to the teaching and learning of science. The papers are designed to present extensive reviews and discussions that can not be presented in journals because of the length of the papers.

We hope these papers will provide ideas for implementing research, suggestions for areas that are in need of research, and suggestions for research design.

The availability of the documents utilized in developing the paper are listed in the bibliography. If you are not able to obtain a document, you may contact this Center for assistance.

<div align="center">
Robert W. Howe
and
Stanley L. Helgeson
Editors
</div>

INSERVICE EDUCATION FOR TEACHERS OF SECONDARY SCHOOL SCIENCE

INTRODUCTION

This paper is another in a series of reports to the profession concerning various aspects of science education. It is designed to supplement the previous review of research on preservice education for secondary school science teachers (12).

Inservice education is defined, in the Encyclopedia of Educational Research (34), as consisting of "all school-personnel activities which are designed to increase professional competence." This report is limited to three broad topics: published descriptions of inservice programs, evaluative reports and studies of inservice programs, and research studies relevant to inservice education for science teachers. In addition, a final section of the report contains recommendations for the improvement of inservice education programs and activities. The materials reviewed for this paper are limited to those studies, reports, and articles published since 1960.

In a previous review of research (12), the statement was made that science educators have assumed that the prime concern of preservice programs should be that of producing an effective, competent teacher who can help children learn. This same concern carries over into inservice programs and activities. It has been suggested that no sharp distinction be made between preservice education and inservice education. Instead, the two should merge as "continuing education" (54, 66). The fact that preservice education can provide the teacher with only the basic tools and skills of teaching means that inservice education is of primary importance in attaining the goal of producing individuals who can provide maximum learning opportunities for students.

The major emphasis in inservice education for science teachers has been on improving the teacher's background in science content and/or up-dating this information. There are problems in addition to the rapid obsolescence of subject matter knowledge and skills. These might be enumerated as (2) the proliferation of educational hardware, (3) the fluid but apparently evolving state of learning and instructional theory, (4) the advent of new educational tasks, such as education of the disadvantaged, (5) a growing necessity for global awareness, (6) the acceleration of school reorganization, (7) the increasingly evident consequences of teacher misassignment, and (8) the problem of teacher drop-outs (66). All of these problems carry implications for a broader perspective of inservice education activities for secondary school science teachers.

PROGRAM DESCRIPTIONS

This portion of the paper contains program descriptions and reports of inservice activities. These range from locally initiated and developed programs through those of curriculum projects and commercial publishers. Programs

funded by the National Science Foundation (Inservice Institutes, Summer Institutes, Academic Year Institutes, Cooperative College-School Science Programs) are also included.

Cooperative College-School Science Programs (National Science Foundation)

An overview of the NSF Cooperative College-School Science Programs may be obtained by reading articles such as the one which appeared in the March, 1968, issue of School Science and Mathematics (55). In it were listed 81 grants to help school systems improve science and mathematics courses and curricula. Most of these concentrated on a specific discipline although some were oriented toward introducing new curriculum materials.

Higgins and Boyer (38) reported on a cooperative project involving The University of Texas and the San Antonio Independent School District. This project was designed to improve the teaching of earth science. Two geologists, one science educator, and four eighth grade science teachers served in an advisory capacity one summer to develop curriculum materials. Inservice workshops, held at the end of the school day, were conducted on a biweekly basis, with 51 teachers participating. The teachers carried out 30 student experiments. The feedback which they provided was used to revise the materials.

Another program, also financed by a Cooperative College-School Program grant, was aimed at modifying biology curricula to be used with a multiracial student population (5). This project involved a semimonthly inservice teacher training program. Behringer conducted a study, in conjunction with this project, to determine if the program of curriculum differentiation and teacher training was effective in providing for the need of different levels of student ability. Effectiveness was measured in terms of student achievement. Gains in learning were significant for all groups.

These inservice programs took place during the academic year. The teachers participating in them were involved in this work in addition to their usual teaching duties and activities. A different kind of NSF-funded Cooperative College-School Science Program was that investigated by McCormick (49). The purpose of this study was to develop an innovative inservice program which would provide high school biology teachers with (1) an increased understanding of the processes of science and (2) the necessary skills for including these processes in their teaching.

A ten week program was developed. In the first phase, 31 high school biology teachers investigated ecology, concentrating on principles and concepts. During the second phase, each of the participating teachers supervised a similar ecological investigation by one of his students. Both teachers and students submitted their findings in the format of a scientific paper.

The effectiveness of this experimental program was assessed by onsite visits in the fall and a survey-questionnaire in the spring. Twenty-two teachers

(2)

responded to the questionnaire. Eighteen teachers were using the outdoor laboratory in their teaching. Fourteen outdoor laboratories were in use for the first time. Fifteen teachers were using the outdoor laboratory for entire classes and four teachers were using the outdoor laboratory for general science classes. Twice as many students were involved in independent study as during the previous year. It would appear that the experimental program had resulted in modifications, in teaching by the participants, in the direction desired by the developers of the inservice program.

Traveling Science Demonstration Lecture Program (National Science Foundation)

Another approach to the problem of inservice education for classroom teachers is the traveling science demonstration lecture program. A study reported by Bogen (13, 14) described a program, originated at The University of Oregon, involving classroom teachers trained as demonstrators.

These demonstrators were provided with equipment and station wagons in which to travel. They spent the academic year visiting schools from which the project had received requests for their services. The demonstrators spent approximately one week at each school visited, giving lecture-demonstrations to science classes as well as to special student, teacher, or civic groups. They also discussed science education problems with teachers and administrators.

The traveling science lecture demonstration program was evaluated through questionnaires sent to the 415 teachers visited and through another questionnaire to the 11 individuals who had served as demonstrators. The classroom teachers indicated they thought they had increased their teaching skills and techniques and had gained useful information. The reactions of the demonstrators were mixed but the favorable responses outweighed the unfavorable. The consensus was that the program was better than the usual summer institute for increasing classroom effectiveness.

Research Participation Programs

Several reports were found in which the approach to inservice education was a summer research program for science teachers [Bruce and Johnson (17), Schaefer (73), Sarner (71)]. Schaefer described a nine week summer program in which teachers were able to work in laboratories. He felt that such a program was valuable in that teachers with a background in research could aid their students in finding information. He also thought that teachers with research experiences would be more effective in helping their students develop confidence that they too were capable of doing research.

Bruce and Johnson (17) reported on the teacher research program at Cornell. They felt that such a program provided teachers with the opportunity to change from being individuals who know about science to people who know what science is about. The participants in this research-oriented program carried on scientific research in their schools, involving a few of their science-oriented students. Teachers and students worked under the guidance of a research scientist who served as a consultant. The majority of the research proposals

(3)

were developed by the scientists and the projects were teacher oriented rather than student oriented. Evaluation of the program had not been completed at the time of publication of the article. The authors did, however, indicate that the subjective judgment of those concerned with the evaluation was that, as a result of their participation, both teachers and students increased in their understanding of science as a process of inquiry.

Sarner (71) reported an attempt to retrain inservice teachers to use a "critical thinking, problem solving" approach in their science teaching. These individuals worked as part of a research team on an ongoing research problem. The six week research was preceded by a week of orientation and followed by a week devoted to discussing methods of using critical thinking and problem solving in their science classes.

Summer Institutes (National Science Foundation)

The majority of the summer programs reported in the literature involved attendance at summer institutes for six to nine weeks. Some programs were designed to provide teachers with opportunities to investigate more than one science. In other programs the approach was one in which the teacher enrolled in several courses all of which were related to a particular science. For example, Mertens and Nisbet (51) described a graduate credit course in cytology which was offered as a part of a unified institute for high school biology teachers. In addition to this course, the teachers took a course in biochemistry and a third in BSCS biology.

Although most of the institute programs reported were designed for teachers of a particular science, one article contained a report of institutes for junior high school teachers of general science (78). Indiana State College personnel designed these institutes using the rationale that general science teachers usually have backgrounds in biology and chemistry but lack preparation in physics, astronomy, and geology.

For the summer institutes, the participants were divided into two groups on the basis of their scores in a biology examination. Those with high scores took astronomy. Suttle summarized the report of the activities with the statement that the participants felt the institutes were worthwhile and that many went on to do more graduate work.

Local Programs

The programs described in this paper have been of the variety that have been planned by sources removed from the local situation. It is assumed that many local programs which develop out of action-research activities within a particular school or school system never become published other than in the form of some curriculum manual or teacher's guide and therefore are not available for a more general public to analyze and review.

(4)

It may also be true that local programs receive little attention due to lack of funding. However, some local activities have been initiated under Title III.

Title III programs are of two types. Those under PL89-10 Elementary and Secondary Education Act of 1965 are sometimes referred to by the acronym PACE, Projects to Advance Creativity in Education. This provides a five-year program to stimulate innovative and exemplary programs and to support supplementary educational centers and services. Three basic functions are possible: (1) to improve education by enabling a community to provide services not now available to children who live there, (2) to raise the quality of educational services already offered, (3) to stimulate and assist in the development and establishment of exemplary and secondary school educational programs to serve as models for regular school programs. (67)

Approximately 30 proposals for funding under the PACE Program of Title III were read during the process of compiling information for this paper. At least 15 of these were investigated through telephone calls to the individuals listed as contacts for further information. Several complied with a request for further information. In most instances the programs were still in the developmental stage. Such programs are not included in this report because they are subject to further changes and also because the evaluative component of most of the programs had not been formulated in any detail.

A second type of program is that of PL85-864, National Defense Education Act of 1958 (Revised). Title III, here, provides financial assistance for strengthening instruction in critical subjects in the elementary and secondary schools. Funds may be used to pay for instructional equipment and materials, minor remodeling, and for state supervision and administration of the programs. (67)

The Bethlehem Area School District in Pennsylvania (8) published a report of a Title III funded workshop for teachers and students in nuclear science. Fifty people participated. The teachers involved gained subject matter content, practice in manipulative skills in the use of the various monitoring instruments, and experience in recording data and plotting graphs of collected data. It was hoped that participation in the workshop would change the teachers' beliefs that the cost of the equipment would prohibit student use and that the teachers would incorporate "nuclear experiences" into their existing chemistry, physics and biology courses.

Another result of work at the local level is the program of the Pacific Science Center in Seattle (62). The Center, in conjunction with the Puget Sound Arts and Sciences Program, conducts a variety of inservice training programs and workshops. It also contains a model science classroom-laboratory which is used for some inservice education activities. Although the emphasis is on workshops for the elementary school teacher, there are programs for secondary school personnel. A number of workshops provide not only the necessary background and training in new science programs but also materials which the teachers may take with them to use in their classrooms.

Junior and senior high school teachers have participated in workshops at the Center which were designed to acquaint them with the curriculum and materials involved in the Earth Sciences Curriculum Project and the Biological Sciences Curriculum Study as well as with Introductory Physical Science. In addition, secondary school science teachers were offered the opportunity to participate in a workshop on current developments in the space program and recent discoveries in astronomy.

The Science and Mathematics Improvement Project (74) that serves teachers in a five county area in Pennsylvania has been in operation for two years. During this time, college professors and high school teachers have worked together to develop a variety of inservice activities. Individuals have been involved in writing materials for classroom use, preparing kits of valley rock-types, producing and distributing a set of nine SMIP filmstrips to each high school in the region, participating in inservice programs on single school levels as well as county levels, and planning for three different programs for the 1969-70 school year. Curriculum guides in each of the major science disciplines (biology, chemistry, physics) have been developed. SMIP materials include a course called environmental science. Predicated on the judgment that typical earth and space science courses try to cover too much material, the environmental science course emphasizes looking, describing, and relating. It is composed of five major units. Teachers participating in the inservice activities involved with this course receive free credit at Wilkes College, Wilkes-Barre, Pennsylvania. There are college credit courses in the other science disciplines and in mathematics also.

The Project publishes the SMIP Newsletter. These newsletters contain information regarding materials available to teachers, as well as announcements of workshops and courses, and short articles on mathematics and science education.

Personal communication from the Associate Director of the Project provided the information that over 1500 pieces of curriculum material have been requested by area teachers. When this information was provided, in late June of 1969, 97 teachers had indicated an interest in taking the SMIP fall courses, 88 had asked for applications to the summer workshop, and five schools were planning to give their teachers released time to work with the SMIP staff on curriculum development. These facts appear to provide evidence that this project is providing necessary, useful inservice activities for teachers in the area it serves.

The Corpus Christi, Texas, Independent School District personnel worked with individuals from parochial schools, a member of the National Audubon Society, and officials from the Wilder Wildlife Foundation (21). They organized a workshop in conservation education in which teachers were able to work in the laboratory as well as in the field. The information sent the ERIC Center did not contain any description regarding evaluative activities, if any, involved in the program.

(6)

Inservice education in the Corpus Christi Schools is also accomplished through a Life Science Education Center. Personnel at the Center make arrangements with local universities for courses that fit the needs of the various school faculties within the system. The Center also makes it possible for teachers to contact and work with community resource persons such as commercial fishermen, beekeepers, and members of the humane society.

Bedrosian and Pincus (4) reported on three institutes (chemistry, mathematics, and physics) sponsored by the Newark College of Engineering Research Foundation. The material was geared for the level of college sophomores. The authors concluded that the 30 week institute did help up-date the teacher participants. More success was achieved by those teachers with adequate grounding in the fundamentals of the subject prior to enrolling in the institute than by those with minimal backgrounds.

Organization-Sponsored Inservice Programs

A science program entitled "Interaction of Matter and Energy" has been developed as a Rand McNally Curriculum Project (64). This program is considered to be a new approach to teaching physical science at the ninth grade or junior high school level. Based on an inquiry approach, it has been designed to provide a strong physical science background for students who are terminating their science study in the ninth grade as well as for those who plan to enroll in science in senior high school. Teachers who plan to use the IME Program are invited to attend "briefing sessions." During these two day sessions teachers are asked to assume the role of students as they work through the laboratory investigations and participate in the follow-up discussions. In this simulated classroom situation the writing team for the IME Program or teachers who have taught the course explain the rationale, content, technique and goals of the program.

The Educational Research Council of America is another organization that has developed secondary school science materials (25). It provides services to school systems wishing to use the ERC science programs. These activities range from half-or full-day orientation sessions to workshops lasting four or five days. Teachers who are using the materials for the first time may also attend "briefing sessions" held on Saturday mornings or after school. During these sessions a new or improved technique, a piece of apparatus, or an experiment is explained and demonstrated. In addition, teachers receive information of the how-to-do-it variety via memoranda and newsletters. Feedback seminars are also held, involving teachers who are using the ERC programs and the staff members who have developed and written the materials. The ERC personnel feel that this fluid and flexible approach to inservice education is more useful than that of providing help via an established course dealing with only predictable difficulties.

(7)

Statewide Inservice Activities

In many instances workshop participants may travel to a field studies center or to some location other than that of the school in which they teach. A different approach to the problem of inservice education was reported in a study by Kerns (43). This program was an attempt to upgrade the quality of instruction in junior high school science in Alabama through the use of the statewide educational television network. The program was initiated and developed by personnel in the School of Education at Auburn University.

The program was designed to serve five major functions: (1) to be a demonstration program for the teachers, (2) to show the teacher how his needs could be met in his own classroom, (3) to provide practical suggestions that the teacher could follow up, (4) to suggest ways by which the teacher himself could enrich his classroom work, and (5) to teach the teacher while in his classroom. Each of the in-school telecasts was designed to instruct students while also providing inservice education for the teachers. There were additional after-school telecasts for teachers only. A field conference service was established to serve as a liaison between the classroom teachers and the project.

The program was designed for teachers with little teaching experience and minimum preparation in the academic areas. The reactions of the participating teachers varied relative to their academic backgrounds and teaching experience. Kerns reported that the teachers who were relatively highly qualified in terms of formal preparation and with more experience in science laboratory work considered the time spent viewing less valuable than other teacher-selected and directed activities, indicating that the program had been produced at the intended level of sophistication. The project as a whole was evaluated in a separate study by Steele (77) which will be reviewed in a later section of this paper.

Inservice Institutes

Usually most inservice institute programs concentrate upon helping classroom teachers improve their knowledge of one or more of the sciences. A different approach to inservice education for science teachers was reported by Lavach (45). He developed, presented, and evaluated an inservice course in the historical development of physical science concepts. The course involved both lecture-demonstration and laboratory instruction. The laboratory portion consisted of replicating experiments discussed during the lecture or of conducting parallel experiments which provided experimental support for the concepts presented.

Lavach found that the 11 teachers enrolled in the program made statistically significant gains in understanding the historical development of science with respect to the topics presented in the course. They also made statistically significant gains in understanding the methods, aims and overall nature of science. The participants expressed sufficient confidence in their comprehension to include in their own teaching at least one unit from the five presented to them.

(8)

No attempt was made, as a part of this study, to follow up the participants and to investigate whether they really were using historical materials in their junior and senior high school science classes. Nor was any attempt made to determine what changes, if any, were made in the understanding of the students of these teachers.

Overview of Program Descriptions, Reports, Studies

Many of the reports of programs were limited to program descriptions. Few articles other than doctoral studies contained information relative to what procedures had been undertaken to evaluate the effectiveness of the inservice activities. It would appear that many individuals or school systems developing inservice programs or activities rely on intuitive feelings about a particular program's effectiveness. In a study such as that done by Behringer (5), effectiveness was measured, at least in part, by gains in student learning. In other instances, long term studies would need to be done in order to determine whether or not, or to what degree, an inservice program had been influential in producing a change in the students through changes in the teacher's content background or his approach to content.

EVALUATIVE STUDIES

There were a number of studies published in which the major emphasis was upon evaluation. The majority of these centered around analyses of one or a series of National Science Foundation Institutes given at a particular college or university [Jenkins (41); Heideman (37); Welch & Walberg (82), (83); Educational Testing Consultants (26), (27), (28), (29); Ward (81); Selser (75); Steele (77); Wittwer (85); Milliken (53); Horner (39); Martinen (48); Gruber (32); Brekke (16); Berger & Berger (6).]

Beginning in the 1950's, inservice, summer, and academic year institutes for teachers were developed and promoted under the auspices of the National Science Foundation. These institutes were designed to achieve the following goals:
(1) to up-date the subject matter preparation of teachers who were adequately prepared in science or mathematics when they entered the teaching profession,
(2) to provide remedial training for teachers whose undergraduate preparation was inadequate, (3) to equip teachers with specific background to teach newer curricular materials, (4) to enable teachers to study a subject in greater depth and to meet new, higher standards which might or might not entail an advanced degree, and (5) to provide advanced specialized training for individuals holding or desiring to hold positions of leadership in science education, such as science supervisors (56).

The earliest NSF institutes were of the summer variety, lasting for six to eight weeks and providing teachers with opportunities to update their subject matter background. Those institutes in operation in 1953 were for college teachers. They were followed, in the summer of 1954, by similar institutes for secondary school teachers. Academic Year Institutes, which began in 1956-57, were increased

(9)

in 1959 to include some college teachers as well as secondary school teachers. The Inservice Institute Program, begun in 1957, was similarly expanded in 1961. Summer Institutes and Inservice Institutes for elementary personnel were begun in 1959 (56).

In addition to the doctoral dissertations in which the investigator evaluated the effectiveness of a particular institute or series of institutes in terms of changes in the participants, the programs have also been evaluated by (1) analytical studies by staff members, based on reports from the institute directors, (2) statistical analyses of data accumulated from participant application records, (3) reports of visits by staff and consultants to institutes in progress, (4) group discussions at annual conferences of institute directors, (5) studies of effectiveness of particular institutes by their staff or in graduate student theses (as mentioned earlier), and (6) by contract studies by independent research firms.

It was not possible to obtain an example of each type of evaluative study to include in the materials reviewed for this report.

Evaluations of Academic Year Institutes

One study reviewed for this report was concerned with the investigation of unique features of Academic Year Institute science courses, their orientation, academic level, and successes (81). Institutions at which special courses had been offered for two or more years were contacted. Questionnaires and personal interviews were used to obtain the data. Ward found five features to be common to the special science courses offered as a part of the institute: (1) a review of basic fundamentals of science, designed to bring the participants' knowledge up to date, (2) an emphasis on materials related to high school instruction, (3) graduate credit was generally offered, (4) the material was less rigorously treated than in the usual academic science courses, and (5) the institute participants rated these courses as being of more value to them than the regular college courses in which they were enrolled.

Although the rigor of the content, such as the mathematical requirements for the courses, was less than that of the regular graduate courses, the scope of content and emphasis on fundamentals compared favorably with the regular courses. Ward suggested that since the special science courses apparently were needed by the teacher-participants, these courses might be used as possible models in the restructuring of undergraduate programs for prospective science teachers.

Heideman (37) conducted a pilot study involving 123 teachers who had been participants in the Academic Year Institutes at the University of Wisconsin from 1956-1959 to determine the effects of participation one to three years after the institute program had been completed. He was also interested in determining whether identifiable personality traits and intellectual characteristics of program participants existed, if AYI participation had affected occupational mobility, if strengths and weaknesses of undergraduate programs could be discovered through an analysis of graduate programs, and if the program at Wisconsin accomplished the objectives of upgrading the teachers and removing their academic deficiencies.

(10)

After Heideman analyzed the replies to his semi-structured questionnaire and personal interviews, he concluded that the programs had been beneficial. The participants appeared to have increased in their ability to generate new ideas, to create new teaching concepts and in their desire to try new teaching methods. They had also increased the effectiveness. This might imply the existence of a "teaching personality" which is determined by home, school, and community influences and which greatly influences teaching effectiveness. Apparently, if participation in an inservice program such as an Academic Year Institute can enhance or increase teaching effectiveness, the experience also changes this "teaching personality," if it exists.

Another evaluative study of NSF academic year institutes was done by Jenkins (41) and involved the first five institutes at The University of Utah. In addition to sending a questionnaire to AYI participants, Jenkins studied information contained in application forms and asked the staff members to react to the participants and to the program. As in the other studies cited, Jenkins found that the respondents to his questionnaire were of the opinion that they had improved their teaching or some aspects of it and that they had increased their knowledge of subject matter.

The majority of the respondents also indicated their belief that their prestige, attitudes, leadership and professional growth had improved. The majority of the staff members contacted believed that the program was satisfactory and was achieving its goals. One goal that apparently was not achieved was that of having the AYI participants influence more of their students to choose careers in science or mathematics.

Horner (39) concentrated on only one Academic Year Institute. His study was conducted to determine the extent to which the AYI at Syracuse University in 1960-61 had met four major objectives: (1) improving the subject matter comprehension of the participants, (2) improving their teaching, (3) strengthening their capacity to motivate their students to consider careers in science, and (4) increasing the motivation of the participants for continued growth as science teachers.

He involved two control groups as well as an experimental group in his study. The experimental group consisted of 23 AYI participants who returned to secondary school teaching following the program. The first control group was composed of 24 science teachers selected as alternates for the AYI at Syracuse. The second control group consisted of 13 teachers working in the same schools as the AYI participants in the year following the program. Teachers in both control groups had attended summer institutes.

Horner translated objectives two, three, and four into 16 specific objectives for science teaching. Sample objectives were (1) increased amount of time spent in the laboratory, (2) use of experiments not previously employed by the teacher, (3) change from single text or limited sources to multiple text or extensive sources, (4) increased use of problem-solving approach in the laboratory, (5) increased participation in extracurricular activities

in science, (6) increased personal subscriptions to scientific and professional science education periodicals, (7) increased membership in scientific and science education organizations, etc.

Data were gathered from personal interviews, a questionnaire, and analyses of the participants' Institute and pre-Institute academic records. The two control groups supplied information via a questionnaire.

Horner found that the participants and their supervisors felt that the AYI experiences had enabled the teachers to make considerable progress toward the 16 objectives. Both depth and breadth of subject matter competence were achieved. However, an analysis of the changes in the 31 teaching and professional activities into which the 16 objectives had been subdivided showed almost no significant differences between the performance of the Institute group and the respective control groups. Only two of the 62 comparisons showed statistically significant differences at the .05 level. The Institute group exhibited a significant increase in science and professional science education organization membership when compared with control group one. The Institute participants also displayed significantly more progress in the utilization of "open-ended" or "inductive" type laboratory experiments than did the members of control group two.

When the members of the experimental group were asked for subjective judgments, they considered participation in the program to have had a decidedly beneficial effect. Their supervisors rated the effect slightly higher than did the teachers. When the responses to the items were grouped under appropriate major objectives (listed earlier), the greatest progress was indicated toward objectives two and four, improving teaching and increasing motivation for continued professional growth.

As in other evaluative studies of the effects of institute attendance, Horner found that it appeared to enhance the participants' self-confidence as science teachers. It also appeared to influence them to place more emphasis on current happenings in science in their teaching as well as promoting increased membership in scientific and science education organizations.

Brekke (16) conducted a follow-up study on individuals who had participated in institute programs at the University of North Dakota from 1957-58 through 1961-62. He was interested in determining the effectiveness of the programs in meeting eight stated goals. These goals covered objectives promoted by the NSF projects such as strengthening content background, supplying up-to-date information, increasing the teachers' capacities to motivate their students' to pursue careers in science and/or mathematics.

He sent questionnaires to institute participants and their principals. The teachers were asked to complete a questionnaire in the fall and again in the spring to determine if they had changed their evaluations. They generally increased their evaluation of the institute's effectiveness between fall and spring administrations of the questionnaire. In the spring, they were less concerned with teaching techniques and more pleased with their growth in content knowledge.

(12)

Brekke also found that the participants of the Academic Year Institutes were more critical of the effectiveness of their programs than were those who had participated only in summer programs. The majority of the respondents felt that institute attendance had been beneficial and had resulted in increased enthusiasm for science and mathematics as well as in a desire to gain a graduate degree through further study.

The high school principals identified the institute participants as having increased subject matter competency, teaching effectiveness, and ability to motivate. They had also made efforts to improve facilities for science teaching in their schools. Both teachers and principals agreed that the least changes were made in method.

One major criticism resulting from the evaluation of the first year of the Academic Year Institute program at the University of Colorado was that the participants had not acquired the attitudes and information relevant to teaching science as a way of thinking as opposed to teaching science as a body of knowledge. Gruber (32) was stimulated by this criticism to investigate its applicability to the entire AYI program in the academic year of 1958-59.

During that period there were 15 AYI programs in the United States. Gruber was unsuccessful in obtaining information from the participants from all 15 programs but he did receive responses from 9 different institutes of varying geographic locations and academic programs. He obtained information about the background of each of the teachers participating in his study via a questionnaire completed immediately after the major task involved in the study.

Each of Gruber's subjects was asked to prepare an outline of a 20-30 minute talk appropriate for delivery to high school seniors. The topic chosen was to be one quite familiar to the teachers. These outlines were rated to determine the extent to which the teachers were concerned with presenting science as a way of thought as compared to presenting science as an established body of knowledge. Forty-three of the 202 outlines were rated by a second judge, to test the reliability of Gruber's rating system. (No information was contained in the article as to the background or position of the individuals chosen to do the rating.)

Gruber used seven variables in his study. The criterion variable was teaching science as thought. He found that the most important program characteristic in the case of those individuals receiving a rating of "strong" on this variable was the proportion of time the particular institute allotted to methods of teaching requiring the active participation of the individual in the learning process. Programs ranking high in the use of seminar and laboratory work and high in the freedom with which the participants were allowed to choose their own courses also ranked high on the criterion variable. Programs stressing lectures, tests and prescribed courses ranked low on the criterion variable.

(13)

Gruber concluded that much previous course work in science and mathematics prior to enrolling in the institute was neither a necessary nor a sufficient condition for strong performance on the criterion variable. Apparently an unfavorable AYI program could overcome a favorable educational background and a favorable program could produce good results in individuals whose previous training was less than adequate.

Gruber also concluded that (1) high school teachers generally approach science teaching as a matter of conveying science as established facts and doctrines, (2) training programs stressing passive-receptive teaching methods do little to alter this approach, and (3) training programs stressing active participation by the teacher-participants may lead to an approach to science teaching in which science is treated as a way of thought.

It would appear that the goal of teaching scientific ways of thinking through the teaching of science is still difficult to translate into some workable methodological form. However, producing students who understand science as a method of thought and inquiry is a more desirable educational achievement than producing individuals who have accumulated a storehouse of facts and information which quickly become out-dated. It would also appear that the designers of institute programs can be helped to restructure their teaching.

Evaluations of Summer Institute Programs

Some degree of attainment of the objective of having teachers increase their understanding of scientists and science was reported by Welch and Walberg (82), (83). They evaluated summer institute programs for physics teachers. These investigators decided that few experimental studies had been done relevant to whether or not teachers have been "affected" in the manner specified by stated objectives of the institute programs, i.e. does the available evidence indicate that attendance at a summer institute results in increased "subject-matter competence" on the part of the participating teacher?

Welch and Walberg measured gains in (1) knowledge of the subject and (2) general understanding of scientific methods and processes. They included four institutes in their analyses and concluded that all four did achieve the objective of increasing subject matter competency. The instrument used to assess subject matter competency was the Test on Selected Topics in Physics (TSTP).

Several institutes also achieved goals of increased knowledge of scientific processes and understanding of scientists and science, as measured by the Test on Understanding Science (TOUS) and the Welch Science Process Inventory (SPI).

The authors suggest that a study to identify the relationship of objectives and teacher activities in various institutes to the differential gains in the general understanding of science might be useful. It might be possible, through such an investigation, to establish what goals and activities lead to what outcomes.

Martinen (48) studied a series of Summer Institutes held at The University of Idaho from 1957-1964. He was interested in studying the effects of summer institute participation on teachers' educational stature, professional stature, occupational mobility, and ability to initiate curriculum change within their schools. He found that those individuals with the most extensive institute

(14)

training were the most apt to alter curricula. Those teachers with three summer's training and an advanced degree continued to initiate change at a rate greatly exceeding that of the recipients of only one summer's training. This difference was not statistically significant, however.

He also found that new units which had been added to the high school courses of study could, in most instances, be traced to the content of the curriculum offered by the NSF Institutes. When new courses were added in the secondary schools, the majority required teachers who were subject-matter specialists.

Ninety-seven percent of the individuals replying to Martinen's questionnaire indicated they had increased their subject matter competency as a result of their institute attendance. Very few, however, felt that this attendance had any influence on the positions they held although they did acknowledge that salary and certification benefits had resulted.

Milliken (53) conducted an investigation involving both summer and inservice NSF institutes offered at Kansas State College, 1959-63. He used a questionnaire to attempt to gather information regarding the significance of these institutes as evaluated by the teachers who had participated in them. He emphasized the aspects of (1) renewing knowledge of fundamentals in science and/or mathematics, (2) acquiring knowledge of recent developments and advances in science and mathematics, and (3) becoming familiar with new teaching methodology.

Milliken found that nearly all the respondents in his sample were able to renew their knowledge of fundamentals and become acquainted with recent developments and advances in mathematics and science. Institute attendance did influence respondents to make "some" changes in their teaching methods and comparable course content changes. Mathematics appeared to be the only major area in which the majority had studied the newer curricula in their institute program.

Milliken felt that it was possible that certain institute co-curricular activities contributed more concomitant information on improved methodology than did the structured curricular activities. These "co-curricular activities" appear to have been informal discussions that the institute participants held outside of class.

Evaluation of Inservice Programs

In addition to the study just cited, one other investigator was concerned with the evaluation of an NSF inservice institute. Selser (75) investigated an inservice institute designed for science and mathematics teachers in a county in Florida. In addition to investigating the effect of the institute on content knowledge and conceptual ability of teachers, he wished to determine the effect, if any, on their pupils. He set up experimental and control groups, using stratified random sampling techniques for classes involved in the study.

The teachers were given the STEP (Sequential Test on Educational Progress) in science and the TOUS (Test on Understanding Science) tests. The pupils received the STEP test in science as well as the Iowa Test of Educational Development in science. Selser found that the science teachers who participated

(15)

in the institute gained in their understanding of the nature of science and in their ability to identify and define scientific problems. The pupils of the teachers who had participated in the inservice program made significantly higher scores, at all grade levels (7, 8 and 9), on the STEP test of their ability to identify and define scientific problems. They also exceeded the scores of the pupils in the control population on the ITED test of ability to understand scientific literature, but the difference was not statistically significant at the .05 level of confidence.

Evaluation of a Research Participation Institute Program

Wittwer (85) designed a study to evaluate the effects of participation in the NSF Research Participation Program for secondary school science teachers at The University of Wisconsin. Individuals who had been in this program at some time between 1959 and 1966 were contacted for their opinions concerning the influence of this experience on employment status, subsequent academic program and professional image. Wittwer also wished to determine the teachers' success of establishing research at the high school level. The teacher-participants were also given a specially designed Science Process Inventory in an attempt to determine their understanding of the methods or processes of science. Their scores were compared with those of a comparable group of teachers who had not participated in the research program.

The professors who supervised the research activities during these programs were questioned regarding their opinions of the teacher-participants' understanding of the real nature of research and the significance of their contributions to the research discipline.

Wittwer found that participation in the research program was considered, by the teachers, to be instrumental in changes in employment for some, in a return to graduate school, in the joining of professional societies, in the reading of research journals, and in an increase in prestige among their colleagues, administrators and students. In addition, nearly all the respondents indicated increased competence, effectiveness, and self-confidence as teachers.

Approximately 60 percent of the teachers also participated in the Academic Year Extension phase of the program. This was an attempt to establish a research program in their high schools. However, more than 80 percent reported that no adjustment had been made in their teaching schedules of extracurricular assignments in order to provide them time to continue research.

The supervising professors were of the opinion that more than 90 percent of the participants had gained an understanding of the real nature of research and that nearly one-half of them had made a significant contribution to the research discipline. They also felt that almost three-fourths of the participants had made a significant contribution to the output of the professors' laboratories.

The teachers who had participated in the research program scored significantly higher on the Science Process Inventory than did a comparable group without research experience. On the basis of this and other data

(16)

he collected, Wittwer concluded that the research experience program was a worthwhile addition to the education of secondary school science teachers, if the objectives of the program are accepted as valid. These objectives were (1) to provide activities and responsibilities meaningful in terms of research in science or mathematics, (2) to enable the teacher-participants to generate tangible research results, and (3) to develop in these individuals understanding of the methods or processes of science.

Evaluation by Independent Research Firms

The investigation by Berger and Berger (6) cited at the beginning of the "evaluation" section of this paper will be discussed in the "research" section that follows. This study and a series of studies done by Educational Testing Consultants for the Academic Year Institute programs at The Ohio State University (26-29) were the only reports identified as having been done by independent research firms.

The investigations conducted for The Ohio State programs involved the participants during the time they were enrolled in the program as well as follow-up studies a year later. The spouses of the participants were also questioned as were the school administrators who hired the participants. The investigators found that the teachers tended to rate the benefits of the program somewhat lower after a year had elapsed than they had originally. No attempts appeared to have been made to determine the cause of this change in evaluation. The principals were well pleased with the program as it was reflected in the teaching behaviors of the participants. Many principals had given these teachers increased professional responsibility as well as limited financial rewards.

Other Evaluation Studies

Steele (77) based his doctoral dissertation on the evaluation of a statewide inservice television project conducted in Alabama. Evaluation was conducted by (1) field conference workers who cooperated with the other members of the research team, (2) preservice science teachers, and (3) teachers, teaching principals, and the general science students involved in the project. Several different techniques and instruments were used, including (1) descriptive analysis, (2) field observations, (3) interviews, (4) questionnaires, and (5) rating scales.

Steele found that (1) 70 percent of the teachers involved felt that they had become better overall teachers of general science, (2) 58 percent felt their general relations with their science students had improved, (3) 45 percent felt that the television project had resulted in changes in their methods of teaching, and (4) 39 percent felt that the experience had resulted in changes in their philosophies of teaching.

The project was limited by the small number of personnel involved and was also hampered by lack of television sets, poor reception of the television picture, and difficulties in scheduling the viewing times.

Steele concluded that sufficient knowledge had resulted from this study to be used in developing and establishing more productive methods of telecast inservice activities. He suggested that a need might exist for the establishment of an office of television services which could function under the general

(17)

direction of the Office of Field Services of the School of Education so that the cooperative relationship between the college and the public schools could be maintained.

Other types of evaluation administered to inservice programs have not been so elaborate as those in Steele's study. A great deal of evaluation in the nationally-funded course content improvement projects appears to be of the informal feedback type. Much of the information included here was gleaned from newsletters published by the various projects or from individuals intimately connected with the various projects who were personally contacted and asked to supply information relative to the evaluative activities being conducted in the inservice component of these programs.

All of the individuals contacted agreed to cooperate and did send information (63, 79). This information consisted largely of copies of comments made by participants of workshops and other activities. Comments ranged from "Great--invite me back again next summer!" to "Chairs in the lecture room too hard." In some instances specific criticism and suggestions for improvement were made relative to lecturers, topics and activities. Little information was received concerning any evaluative instruments that might have been used in a pre-and post-test design or even as a post-test only for the various activities.

Information culled from reading the newsletters issued by the curriculum projects was of a general nature, also. Issue #7 of the Earth Science Curriculum Project Newsletter contained an article on the ESCP program of objective testing. It was stated, in April 1965, that students would be given tests to determine their academic aptitude as well as tests to measure their background of scientific information. A special test, the Test of Scientific Knowledge (TOSK), was designed by the ESCP staff and the Psychological Corporation. The first part of the test, 60 items, is designed to measure specific information from the physical and natural sciences and covers terms, definitions, relationships, etc. The second part, 50 items, is designed to measure the student's grasp of scientific principles, methods and procedures.

The testing program was to include teachers and students involved with ESCP and also a control group of 21 teachers and their ninth grade students. The analysis of test results was scheduled to be published in the summer of 1965. However, no subsequent analysis was located.

Two other curriculum project groups, the Biological Sciences Curriculum Study (9) and the Chemical Education Materials Study (19) publish newsletters. These newsletters, like those of the ESCP project, cover items of general interest to teachers in the specific sciences and contain announcements of institutes being offered that relate to the particular project. The various project staffs send out questionnaires from time to time and report on the results of these in the newsletters. These questionnaires cover such topics as teacher preparation, enrollment surveys for a particular subject, and reactions to the project materials.

Harvard Project Physics (35, 36) also publishes a newsletter and a teacher's newsbrief. Rand McNally publishes a newsletter related to the course entitled Interaction of Matter and Energy. These publications usually are issued on a quarterly basis and provide their readers with information about ongoing activities of the project group as well as serving as a forum for expressing opinions and issues in science teaching.

In addition, the Harvard Project Physics Course staff has issued an interim report relative to the evaluation component of the program (1). This component involves several types of activities: (1) feedback from teachers and students which is used for course improvement while the material is being developed, (2) evaluation of what changes have taken place in students for the information of potential users of the course, and (3) basic research in education.

The feedback began during the school year of 1964-65. It consisted of such things as analysis of items on the achievement tests designed for the course, student ratings of the effectiveness of communication and of the difficulty of the chapters and experiments, analysis of the density of the new concepts, and extended discussion with teachers at regional conferences.

User information and basic research activities appeared to be carried out in parallel form. While the course improvement phase of the project was essentially completed in 1967, the other two components continued to operate. A pilot study took place in 1966-67 and a full scale experimental study was conducted in 1967-68. The purpose of the investigation was to describe what happens to different kinds of students in different kinds of classes.

Teachers whose students were involved in the study were chosen by random selection from a list of high school physics teachers compiled by the National Science Teachers Association. In the group agreeing to participate in the study, teachers were assigned to experimental and control groups by use of a random number table. The study involved pre-and post-test batteries as well as a group of tests given only once, at mid-year. Additional data were collected at the end of the year.

This research involved the use of standardized tests, such as the Test on Understanding Science, the Henmon-Nelson IQ Test, the Allport-Vernon-Lindzey Study of Values, and a Biographical Inventory. Several test instruments were developed for the study. A student questionnaire and a semantic differential test designed to assess student attitudes serve as examples.

At the time the interim report was issued, in February 1969, the data were still being analyzed. However, two documents are scheduled for publication within a year. One will be a relatively technical report of the evaluation program. The other will be a more popularized summary of the results.

From the analyses of available results of the three tests: TOUS, the Physics Achievement Test (PAT), and the Science Process Inventory (SPI), Ahlgren has concluded that: ". . .on the average, Project Physics students scored higher on these three tests than they would have had they been in the control group classes."

(19)

In addition to considering student achievement, the study was concerned with interest in physics. The several independent measures of interest all show similar results: a decrease in interest. Nevertheless, even at the end of the year interest in physics tended to be high. In addition, several studies in other subject areas such as foreign language and astronomy have shown a similar loss in interest by the students involved.

Some Summarizing Remarks about Evaluation of Inservice Programs

If one agrees with the assumption that the true test of the effectiveness of an inservice program is in the changes made in the teachers which then become evident in their students, it would seem that more investigation needs to be done in this area of evaluation of both teachers and students. Although some work on evaluation is being done, the problem of determining the effectiveness of inservice activities still remains. Based on available information, several inferences can be made: (1) a formally designed evaluative component has not yet been built into all inservice programs, regardless of whether the inservice activities exist by themselves or in conjunction with a curriculum project, (2) the evaluative part is in the process of being established and the results will be available at a later date, or (3) evaluation exists but the information gathered is not available for public scrutiny for reason or reasons unknown.

It would seem that if a curriculum program is worth time and money to design and implement, it is also worth careful evaluation of effectiveness and particularly of the effectiveness of its inservice activities. It is unlikely that the most carefully planned and well-written curriculum project can ever be fully effective if the classroom teachers using the equipment and materials do not understand and subscribe to the philosophy underlying the program. Is having a grasp of the content involved sufficient to guarantee that the course will result in more than a change of textbooks and the schedule of assigned topics? It seems imperative that attention be given to the inservice and evaluation components of these various curriculum projects as well as to designing laboratory activities and textbooks. This same admonition holds true for locally initiated and developed inservice programs. More than the intuitive hunches of the people involved is needed to constitute an adequate program of evaluation.

The studies and reports cited in the evaluation section of this paper serve as examples of what has been done by different individuals and groups. The Harvard Project Physics Interim Evaluation Report and future publications can serve as examples of what can be done to determine the effectiveness of curriculum change and inservice work by teachers as evidenced by changes in the student population. Such studies do not have to be as ambitious an educational research project as the one just cited in order to determine this information. The variety of available material is such that it is difficult to generalize from it. The readers of this report are therefore welcome to draw their own inferences or to pursue a more detailed investigation by referring to the original sources listed in the bibliography.

RESEARCH STUDIES

Another group of studies[Berger and Berger (6), Roye (70), Menesini (50), Irby (40), Blankenship (10), Dzara (22), Sarner and Edmund (72), Bradberry (15),

(20)

Jorgensen (42), Nixon (57) Shrader (76), Barfield (3), Voth, Leonard and Denney (80), Rothman, Walberg, and Welch (69), Rothman (68), Orr and Young (59) was identified as sharing a research emphasis. Although it is true that studies cited earlier in this paper also contained research components, their primary focus appeared to be evaluation of inservice programs and activities. Again, many of the studies cited in this portion of the paper used participants in the Academic Year Institute programs as their subjects.

Effects of Institute Participation

Roye (70) was interested in assessing those factors related to science and mathematics teaching which could be affected by attending an Academic Year Institute. He selected his population from participants attending institutes at Arizona State University during 1962-64. Information was gathered through the use of a questionnaire as well as from reading application forms and academic records of the participants. He found the majority of his subjects to be male, in their early 30's, with an average of 5-6 years of teaching experience. Fifty-eight of those who responded to Roye's questionnaire indicated that they had taken additional course work after completing their AYI program.

The respondents indicated that their experience had influenced changes which they had made in subject matter content they were using. Three major changes were (1) using new and different concepts, (2) using one of the new curricular approaches, and (3) greater depth and detail in subject matter content. In addition to changing the content they taught, many of the former participants were actively involved in science and mathematics curriculum development in their schools.

The teachers did not view themselves as having been greatly influenced in changing their teaching methods and procedures. Some felt more competent in lecturing and demonstrating. (Roye does not mention if any felt they had been influenced to increase the amount of laboratory activities included in their science courses.) The majority felt that the institute attendance had increased their ability to motivate their students' interest in science and mathematics. In general, the participants felt they had increased in subject matter preparation, competence, and enthusiasm.

Roye suggests that the optimum ratio of academic subject matter courses to teaching methods courses should be investigated to determine how best to increase the participants' competence and effectiveness as teachers. He does not, however, provide operational definitions for the terms "competence" and "effectiveness."

Bradberry (15) also examined the effects of institute attendance on participants. She concentrated on a population selected from different institutes during the years of 1959-60 and 1960-61. The six universities offering the institutes were all located in the Southeast. Principals as well as teachers were involved in this study.

Bradberry found that the teachers had revised the courses they taught, including more up-to-date subject matter. They had also made significant changes in their teaching methods by using more varied methods of presentation, emphasizing the problem-solving approach, using more textual and library material, and using more demonstrations in their science classes.

(21)

The teachers felt that institute attendance had benefitted them through broadened knowledge of subject matter, acquisition of new methods and techniques, development of self-confidence, and provision of opportunity for exchanging ideas with teachers in the same field. The principals indicated that these teachers were more enthusiastic about teaching science and/or mathematics than they had been prior to attending an institute.

Irby (40) surveyed individuals participating in the institute program at the University of Mississippi during 1961-66. He found that the teachers responding to his questionnaire felt they were more effective in the classroom because of their increased knowledge of subject matter. He concluded that the institute program does upgrade academic competency. However, he also pointed out the fact that teachers may be excluded from participation of their academic records do not provide evidence of graduate school potential. It would appear that the best academically prepared applicants are selected to participate rather than those teachers most in need of help. Furthermore, many of the participants shift from secondary to college teaching positions. Finally, institute programs serve only a small portion of the total teaching population. From these factors, Irby inferred that the contribution made by Institute programs was being minimized.

Dzara (22) investigated certain aspects of the chemistry section of summer institutes at the University of Alabama, 1957-62, from the point of view of the participants. He found that most of the teachers were inadequately prepared to teach either science or mathematics when they applied for admission to the programs. (It would appear these institutes did not use graduate school potential as a criterion for selecting the participants.) The teachers involved felt they had gained in subject matter and in knowledge of teaching techniques. The junior high school science teachers who responded to the questionnaire indicated that they wanted more direct guidance relating to what and how to teach, with emphasis on methods and techniques, rather than an increased knowledge of subject matter.

Menesini (50) conducted a study in which he attempted to relate certain changes that may have occurred in science teaching and curricula to attendance of teachers at NSF summer institutes. He used a questionnaire to obtain information regarding effects on (1) curriculum--new courses and subject matter changes, (2) participants--their teaching techniques and attitudes, and (3) other teachers--do the participants communicate with their colleagues? He concluded that the participants had changed their approaches to teaching as well as the subject matter content of their courses. There was an increase in the laboratory approach to science teaching among those who had attended summer institutes. Those who attended did share their newly acquired information with their colleagues. Menesini did not, however, attempt to determine if any changes could be found in pupil gains in achievement.

Teacher Characteristics

If inservice programs are to meet the needs of the teaching population, these needs must be identified. Shrader (76) conducted a study involving teachers with four years or less of teaching experience. The study was confined to teachers in Oregon and Washington. He found that 19 of the individuals responding to his questionnaire (total sample: 130) had neither a major nor a minor in science. Very few general science teachers had credit in earth science. Less than 50 percent of the biology,

chemistry, and physics teachers in his sample had 27 or more credits in each science they were teaching. Many teachers had more than one preparation per day and indicated that they lacked adequate time and/or space in which to prepare for their teaching.

Nixon (57) studied physical science offerings, enrollments, and the preparation of physical science teachers in Alabama senior high schools, using the method of stratified random sampling. He found that the academic preparation of the physical science teachers varied with the size of the school, with the larger schools having the better prepared teachers. However, there were some teachers with minimal preparation in physical science in schools of all sizes, and a few teachers who had no background in physical science.

Nixon found that physical science teachers had made extensive use of the NSF institute programs to gain additional science content. He concluded that the level of academic training of Alabama's physical science teachers compared favorably with those of other states. However, few Alabama schools offered advanced courses in physical science. In addition, some small schools offered no physical science. This latter problem appears to be one requiring consolidation of school districts as well as a possible inservice program. Since Nixon found that larger schools attracted and hired better prepared teachers, consolidation should have doubly beneficial effects.

Orwick (60) was interested in determining the extent of participation of high school science teachers in NSF institute programs. He confined his search to high school teachers in a six county area around Raleigh, North Carolina. He found that 84 percent of his respondents were eligible for participation, 64 percent had participated, and 17 percent had applied but had not participated. He could discover no appreciable differences between applicants and nonapplicants with respect to their personal backgrounds and teaching experience. He did find that these groups differed in certain aspects of their academic background and professional activities. Applicants had more semester hours in undergraduate and graduate science than did nonapplicants, while the nonapplicants had more semester hours in education.

Jorgensen (42) studied the characteristics of teachers submitting applications to the AYI programs at Oregon State University. He considered all who had been accepted and randomly selected one-half of those who had been rejected as subjects for his study.

Individuals were compared on such factors as teaching residence, undergraduate science point average, undergraduate science credits, membership in professional organizations, teaching experience, etc. Jorgensen found that no specific characteristic discriminated consistently between acceptees and rejectees for each of the years included in his study. He also found that, in terms of recommendations for science teacher preparation as stated by the AAAS, many applicants were lacking in depth and breadth of preparation in science and mathematics.

Sarner and Edmund (72) also considered the individuals applying for institute programs. They confined their sample to those teachers applying for programs at

(23)

Temple University. They were interested in securing information they could use in answering three questions: (1) who are applicants for general science institutes, (2) what reasons are given for seeking admission, and (3) to what extent are the objectives of those individuals accepted for participation in the program satisfied?

Using a random sampling technique, they selected 114 names from a total of 1,400 applicants for the summers of 1959 and 1960. They found that 105 of the 114 were full time general science teachers. The most common reason for applying was to acquire more knowledge of content. Only eight percent of the sample were concerned with learning methodology. Almost 10 percent of the sample had had no courses in biology; 25 percent, no chemistry; 25 percent, no physics; approximately 50 percent, no earth science.

In order to answer the third question concerning the meeting of the teacher's objectives for applying, the investigators contacted 35 teachers who had completed an earth science institute in the summer of 1960. These teachers indicated that they had gained knowledge of content and had acquired confidence in teaching science as a result of the program.

Orr and Young (59), working with the American Institute for Research, conducted a study designed to obtain information about the characteristics of applicants and nonapplicants for NSF programs. They sought to obtain data concerning biographical information; training and education; professional activities; attitudes, needs and motivations; and relevant school and community characteristics. The study, begun in July, 1961, was completed late in 1962. Both a questionnaire to teachers and an interview schedule were used. Using the method of stratified random sampling, 491 schools were chosen for the study.

The investigators found that of an estimated total of 169,000 mathematics and/or science teachers, approximately 32 percent had applied for and attended NSF programs, 13 percent had applied and been rejected, and 55 percent had never applied. Although the majority of the nonapplicants were in the public schools, proportionately more tended to come from nonpublic and junior high schools. There were more female than male nonapplicants. Nonapplicants tended to teach in rural rather than in urban school systems and in schools with less extensive course offerings in science and mathematics. They tended to feel that parents, students and surrounding community were less favorably inclined toward education and science than did the applicants.

Nonapplicants were likely to be teaching in at least one other subject-matter field as well as in science or mathematics. Since they spent less than 40 percent of their time teaching mathematics or science, many nonapplicants have primary identification with some other subject. In addition, the nonapplicants tended to be less subject-matter oriented. They apparently derive relatively greater satisfaction from their interpersonal relationships with students and relatively less from their subject-matter activities. They also engage in significantly fewer professional activities.

These and other findings were used by the investigators as the basis for their conclusion that failure to apply for NSF programs was often indicative of a generally low level of self-improvement motivation on the part of the teachers involved in the study.

Berger and Berger (6), working for Psychometrics Consultants, surveyed applicants to NSF summer institutes in 1964. The population included elementary school and college teachers as well as secondary school teachers. The 1964 program attracted more than 80,000 teachers who submitted approximately 200,000 applications.

Similar studies of secondary school teacher applicants had been made in 1957, by the Corporation for Economic and Industrial Research, and in 1960, by Science Research Associates. These studies were used for comparison purposes with the findings of the 1964 population.

A randomly selected sample of 4,400 secondary school institute applications was analyzed. An examination of these forms revealed that the number of undergraduate credits in physics and chemistry decreased significantly with each year. Graduate credits in each of the five sciences markedly increased from 1957 to 1964 for the applicants accepted for summer institutes. The percentage of undergraduate majors in education increased with each succeeding year, while the science or mathematics majors decreased. The percentage of applicants with the bachelor's degree as the highest degree increased each year. More applicants in 1964 than in 1960 had had recent experience teaching a combination of non-science subjects and science or mathematics. There were fewer applicants with provisional teaching certificates in 1964 than in 1960.

The trend for selection in all three surveys was to favor those teachers with the higher grades. In 1964, the higher the number of graduate credits in any subject, the greater the likelihood of being accepted for an institute program. In all three years selection tended to favor those with a science or mathematics undergraduate major. Professional interests, on the whole, did not seem to enter significantly into selection. Academic performance and a professional orientation toward science and mathematics appeared to form the strongest and most consistent criteria for selection in 1957, 1960, and 1964.

Another, but less-global, survey was that conducted by Barfield (3) in which he investigated the problems of beginning science teachers in Virginia high schools. He was interested in identifying (1) the extent of help needed by beginning science teachers in certain selected problem areas during their first semester of teaching, (2) the amount of help provided by persons available for assistance, and (3) the help which beginning science teachers recognized as being provided by certain selected inservice techniques during their first semester of teaching.

He found that secondary school science teachers beginning their teaching careers in 1958-59 recognized the need for help in certain selected problem areas. The responses to Barfield's questionnaire appeared to indicate that the foremost problem was that of locating instructional materials for teaching science. The teachers were of the opinion that much help should come from experienced coworkers.

The majority of the beginning teachers in Barfield's population were of the opinion that no one had helped them. Their supervisors, however, believed that

adequate help had been provided. It would appear that there is need for better communication between all persons concerned with the supervision of new science teachers. It would also appear, if these findings are still valid, that inservice programs for beginning teachers may need to differ in emphasis and content from those designed for experienced teachers.

Teacher Attitudes, Behaviors

Many of the research studies cited thus far have been concerned with subject matter preparation. Another area which also deserves attention is that of the investigation of teacher behaviors and attitudes. Does increased subject matter knowledge contribute toward teacher effectiveness, however this term may be defined, if it still has to filter to the students through the same old teacher beliefs and behaviors?

Blankenship (10, 11) was interested in studying teachers' reactions to BSCS biology. Inferring that new programs may call for modification and/or radical changes in teaching techniques used by science teachers, Blankenship wished to determine teacher attitude toward these programs. He used four different methods to determine attitude and analyzed the effectiveness of each. The methods consisted of an attitude inventory which Blankenship devised, a peer rating, the instructor's rating, and a follow-up questionnaire designed to ascertain the use, lack of use, and anticipated use of BSCS programs.

Blankenship found that his attitude inventory and the peer rating were equally effective in identification of teachers' attitudes and that the instructor's rating was least accurate. In the questionnaire used in the study, he asked teachers to state reasons for the non-use of BSCS materials. He concluded that one cannot equate the number of teachers teaching a particular program with the number who agree with the program's rationale.

In classifying the teachers in his sample as having attitudes favorable, unfavorable, and not certain relative to BSCS, Blankenship concluded that teachers with favorable attitudes generally ranked higher on measures of capacity for independent thought and action and had taught high school biology fewer years, on the average, than those who did not favor BSCS.

Several investigators (68, 69) conducted studies of the teachers involved in the Harvard Project Physics program. Rothman, Walberg and Welch (69) were interested in (1) determining whether, as a result of participation in the institute, the teachers' attitudes towards physics and towards several activities related to the teaching of physics had changed and, if so, (2) identifying specific changes in attitude.

They used a randomly selected sample of 56 physics teachers from a national population of approximately 17,000. Thirty-six of these teachers participated in a summer institute and served as the experimental group while the remaining 20 were the control group. These two groups were asked to rate, in a post-test, each of a series of concepts (physics, physics in my life, doing laboratory experiments, solving problems, etc.) on a list of bipolar adjective scales (semantic differential technique).

(26)

The investigators found there was no overall significant group difference on the "student activities" scores and concluded that the teachers' attitudes concerning student activities apparently were not affected by the summer institute. They found, however, that the teachers in the experimental group rated science more understandable and physics in their lives as less complex. These teachers also rated science more important, but physics less important. From these findings, the investigators inferred that the factual content about science had apparently been presented in an effective manner. The broad approach which involved astronomy, chemistry, and technology as well as physics and which stressed the social implications of scientific progress rather than mathematical rigor was considered to account for the difference in rating of physics as compared to science.

The teachers in the experimental group also regarded the universe as less friendly. The investigators speculated that the teachers might feel threatened because they may have felt inadequately prepared to teach the astronomy unit. Despite this finding, the teachers who attended the institute exhibited generally favorable attitudes as compared with those of the control group. In addition, these attitudes seemed to reflect the objectives of the institute. The philosophy of the course is that physics should be seen in relation to other sciences, scientific processes, and to culture and modern life. The teachers in the experimental group did see science as more important and understandable and physics as correspondingly less important and less complex in everyday life, thus exhibiting attitudes which seemed to characterize a broadened view of physical concepts.

Rothman (68) continued to study the teachers in the experimental group. He was interested in determining whether the teachers' attitudes towards the same concepts changed while teaching the new course and, if so, to compare these changes with those that occurred while they attended the physics institute. He used the instrument developed for the post-test previously described, administering it in the middle of February in the year following the summer institute.

Rothman was particularly interested in determining if there were any significant changes in the teachers' attitudes towards the student activity variables included in the semantic differential instrument. He found that, after teaching the new course for five months, the teachers responded that "doing laboratory experiments" was more important and more orderly. They also rated "learning about science" as simpler and "solving physics problems" as simpler and more orderly. All significant changes in attitudes were in the positive direction. These results were in marked contrast to the finding, during the summer institute, of no overall attitude change towards these variables.

There were additional significant attitude changes. These, too, were in a positive direction. The teachers rated "science" as more understandable and "physics in their lives" as more important. They also found "physics" more interesting and safer. Although, during the institute, the teachers had rated "science" more important than "physics" this difference had disappeared. The teachers reacted favorably to both science and physics.

Rothman concluded that participation in a summer institute is only a preliminary factor in the forming of teacher attitudes toward a science course.

(27)

It would appear that only when teachers assume the role of teachers and operate in the reality of the classroom are they able to view the offerings of the course in proper perspective. In the frame of reference as teacher rather than as institute participant, the individuals can react to the effects of student activities and attempt to judge the suitability of the course content. As a result of teaching the course, the teachers become favorably disposed toward its concept of physics and toward the student activities it offers.

An inservice project involving the investigation of teacher behavior was reported at the National Science Teachers Association annual convention in Dallas, March, 1969 (30). Project PIBAC (Pupil Inquiry Behavior Analysis and Change) is being conducted in the Springfield, Missouri, Public Schools in an attempt to change the instructional behavior of high school biology teachers so that they promote increased student inquiry in their classrooms.

The project involves visits to the classrooms of the participating teachers, small group workshops conducted after school hours within each individual high school and weekly large group workshops. Data are recorded on videotape and these tapes are analyzed using several instruments: Flanders Interaction Analysis, specially designed PIBAR (Pupil Inquiry Behavior Analysis Record) and CEBAR (Cognition Elicited Behavior Analysis Record) instruments. The project is still in process. Results should be available in the near future, either from the Springfield School System or from the Mid-Continent Regional Educational Laboratory in Kansas City, Missouri, whose personnel are working with the Springfield teachers.

SUMMARY

Numerous reports and studies have been reviewed for this paper. They can be classified into four general groups: National Science Foundation institute programs, locally developed programs, cooperative college-school programs, and research and/or evaluative studies. Although inservice education may be thought of as having four broad goals: (1) skill training, (2) acquisition of information, (3) attitude change, and (4) general self-improvement. (2), the acquisition of information, appears to have received the most attention.

The task of attempting to analyze these goals in terms of inservice activities has proven a difficult one. It is easy to determine if a teacher has acquired information by administering an achievement test or a test battery. Determining attitude change is a more complex task although some progress has been made toward this objective in the form of studies such as those of the Harvard Project Physics investigators in which teacher attitude changes are inferred through the use of a semantic differential test. However, as was pointed out in Blankenship's study (10), the attitudes that teachers profess to possess and what goes on in their classrooms are not always comparable. Another factor that must be considered is that attitude change is a slow process and most of the inservice evaluative studies have not been longitudinal ones.

General self-improvement is a goal that appears to lend itself most readily to subjective evaluation. Many studies asked the teachers for their opinions regarding the benefits of participation in institute programs of differing types. The

majority of responses in the studies indicated that teachers did feel that they had improved, not only in knowledge, but in enthusiasm and self-confidence as teachers. It would appear that general self-improvement is a side-benefit of many programs aimed at the acquisition of information by teachers.

The neglect of inservice programs emphasizing the objective of skill training is puzzling. Some studies contained reports of teachers learning to manipulate laboratory apparatus or of acquiring research techniques. However, if the use of educational hardware and the interpersonal relations aspects of teaching are to be considered as parts of skill training, little research has been reported in these areas.

In the introduction to this paper, eight problems were listed as factors contributing to the need for inservice education for secondary school science teachers. These were (1) rapid obsolescence of subject matter knowledge and skills, (2) the proliferation of educational hardware, (3) the fluid but apparently evolving state of learning and instructional theory, (4) the advent of new educational tasks, (5) a growing necessity for global awareness, (6) the acceleration of school reorganization, (7) the consequences of teacher misassignment, and (8) the problem of teacher drop-outs (66). Again, only the first of these problems appeared to be a consistent concern in the materials surveyed.

Goodlad, in "The Schools vs. Education," (31) said

> Public schooling is the only large-scale enterprise
> in this country that does not provide for systematic
> updating of the skills and abilities of its employees
> and for payment of the costs involved. Teachers are
> on their own as far as their inservice education is
> concerned, in an environment designed for 'telling'
> others, yet one that is grossly ill-suited to intellectual
> pursuits with peers. . .

If this is a valid criticism, as it appears to be, much work needs to be done to improve inservice education for science teachers as well as for teachers of the other content areas. It is difficult to consider inservice education apart from the broader framework of innovation and change. Historically, inservice education was developed to correct deficiencies of preservice education. It is still difficult to achieve both breadth and depth in undergraduate programs for science teachers.

Although many of the National Science Foundation Institute Programs appear to have been designed to improve knowledge and teaching methodology of the experienced classroom teacher, beginning teachers can also benefit from inservice education. A study cited earlier in this paper provided evidence that beginning teachers recognized the need for help in certain areas. The majority of the teachers were of the opinion that no help had been provided them. Beginning teachers have been described as suffering with the "Robinson Crusoe syndrome." Each individual works alone, in the usual teaching situation, and handles his class unaided, unvisited, and unobserved (54).

If isolation sets the context for the orientation of the beginning teacher, then it is not difficult to understand why many teachers might equate innovation and change with threats to their security and established routines. Introducing

(29)

and using new ideas in the classroom involves a number of problems. Although much has been written about the resistance to new ideas and change that exists among school personnel, few studies reviewed for this paper were concerned with this problem. The assumption seemed to be that the benefits of new programs and/or inservice activities would be so obvious that they would outweigh all objections to their installation.

In addition to failure to consider possible opposition or resistance to change, many of the local programs surveyed appeared to result from a need that had been identified by one or more individuals within a school or school system. Some of these programs lacked a research base for the plan of action that was followed. Such a lack may result in a program that is not really appropriate. The program may treat the symptoms but never identify the cause and deal with it.

A study of inservice education programs in Nebraska secondary schools with 10-40 teachers (58) revealed that most of the teachers and administrators surveyed felt that their school's inservice program was inadequate. The three areas in which teachers most wanted help were (1) motivating students, (2) providing for individual differences, and (3) developing and using new approaches and innovations. The problems of beginning and experienced teachers did not differ greatly. Both groups indicated they had received very little help from inservice programs.

Systems which lack the personnel and expertise to develop good inservice programs should develop a working arrangement with some college or university. They might also establish contacts with one of the Regional Laboratories or with a Research and Development Center. The Far West Laboratory For Educational Research and Development (30) is involved in five major areas, one of which is teacher education at both the preservice and inservice levels. The personnel at the Laboratory are attempting to develop a series of inservice education packages, based on the findings of the Stanford Research and Development Center.

The Research and Development Center for Education at the University of Texas in Austin is also involved in inservice education. This emphasis resulted in "Designs for Inservice Education" edited by E. W. Bessent (7), a monograph in which three different approaches to inservice education are presented. These models (the laboratory approach, the classroom experience model, and the teaching demonstration model) were developed from work done by University personnel and various school districts. Inservice education, for the purposes of this publication, is defined as "all those planned staff development programs which are designed to bring about instructional improvement in schools." Summer school as an inservice activitiy is excluded from consideration.

Another source of information for supervisory personnel charged with the development of inservice programs is "A Sourcebook for Science Supervisors," (33). Published by the National Science Supervisors Association, a section of the National Science Teachers Association, it was developed to serve as a vehicle for the exchange of ideas and information among science supervisors.

Many individuals consider that inservice education and curriculum development are parallel activities. Only a small portion of the materials reviewed for this paper were reports of such projects. This appears to be an area in which more work needs to be done.

This may be an appropriate point at which to request that studies be reported in sufficient detail that they may be replicated. Frequently investigators report that different treatments were used but do not supply sufficient detail to ensure that replication is possible. Doctoral dissertations provide brief descriptions of the methods used to analyze the data obtained but these, too, are frequently too brief to ensure adequate replication.

A second request that might be made is that more of the local programs and inservice activities be written up and made available for public information. Reports sent to a center such as the ERIC Clearinghouse for Science Education can be processed and their existence made known through newsletters and bibliographies distributed from the Clearinghouse.

Local programs which are presently available for public information constitute only a small portion of the references cited in this paper. Those which were available tend to center around a specific subject or content area. Only a few might be classified as having a broad fields approach, such as that exemplified by outdoor education programs or by activities conducted at a science center. More work needs to be done in the area of unified science and more of that which has been done needs to be disseminated.

The inescapable conclusion regarding inservice education activities is that most are attempting to bring about the kind of learning resulting in change and improvement in teachers and in the courses they offer. The effectiveness of a program is judged by the degree to which learning has taken place. The attainment of such a goal often involves attitude change, yet most studies of attitude change were concluded before any long term effects became evident, a fact that was mentioned earlier. In addition, there is no simple one-to-one relationship between information, attitude and overt behavior (2).

These factors may account for the proliferation of studies that have been concerned with National Science Foundation institute programs. More than 16 investigators concentrated on one or more Academic Year Institute programs. Most of these investigators appeared to be aware of the fact that it is difficult to alter complex patterns of teacher behavior, even in a nine month period. Many of the studies were based on questionnaires and required the participants to analyze the benefits they felt they had gained from their experiences. Although the majority of the findings were positive, more research needs to be done to provide concrete, objective evidence of the effects of Institute participation by teachers on school programs.

Although NSF institutes have been a definite factor in improving the science teaching to which our students are exposed, they are not an ultimate panacea. The most significant finding of a study by the American Institute for Research, conducted during the 1961-1962 period, was that more than half of the secondary school science and mathematics teachers had not submitted an application to any institute during the previous five years (56).

(31)

This problem is also compounded by the fact that many of the teachers who do apply for institute programs are rejected because their undergraduate records are such that these individuals are unable to qualify for institutes in which they must also be admitted to graduate school. In such situations, it would appear that the good tend to become superior and the poor continue in mediocrity (56).

Yet another problem related to institute programs stems from the differences that often exist between so-called "institute courses" and the standard graduate program. A similar situation exists in preservice teacher education. Many of the advanced but undergraduate science courses are designed with the expectation that the students enrolled will pursue careers as research scientists rather than as science teachers. More research needs to be done to design graduate credit courses in the sciences that are appropriate to the needs of secondary school science teachers.

One of the common assumptions among educators is that the division between preservice and inservice education will disappear and that "continuing education" will become the focus of their efforts. This has not yet become an actuality. Kreigehbaum and Rawson (56) point out that the effect of institute programs on the undergraduate curriculum for preparing teachers has been less than the National Science Foundation originally hoped for and that those changes which have occurred have taken longer than expected. Unless beginning teachers are well-prepared to teach the subjects to which they are assigned, the institute programs will have to continue indefinitely. Although institute programs may help to alleviate the problem of lack of preparation, they are not an adequate substitute for an excellent undergraduate education.

This is not to imply that improving the preservice education of secondary school science teachers would eliminate the need for inservice education. This is far from reality. Changes in content, in teaching methodology, in knowledge of learning theory and instructional strategies, as well as new developments in educational technology and the concepts of differentiated staffing necessitate that inservice activities be one of the on-going components of the school program.

Surveys reveal that the average length of time that an individual remains in teaching continues to be about five years. This fact, coupled with the reality that preservice programs can provide teachers with only the basic skills of teaching, emphasizes the need for inservice programs. It has been suggested that one of the objectives of an inservice program should be to develop a cadre of "resource teachers" (7). Such individuals would be involved in the pilot program and could later serve as local consultants to new staff members. Presumably they would attain sufficient status and incentive in this role to encourage them to remain longer than the average five year period.

An area which appears to have received only a fraction of the attention it deserves is that of designing inservice programs for teachers who are teaching science to different cultural groups. Only one study was located in which this problem was considered.

If one overall generalization were to be made in summary of the literature reviewed for this paper, it would be that providing inservice education for

science teachers is a vital problem that deserves more attention and careful research than it has thus far received.

RECOMMENDATIONS

The majority of the studies cited in this paper, if they have involved research at all, have been of the type of research categorized as descriptive. Some were status investigations; many were questionnaire surveys. One of the first recommendations that might be made is that a greater variety of research methods should be attempted in inservice education. There were a limited number of experimental research studies in which different treatments were applied to different groups. Pre- and post-treatment tests were administered to these groups and the data were used to determine the differential effects of the treatments. Such studies are infrequent occurrences in inservice education, however. Perhaps educators feel that if a treatment (program, activity, new course of study) is going to benefit the subjects involved, it should not be withheld from the total population merely for comparison purposes. The assumption that the implementation of an untested program will prove beneficial is open to question.

Another type of research study, commonly known as "action-research," was not much in evidence in the literature either. This term possesses a variety of definitions and is used here to refer to research studies which take place within the context of the regular school program and which are carried out by the school personnel normally involved in the program. Such studies may entail a change in teaching methodology, instructional theory, or content, to name a few examples. These studies have also been subject to criticism by educational researchers because many did not, in the opinion of the researchers, meet all of their criteria for research. Nevertheless, if school personnel can secure help in designing and initiating action-research studies, these would be of benefit to the systems involved.

The suggestions or recommendations which follow are concerned with the topics of (1) the development of local inservice programs, (2) teacher attitudes, behavior, characteristics, (3) other areas in need of research, and (4) research design and evaluation. The statements are descriptive rather than prescriptive. Questions are raised for consideration rather than as demands for immediate action.

Local Inservice Programs

One of the major criticisms of inservice work is that many of the programs have been planned by sources removed from the local situation. New curriculum materials have to be implemented by people who did not originate them. If these materials are to be used properly, the teachers need to know (1) what to do in terms of both content and the instructional strategies, (2) how to do it, to implement the strategies involved, and (3) why to do it that way (18).

Inservice activities should be locally initiated and developed. This does not imply that programs developed by the national course content improvement projects or by publishing companies are not of value. Individuals participating in the development of new curricula contribute expertise and perspectives far beyond those

an individual school system or district is able to command. Nevertheless, this broad approach must be redefined and focused on problems existing at the local level if any real and lasting improvement is to occur.

This means that individuals responsible for structuring and initiating inservice education activities must have a broad background in inservice education per se as well as in the content area(s) involved. Several sources of information are available to those wishing to attain this perspective. One is a document entitled "Inservice Education--Psychological Perspectives" (2). Written by James J. Asher for the Far West Laboratory for Educational Research and Development, it is a report summarizing and evaluating literature and research relevant to inservice education and dealing with the psychological settings for behavioral change.

Asher's report is divided into seven parts: (1) the history of inservice education, (2) the ideal goals of inservice training, (3) the analysis of inservice programs that have been tried, (4) 'the acceptance of innovation,' dealing with the question of resistance to new ideas, (5) the evaluation of inservice programs, (6) future inservice programs, and (7) recommendations.

An even more extensive survey of literature was also prepared for the Far West Laboratory by Dorothy Westby-Gibson for her report, "Inservice Education--Perspectives for Education" (84). She included a 184 item bibliography which covers newspaper articles, journals, books, and other materials published from 1950-1967. The topics included in this report cover new practices and devices such as (1) systems analysis, (2) interaction analysis, (3) microteaching, (4) sensitivity training, (5) various electronic media, and (6) the diversification of staff and duties.

A third source of information is the Guba-Clark Classification Schema of Processes Related to and Necessary for Change in Education (20). In this model the developers explain the phases they consider to be involved in initiating change in education. These phases may be categorized as research, development, diffusion, and adoption.

These sources, plus selected chapters in Innovation in Education, edited by Matthew B. Miles (52), can serve to provide a background for considering inservice education activities. In Chapter 10, the strategies used in developing and disseminating the Physical Science Study Committee's high school physics course are discussed. Although the task facing the PSSC personnel was one with nationwide aspects, many of the methods they used can be adapted to local programs and activities.

Introducing and using new ideas in the classroom involves a number of problems. Research needs to be done to determine what methods work best for a particular school or school system. The three models suggested in an earlier part of this paper: the laboratory approach, the classroom experience model, and the teaching demonstration model should be investigated and compared to determine which meets with the most success and in which situations it can be used most successfully. More importantly, perhaps, other models can be developed and tested.

(34)

More attention should be devoted to inservice programs that attempt to articulate the science program within a total school system, K-12. Is there a consistent approach and philosophy throughout the student's educational experience in science? Does he function in the inquiry mode in elementary school only to be confronted by textbook-oriented science in the secondary school or science courses dominated by the objective of college preparation? Or, does his elementary science experience consist primarily of reading about science rather than doing science so that he is ill-prepared for any secondary school science course in which he is expected to demonstrate that he already possesses a command of the processes of science and can use them as an independent investigator?

The problem of obtaining qualified personnel to guide the development of an inservice program persists. Outside consultants, on a short term basis or in some continuing liaison with the school system, may be obtained for the initial stages of development. Research needs to be done to determine methods which may be used to develop personnel within the school system who are competent to function after the consultants leave or who can work unaided by outside experts.

Finding time for inservice activities apparently has always been a problem. Teachers are not at the peak of enthusiasm at 4 P.M. on a school day. An inservice program, in order to achieve maximum effectiveness, should be built into the school day. Provision must be made for released time for those teachers involved in development and inservice activities. An alternative solution would be to pay the teachers for inservice participation, either with additional cash or credits toward the next salary increment. Either plan requires money, for the substitute who takes charge of the class or for the teacher involved in inservice. Research needs to be done to determine what plan works best for a particular school, both in terms of teacher acceptance and in terms of actual change evidenced in the classroom. Still other approaches to the time problem need to be devised and studied.

If one school system is unable to muster adequate finances and personnel to carry out inservice education, the possibility of developing regional centers which could serve as loci for inservice activities and materials development should be investigated. Some examples already exist, such as the Science and Mathematics Improvement Project in Wilkes-Barre, Pennsylvania, and the Pacific Science Center, Seattle, Washington (74, 62). Such regional centers could be assisted, at least in the initial stages, by personnel from the various Regional Laboratories and by members of science education faculties from a local college or university. Such a consortium of school districts should be more effective in attacking common problems than each system working independently would be.

If inservice education at local, county, state or national levels is to be successful and productive, the factors of time, finances, personnel, and appropriateness must be considered. A common conclusion about effective inservice programs appears to be that they involve released time, require special instructional materials (in many cases), make appropriate use of outside consultants, and demand adequate commitment of supervisory and administrative time to the program.

Teacher Attitudes, Behaviors, Characteristics

More research needs to be done in the areas of teacher attitudes, behaviors, and characteristics. Many of the studies concerned with National Science Foundation Institutes reported on teacher characteristics. However, fewer investigators considered teacher attitudes and behaviors to be a part of inservice education research. If it is true that resistance to change and to new ideas exists among school personnel, research needs to be done to determine the degree to which this resistance exists. Is it more imaginary than real? What factors might account for it, if resistance does exist? How can new ideas and methods be introduced without having the teachers feel threatened?

Does the degree of acceptance of a new program or other innovation involving inservice work vary with the number of individuals initially involved in design and implementation? Studies concerned with this question have been done at the elementary level but none were located that involved secondary school science teachers.

Is the verbalized philosophy of classroom teachers consistent with the teaching strategies employed in their classrooms? If we accept the assumption that "teachers teach as they are taught," should teachers about to adopt new curriculum materials which involve new teaching methodology experience the course in the same way that their students will experience it? Will such a treatment guarantee that the changes will be in evidence in the classroom? How can we find out?

Follow up studies need to be done to determine what changes in teaching are really made by individuals who have been exposed to inservice activities as well as to investigate the effects of time on these changes. Can inservice programs be designed that enable a teacher to become a flexible, innovative person in the classroom? Should beginning and experienced teachers receive the same type of inservice program to prepare them for a new curriculum? If the programs should differ, in what ways should they vary?

Research also needs to be done to determine what types of inservice programs are most effective in helping teachers attack the problem of attitude change. Should such programs be concentrated in a six week summer program or, since attitude change is a long process, should the activities be spread throughout the school year? What types of activities work best with science teachers? Do experiences which help science teachers examine themselves and their teaching methods objectively differ from those which achieve success with teachers in other subject areas?

In inservice as well as in preservice education for secondary school science teachers, the emphasis has been placed on enabling the individuals to increase their science content knowledge. Studies reviewed for a review of research relative to preservice education (12) tended to support the assumption that more than an adequate knowledge of science was necessary for an individual to function effectively in the classroom. Investigators have found that teachers categorized as "nonapplicants" for institute programs derived relatively greater satisfaction from their interpersonal relationships with students and relatively less from their subject-matter activities. One might infer from this statement that the

(36)

converse situation was the desirable one. Can this inference be supported by research? Should we develop inservice programs in which secondary school science teachers are enabled to participate in intensive group experiences? Should we limit their sensitization processes to microteaching and interaction analysis? How can science teachers be made more aware of the various forms of student feedback other than laboratory reports and projects? What types of programs should be designed? How should their effectiveness be evaluated?

Other Areas in Need of Research

Many studies involved institute programs. The majority of studies reviewed teacher characteristics and the subjective judgments of the participants as to the value of their experiences. More research needs to be done to provide concrete evidence of the effects of Institute participation on school programs.

Follow up studies need to be done to determine what long-range effects, if any, result from Institute attendance. Additional studies should be done to determine how many AYI participants leave teaching and to identify the reasons for leaving.

More studies need to be done to discover the effects on the students of the teacher's participation in inservice programs, particularly of the institute variety. If they participate in an Academic Year Institute, the teachers are removed from the classroom and its problems for nine months. Many of the participants report, on returning to teaching, an increase in enthusiasm. What happens to this enthusiasm as time passes? Especially, what happens when the teacher is the only member of his department with these enthusiasms and interests? Such a situation has been compared to the transplant of some foreign tissue to the body. The tissue is rejected. Does this "rejected" teacher conform to the predominant teaching pattern of his department, does he try to convert his colleagues, does he move to a new school where his views are shared, does he return to graduate school, does he leave the teaching profession? Such a problem lends itself to case studies as well as to the conventional questionnaire study.

More studies need to be done in which the teaching of former AYI participants is compared to that of control groups. Also, does participation in several summer institute programs provide benefits commensurate with that of being a student for an entire academic year? It might also be worthwhile to conduct a national study of the effects of Academic Year Institute attendance on science teaching.

As yet no research has been made available in which any attempt has been made to develop a model institute program. It is likely that one model would be inadequate; probably several "model programs" should be developed.

More studies need to be done in which the primary investigation is that of measuring changes in participant understandings rather than determining satisfactions and dissatisfactions.

(37)

Another problem that does not appear to have been investigated, perhaps because a suitable means of investigation is not apparent, is that of determining the effectiveness of teachers prior to participation in institute programs. Some of the reports indicate that those teachers who apply for institute programs are already categorized as effective teachers by some standards.

A concomitant problem can be identified as that of the science teachers who might be termed "nonapplicants" insofar as institute programs are concerned. What can be done to reach these individuals? Are they as much in need of these experiences as some science educators have inferred?

What can be done about another group, that of the science teachers who need to gain more content knowledge but who cannot meet the standards set for any of the different levels of institute programs? Chances are that such individuals are in school systems too small or too inadequately financed to have their needs met through a local inservice program. How are they, and the pupils in their classrooms, to be helped?

Another area in need of more research is that of designing inservice programs aimed at educating teachers so that they present science as a way of thought rather than as a body of content to be learned. Some of the investigations involved in the Harvard Project Physics program have emphasized this problem but more work needs to be done.

More research needs to be done on the adoption, acceptance, and implementation of the new curriculum projects of both the federally-funded and commercial variety. Investigators need to design measures for determining the understanding by the classroom teachers of the philosophy and rationale of the program they are adopting. Research needs to be done to determine if the teachers can demonstrate this understanding in their teaching behavior. Studies cited in this paper have revealed that what a teacher says he believes and what he practices in the classroom are not necessarily identical. Can reasons for the existence of this incongruity be identified? Do the reasons lie within the teacher or within the situation in which he operates? What can be done to change the situation?

An area which appears to have received only a fraction of the attention it deserves is that of designing inservice programs for teachers who are teaching science to different cultural groups. Should science teaching for bicultural groups be different from either what we have traditionally been teaching or the newer curriculum projects? Is science for the inner city secondary school student necessarily different in content and approach than science for the suburban or rural students? If so, what needs to be done to prepare experienced, as well as beginning, teachers to function effectively in their assignments? What new methodologies need to be developed and used? How can this best be accomplished?

New materials and teaching tools continue to be developed. How can inservice programs prepare science teachers for the multi-media approach to

education? What should be done to make them competent to evaluate and use the many pieces of educational hardware now on the market? What are the most efficient ways to help science teachers use television, videotaping, programed instruction, etc. in their classrooms?

Research also needs to be done on the problem of providing for continuing inservice education. Presently, inservice activities seem to come in short spurts or to take place in locations removed from the actual school setting in which the teachers operate. More research needs to be done in designing programs of the Cooperative College-School variety. Both classroom teachers and college faculty benefit from these programs. The college teachers can provide knowledge and perspectives that classroom teachers have been unable to develop due to the press of routine duties that are a part of public school teaching. The classroom teachers, in turn, can provide the college staff with an opportunity to contrast practice with theory and to translate theory into action.

Research also needs to be done to determine ways of providing continuity for a program in which the personnel are changing. If the average tenure of an individual in teaching is three to five years, should programs be developed that run in three year cycles? How can inservice programs be designed to promote this continuity while also promoting the idea that innovation and change are necessary and desirable in education? Schools have been said to be resistant to change because they were established to transmit "the culture." Does what constitutes "the culture" in science teaching change over time? If it does, how can we prepare teachers to recognize and act upon this fact?

Research Design and Evaluation

Much of the literature reviewed for this paper entitled a "review of research" cannot be strictly classified as research. Doctoral dissertations were in evidence but many other documents were reports rather than research studies. There is need for more investigations of inservice education that merit the title of "research."

In some instances the problem investigated was a relatively trivial one. In other studies, a simple design was used to study a complex problem. In many, the description of the procedures used was lacking in detail and would make replication difficult if not impossible. Frequently variables that appeared to be relevant to the major problem of the study were not considered or received little consideration.

Although the recommendation has been made that more experimental research needs to be done in inservice programs, experimental research, too, has its disadvantages. It is useful in making end-of-the-project judgments but requires that conditions be held constant throughout the duration of the project if these judgments are to be valid ones. Frequently the need to make decisions and changes while the project is underway exists.

A research model known as the CIPP model (61) needs to be put to greater use in inservice education in those instances in which the project personnel wish to evaluate their work before completing it. This model was developed for use in evaluating innovative projects developed under Title III. It enables local project personnel to collect evaluative information that might form the basis for decisions.

The CIPP model is divided into four parts, reflecting the four major types of decisions which should be made during the course of the project: (1) context, (2) input, (3) process, (4) product. Each part can, however, stand by itself.

A modification of the CIPP model, called the CDPP model, has phases which consist of (1) context evaluation, (2) design evaluation, (3) process evaluation, and (4) product evaluation (65). This was developed as an adaptation of the Stufflebeam CIPP model by personnel at the Southwest Educational Development Laboratory.

Even if those individuals involved with the design of inservice programs at the local level do not wish to use either of these or any other models, they should make an effort to define the specific objectives of their program. This is not an advocation of the unqualified adoption of the behavioral objective approach. However, an objective such as "The teachers involved in this program will, at the end of six weeks, be able to identify the types of verbal and nonverbal reinforcement they use in their teaching" certainly provides more direction than a statement to the effect that "the teachers will attempt to become more effective in their interpersonal relations in the classroom and laboratory." Stating objectives in behavioral terms enables the individuals involved to better determine if these objectives have been reached. Overall objectives may be stated in global terms in order to provide a general framework. These can be broken down into more specific statements so that the teachers realize just what it is that they are expected to accomplish. More work needs to be done in this area, particularly with inservice activities relating to teacher attitudes.

In Conclusion

The present state of research in inservice education is not definitive enough to provide a basis for mandating inservice education practices for secondary school science teachers. It is hoped, however, that this paper will serve as a contribution to the profession through the identification of some sources of information, the citation of recent studies which have been done, and the summarization of some of the problems involved in developing inservice education programs for secondary school science teachers.

BIBLIOGRAPHY

1. Ahlgren, A. "Evaluation of Harvard Project Physics Course Interim Report."
    Paper presented at The American Association of Physics Teachers Meeting,
    February, 1969.

2. Asher, J. J. "Inservice Education--Psychological Perspectives." Far West
    Laboratory for Research and Development, Berkeley, California, 1967.

3. Barfield, A. D. J. "In-Service Education for Beginning Science Teachers in
    Virginia High Schools." University Microfilms, Ann Arbor, Michigan, 1961.

4. Bedrosian, A.; Pincus, A. L. "Teaching Teachers." Improving College and
    University Teaching. Summer, 1961.

5. Behringer, Marjorie, "The Development of Differentiated Curricula for Ability
    Grouped Biology Classes, Including Teacher Training and Program Evaluation."
    University Microfilms, Ann Arbor, Michigan.

6. Berger, R. M.; Berger, F. R. "A Study of the Attributes of Applicants to
    National Science Foundation Summer Institutes in 1964." National Science
    Foundation, Washington, D.C., 1965.

7. Bessent, E. W.ed. "Designs for Inservice Education." Research and
    Development Center for Education, Texas University, Austin, 1967.

8. Bethlehem Area School District. "Teacher-Student Workshop in Nuclear
    Science." Bethlehem Area School District, Pennsylvania, 1966.

9. Biological Sciences Curriculum Study. "The Teacher." BSCS Newsletter 32.
    Biological Sciences Curriculum Study, Boulder, Colorado, September, 1967.

10. Blankenship, J. W. "Biology Teachers and Their Attitudes Concerning BSCS."
    Journal of Research in Science Teaching 3:54-60; March, 1965.

11. Blankenship, J. W. "The Effectiveness of Four Methods of Determining Science
    Teacher Attitudes Toward a New Biology Program." School Science and
    Mathematics, 66:831-837; December, 1966.

12. Blosser, P. E.; Howe, R. W. "An Analysis of Research Related to the Education
    of Secondary School Teachers." The Science Teacher, 36:87-95; January, 1969.

13. Bogen, G. K. "An Appraisal of the Traveling Science Demonstration Lecture
    Program in Oregon and Its Effectiveness as an Agent for Inservice Education."
    University Microfilms, Ann Arbor, Michigan, 1963.

14. Bogen, G. K. "The Traveling Science Teacher Demonstration Program and
    Inservice Education." Journal of Research in Science Teaching, 2:69-72; March, 1964.

15. Bradberry, H. S. "A Study of the Participants in the 1959-60 and 1960-61
    Academic Year Institutes Sponsored by the National Science Foundation at Six
    Southeastern Universities." University Microfilms, Ann Arbor, Michigan, 1967.

16. Brekke, G. W. "A Follow-Up Study of the Effectiveness of National Science Foundation Science and Mathematics Institutes for Secondary Teachers in Meeting Stated Goals." Gustavus Adolphus College, St. Peter, Minnesota, 1964.

17. Bruce, M. H., Jr.; Johnson, P. G. "School-Centered Research Experiences for Science Teachers." The Science Teacher, 30:16-20; September, 1963.

18. Butts, D. P. "Widening Vistas in Inservice Education." Science Education, 51:130-133; 1967.

19. Chemical Education Materials Study. Chem Study Newsletter, Chemical Education Materials Study; February, 1966.

20. Clark, D. L. "Strategies and Dynamics in Changing Educational Practices" in Richardson, J. S.; Howe, R. W. "The Role of Centers for Science Education in the Production, Demonstration and Dissemination of Research." Department of Health, Education, and Welfare, Office of Education, Washington, D.C., 1965.

21. Corpus Christi Schools. "Workshop in Conservation Education." Mimeographed, no date. Corpus Christi Independent School District, Corpus Christi, Texas.

22. Dzara, F. T. "An Investigation of Certain Aspects of the Chemistry Section of the National Science Foundation Summer Institutes Held at The University of Alabama." University Microfilms, Ann Arbor, Michigan, 1963.

23. Earth Science Curriculum Project. ESCP Project Newsletter, No. 15. Earth Science Curriculum Project, Boulder, Colorado; February, 1968.

24. Earth Science Curriculum Project. ESCP Project Newsletter, No. 7. Earth Science Curriculum Project, Boulder, Colorado; April, 1965.

25. Educational Research Council of America. "In-Service Programs of Teacher Education." Mimeographed, no date. Educational Research Council of America, Cleveland, Ohio.

26. Educational Testing Consultants. "A Follow-Up Study of Members of the First Academic Year Institute at The Ohio State University, 1957-58." Educational Testing Consultants, Ohio State University, Columbus, Ohio. 1960.

27. Educational Testing Consultants. "A Follow-Up Study of Members of the Second AYI at the Ohio State University, 1958-59." Educational Testing Consultants, Ohio State University, Columbus, Ohio. 1960.

28. Educational Testing Consultants. "A Follow-Up Study of Members of the Third Academic Year Institute at The Ohio State University, 1959-60." Educational Testing Consultants, Ohio University, Columbus, Ohio. 1960.

29. Educational Testing Consultants. "A Follow-Up Study of Members of the Fourth AYI at The Ohio State University--An Evaluation Report, 1960-61." Educational Testing Consultants, Ohio State University, Columbus, Ohio. 1961.

30. Far West Laboratory. "Program Plans - March 1, 1967." Far West Laboratory for Educational Research and Development, Berkeley, California. 1967.

31. Goodlad, John. "The Schools vs. Education." The Saturday Review:59-61; April 19, 1969.

32. Gruber, H. E. "Science as Doctrine or Thought? A Critical Study of Nine Academic Year Institutes." Journal of Research in Science Teaching 1:124-128; June, 1963.

33. Harbeck, M. B. "A Sourcebook for Science Supervisors. National Science Teachers Association, Washington, D.C. 1967.

34. Harris, C. W. ed. Encyclopedia of Educational Research. Third edition. The Macmillan Co., New York. 1960.

35. Harvard Project Physics. "Teacher's Newsbrief, Consolidation of Newsbriefs from September, October, and November, 1968." Harvard University, Cambridge, Massachusetts. 1968.

36. Harvard Project Physics. Newsletter 3. Harvard University, Cambridge, Massachusetts; Spring, 1966.

37. Heideman, R. G. "National Science Foundation Academic Year Institutes for Secondary School Teachers of Science and Mathematics Held at the University of Wisconsin, 1956-57 through 1958-59. An Evaluation of the Background, Training, Placement, and Occupational Mobility of the Participants." University Microfilms, Ann Arbor, Michigan. 1962

38. Higgins, J. L.; Boyer, R. E. "Experimental Earth Science Program for Eighth Grade--A Cooperative College-School Science Program." The Science Teacher 35:51-53; January, 1968.

39. Horner, C. M. "A Study of the Attainment of Certain Objectives of 1960-61 National Science Foundation Academic Year Institute at Syracuse University." University Microfilms, Ann Arbor, Michigan. 1965.

40. Irby, B. N. "A Follow-Up Study of the Participants of the National Science Foundation Academic Year Institutes for High School Teachers of Science and Mathematics Held at the University of Mississippi, 1961-66." University Microfilms, Ann Arbor, Michigan. 1967.

41. Jenkins, L. E. "An Evaluation of the First Five Academic Year Institutes, University of Utah, September, 1957-August, 1963." University Microfilms, Ann Arbor, Michigan. 1964.

42. Jorgensen, H. C. "Characteristics of Teachers Submitting Applications for Academic Year Institute Programs at Oregon State University." University Microfilms, Ann Arbor, Michigan. 1966.

43. Kerns, H. V. "A Descriptive Study of the Development and Presentation of an In-School Television Program for the In-Service Education of Junior High School Science Teachers." University Microfilms, Ann Arbor, Michigan. 1962.

44. Kerns, Victor "Three Approaches to Science Education by Television." Science Education 51:276-278; April, 1967.

45. Lavach, J. F. "An In-Service Program in the Historical Development of Selected Physical Science Concepts." University Microfilms, Ann Arbor, Michigan. 1967.

46. Lewin, C. R., Jr. "In-Service Education in Relation to Curriculum Development- Trends and Recommended Programs in Secondary Schools." University Microfilms, Ann Arbor, Michigan. 1963.

47. Lowry, W. C.; Redfield, D. D. "Selection of AYI Participants at the University of Virginia." The Mathematics Teacher 53:270-276; April, 1960.

48. Martinen, G. D. "A Study of the National Science Foundation Summer Institutes in Science and Mathematics Held at the University of Idaho From 1957 through 1964, and their Impact on Professional Activities of the Recipients." University Microfilms, Ann Arbor, Michigan. 1967.

50. Menesini, M. M. "Some Effects of a National Science Foundation Summer Institute in Molecular Biology." University Microfilms, Ann Arbor, Michigan. 1963.

51. Mertens, T. R.; Nisbet, J. L. "Cytology - For Inservice Biology Teachers." The Science Teacher 33:16-19; February, 1966.

52. Miles, M. B. ed. Innovation in Education. Bureau of Publications, Teachers College, Columbia University, New York. 1964.

53. Milliken, D. Q. "An Evaluation of National Science Foundation Institutes by the Participants." University Microfilms, Ann Arbor, Michigan. 1964.

54. National Commission on Teacher Education and Professional Standards. The Real World of the Beginning Teacher. National Education Association, Washington, D.C. 1965.

55. "National Science Foundation Cooperative College-School Science Programs," School Science and Mathematics 68:235-246; March, 1968.

56. National Science Foundation, "PPE--Special Study--1967, Science Education Question 4, and Appendices A through F." Mimeographed, National Science Foundation, Washington, D.C.

57. Nixon, L. C., Jr. "Physical Science Offerings, Enrollments and the Preparation of Physical Science Teachers in Alabama Senior High Schools." University Microfilms, Ann Arbor, Michigan. 1967.

58. O'Hanlon, J. O.; Witters, L. A. "'Breakthrough,' In-Service Education for All Schools." Nebraska State Department of Education, Lincoln, Nebraska. 1967.

(44)

59. Orr, D. B.; Young, A. T., Jr. "Who Attends NSF Institutes?" The Science Teacher 30:39-40; November, 1963.

60. Orwick, R. F. "Participation of High School Science Teachers in Central North Carolina Institutes Supported by the National Science Foundation." Master's thesis, North Carolina State University, Raleigh, North Carolina. 1966.

61. PACE Report. "A Look at Evaluation." College of Education, University of Kentucky, Lexington, Kentucky; November, 1967.

62. Pacific Science Center. "Science and Mathematics Project, A Report." Puget Sound Arts and Sciences Program, Seattle, Washington; Mimeographed; November, 1967.

63. Peterson, G. E. Personal communication relative to the evaluation of BSCS teacher preparation programs. March 19, 1969.

64. Rand McNally Curriculum Project. Interaction Newsletter (1 through 5). Rand McNally Company, Chicago. 1967-1969.

65. Randall, R. S. "An Operational Application of the Stufflebeam-Guba CIPP Model for Evaluation." Paper presented at the American Educational Research Association Convention, Los Angeles; February, 1969.

66. Reno, R. H. "In-Service Teacher Training: A Critique Not An Indictment." Education Age 5:2-5; November-December, 1968.

67. Roney, R. A. The Doubleday Guide to Federal Aid Programs: 1967-68. Doubleday & Co., Inc., Garden City, New York. 1967.

68. Rothman, A. I. "The Effects of Teaching a New Physics Course on Teacher Attitudes." Mimeographed paper, no date. Harvard University, Cambridge, Massachusetts.

69. Rothman, A. I.; Walbert, H. J.; Welch, W. W. "Effects of a Summer Institute on Attitudes of Physics Teachers." Mimeographed paper, no date. Harvard University, Cambridge, Massachusetts.

70. Roye, J. P. "Modifications of Professional Characteristics of Teacher Participants in National Science Foundation Sponsored Academic Year Institutes." University Microfilms, Ann Arbor, Michigan. 1968.

71. Sarner, D. S. "A New Approach to the Training of Science Teachers: An Institute to Develop Techniques of Research for High School Teachers." Science Education 47:33-34; February, 1963.

72. Sarner, D. S.; Edmund, N. R. "Do Science Institutes Satisfy Teacher Objectives?" Science Education 47:31-33; February, 1963.

73. Schaefer, D. A. "Research for High School Science Teachers." The Science Teacher 27:14-19; April, 1960.

74. Science-Mathematics Improvement Project. SMIP Newsletters (Vol. 1-2). SMIP, Wilkes-Barre, Pennsylvania. 1968-69.

75. Selser, W. L. "An Evaluation of an In-Service Institute for Improving Science and Mathematics Instruction in the Hillsborough County Junior High Schools." University Microfilms, Ann Arbor, Michigan. 1962.

76. Shrader, J. S. "An Investigation of Instructional Problems Encountered by Beginning Secondary Science Teachers in the Pacific Northwest." Science Education 45:143-153; March, 1961.

77. Steele, H. C. "A Descriptive Analysis and Evaluation of the Auburn Educational Television Project in General Science for the 1959-1960 School Term." University Microfilms, Ann Arbor, Michigan. 1961.

78. Suttle, S. W. "National Science Foundation Activities at Indiana State." College Journal 32:129-130; March, 1962.

79. Thompson, J. F. Personal communication about inservice program evaluations and agendas. February 19, 1969.

80. Voth, J. A.; Leonard, B. C.; Denney, L. L. "Instruments for Teaching Assessment." Paper presented at NSTA Annual Convention, Dallas, Texas; March, 1969.

81. Ward, H. E. "Special Institute Science Courses in Academic Year Institutes, 1962-63." University Microfilms, Ann Arbor, Michigan. 1964.

82. Welch, W. W.; Walberg, H., Jr. "An Evaluation of Summer Institute Programs for Physics Teachers." Paper presented at National Association for Research in Science Teaching, at Los Angeles, California; February, 1969.

83. Welch, W. W.; Walberg, H. J. "An Evaluation of Summer Institute Programs for Physics Teachers." Journal of Research in Science Teaching 5:105-109; 1967-8.

84. Westby-Gibson, Dorothy. "Inservice Education--Perspectives for Educators." Far West Laboratory for Educational Research and Development, Berkeley, California. 1967.

85. Wittwer, F. A. "An Evaluation of the National Science Foundation Research Participation Program for High School Science Teachers at the University of Wisconsin." University Microfilms, Ann Arbor, Michigan. 1967.

86. Andrews, T. F. ed. "BSCS Materials for Preparation of In-Service Teachers of Biology." Biological Sciences Curriculum Study, Boulder, Colorado. 1964.

87. Bingham, N. E. "Working Cooperatively, Science Teachers, Scientists and Science Educators Produce a Program Which Significantly Improves Achievement in Science in Junior High Schools of Hillsborough County, Florida." Science Education 47:220-236; April, 1963.

88. Biological Sciences Curriculum Study. BSCS Newsletter No. 30. BSCS, Boulder, Colorado. 1967.

89. Bosley, H. E.; Wigren, H. E. eds. "Television and Related Media in Teacher Education, Some Exemplary Practices." Multi-State Teacher Education Project, Baltimore, Maryland. 1967.

90. Brittain, C. V.; Sparks, Edithgene "Changes in Teaching Difficulties Reported by Teachers Completing an Inservice Course in Science." Science Education: 152-156; March, 1965.

91. Clark, G. M. "The Middle School." BSCS Newsletter, No. 34. Biological Curriculum Study, Boulder, Colorado; April, 1969.

92. Crall, H. William; Myers, R. M. "Some Implications of Reactions of State Superintendents and State Chairman of North Central Association Committees to a Questionnaire Pertaining to Certain Recommendations for Master's Degree Preparation for Master Teachers of Biological Sciences in High School." Science Education 46:401-405; December, 1962.

93. Earth Science Curriculum Project. ESCP Newsletter, No. 16. ESCP, Boulder, Colorado; May, 1968.

94. Eccles, P. J. "What Does a Teacher Need to Know?" The Science Teacher 31: 72; April, 1964.

95. Flanders, N. A. "Interaction Analysis and Inservice Training." Mimeographed paper, no date. The University of Michigan, Ann Arbor, Michigan.

96. George, K. D.; Wrench, S. H. "Are You Prepared to Teach a Course in Unified Science?" School Science and Mathematics 66:429-436; May, 1966.

97. Giuliani, Serafino; Dean, R. A. "Continuing Education Programs for Teachers of Science in the San Diego Area." The American Biology Teacher 30:827-831; December, 1968.

98. Harvard Project Physics. Teacher's Newsbrief. Harvard University, Cambridge, Massachusetts; December 1, 1968.

99. Heyman, M. M. "Criteria and Guidelines for the Evaluation of Inservice Training." Department of Health, Education and Welfare, Washington, D.C. 1967.

100. Hinerman, C. O. "An Experimental In-Service Program in Radiation Biology for High School Teachers." The American Biology Teacher 27:499-503; August, 1965.

101. Hurd, P. D. "The Education of Secondary School Biology Teachers." The American Biology Teacher 24:327-331; May, 1962.

102. Kane, Julian "Junior High Faculty Holds Science Seminars," The Science Teacher 31:27; March, 1964.

103. Kelley, C. Y. "Where It's Happening, A Selective Guide to Continuing Programs Funded by the United States Office of Education." Doubleday & Company, Inc., Garden City, New York. 1968.

104. Mallinson, G. S. "The Summer Institute Program of the National Science Foundation." School Science and Mathematics 63:95-104; February, 1963.

105. Marshall, L. W. "Identifying Changes Effected by National Science Foundation Participants in Local Title III, National Defense Education Act Programs in Indiana." University Microfilms, Ann Arbor, Michigan. 1964.

106. Michigan-Ohio Regional Educational Laboratory, Basic Program Plan for Inservice Teacher Education. MOREL, Detroit; September, 1968.

107. National Academy of Sciences. "Guidelines for Development of Programs in Science Instruction." National Academy of Sciences, Washington, D.C. 1963.

108. National Commission on Teacher Education and Professional Standards. Remaking the World of the Career Teacher. National Education Association, Washington, D.C. 1966.

109. National Science Foundation. "Academic Year Institute for Secondary School Teachers of Science and Mathematics 1967-68." School Science and Mathematics 67:88-94; January, 1967.

110. National Science Foundation Upgrades Teaching of Science." Nation's Schools 65:69:75; February, 1960.

111. Nicodemus, R. B. "Cooperative College-School Science Project - First, Second, and Third Year Report - 1965, 1966, and 1967. ERIC Document Reproduction Service, 1967.

112. North Carolina State Department of Public Instruction. "Certification and In-Servi e Experiences, North Carolina Science Teachers Grades 7-9." A Status Report, Raleigh, North Carolina, Mimeographed. 1968.

113. Piltz, Albert; Steidle, Walter. "A Report of a National Conference of Science Supervisors, June 14-17, 1966." U.S. Office of Education, Washington, D.C. 1966.

114. Piltz, Albert; Steidle, Walter. "National Defense Education Act of 1958, as Amended - Title III Annual Report - Fiscal Year 1966 - Part III - Narrative Report." U.S. Department of Health, Education and Welfare, Washington, D.C. 1966.

115. Richardson, J. S.; Diehl, T. H. "The Development of a Mobile Laboratory in the In-Service Education of Teachers of Science and Mathematics." The Ohio State University, Columbus, Ohio. 1961.

116. San Antonio Chemistry Project. "Report of the Directors of the San Antonio School Chemistry Project." Science Education Center, University of Texas, Austin. 1965.

117. Shea, J. H. "Highlights of 1965 ESCP Survey of Earth Science Teachers." Journal of Geological Education 14:9-12; February, 1966.

118. Smith, H. A. "Educational Research Related to Science Instruction for the Elementary and Junior High School - A Review and Commentary." Journal of Research in Science Teaching 1:199-225; September, 1963.

119. White, K. E. "Where Are They Now? A Study of Teacher Supply in Mathematics and Science." Journal of Educational Research 53:331-335; May, 1960.

120. Winter, S. S. "Comments on Teacher Education, Number 1:A Harvard Project Physics Summer Institute." Harvard University, Cambridge, Massachusetts. No Date.

ADDENDUM

For the convenience of those readers wishing a quick reference to materials
reviewed for this paper, these materials have been categorized relative to the
three main areas of the report: (1) program descriptions, (2) evaluation of
inservice activities, and (3) research studies and reports. Some overlapping of
areas two and three was inevitable because many studies included a research
component in the evaluative investigation or an evaluative component in the research
design.

Materials listed include not only those cited in the body of the paper but
also related references listed in the latter part of the bibliography:

    I PROGRAM DESCRIPTIONS: 4, 5, 8, 14, 17, 21, 25, 30, 38, 43, 45, 49, 51,
            55, 62, 64, 71, 73, 78, 87, 96, 99, 101, 114;

    II EVALUATION: 1, 6, 13, 16, 26, 27, 28, 32, 37, 39, 41, 48, 53, 56, 61,
            65, 75, 77, 81, 82, 83, 85, 110, 115;

    III RESEARCH STUDIES AND REPORTS: 3, 6, 10, 11, 15, 16, 22, 32, 39, 40,
            42, 47, 48, 50, 57, 58, 59, 60, 68, 69, 70, 72, 76, 80, 90,
            91, 104, 111, 118.

TABLE 1-A

MEAN BEHAVIOR MODE PERCENTAGES FOR ALL SESSIONS,
ACCORDING TO ACTIVITY-TYPE CLASSIFICATIONS

Class	No. of Lessons	Passive	Cognitive Verbal	Cognitive Active	Active Noncog.	Gross Motor
Concept Builder	13	49.93	38.02	6.77	4.77	.00
Listen, Look, and Talk	16	71.43	21.73	3.27	1.28	2.29
Make and Do A-go-go	19	38.39	13.15	18.84	18.81	10.74
difference significant, chi square, df = 2. p < .01			.01	.05	.01	--
All Lessons	48	52.53	22.74	10.38	9.17	5.01

TABLE 1-B

MEAN APPROPRIATE INVOLVEMENT AND DEVIANCY RATINGS FOR ALL
SESSIONS, ACCORDING TO ACTIVITY-TYPE CLASSIFICATIONS

Class	No. of Lessons	Appropriate Involvement	Deviancy Rate
Concept Builder	.13	80.90	9.35
Listen, Look, and Talk	16	83.12	11.86
Make and Do A-go-go	19	81.71	7.70
difference, chi square (df=2) not significant beyond chance.			
All Lessons	48	81.96	9.53

activity, or activity-setting, constitutes an independent variable in relation to the dependent variable, behavior-mode. Verbal participation on the part of the children is seen to have been higher in the Concept-Builder lessons than in the Listen and Talk lessons, although physical activity levels remained relatively low. For example, children in the Listen and Talk lessons were found to be passive more than 71 percent of the time, but in the Concept Builder lessons, they are rated as passive less than 50 percent of the time. Verbal behaviors occurred in the Listen and Talk lessons less than 22 percent of the time, but constituted 38 percent of behavior in the Concept-Builders. Motor behaviors constituted barely 10 percent of the behavior coded in either of these two lesson groups. In contrast to the other groups, the activity level in the third classification, Make and Do A-go-go, averaged about 48 percent physically active and only 38 percent passive, while barely 13 percent of the behavior reported in this third group was verbal.

Behavior Mode as Independent Variable

The children's behavior, when measured in terms of appropriate task-involvement and deviancy, is seen to be related to behavior-mode but not to activity setting. Although

the three activity-type classifications differ significantly
in regard to the behavior-modes induced within them, they do
not differ significantly overall in regard to appropriate
task-involvement and deviancy. (Table 1-B)

While, on the one hand, the behavior modes are
seen to be _dependent variables_ in relation to the independent
variable "activity setting", they take on the role of _major
independent variable_ in relation to the children's responsive
behavior.

Props: Independent Variable

A second major independent variable, in relation
to the children's task-involvement and deviancy, is the
appropriateness of props used during a teaching lesson. Props,
of course, are the equipment, toys, tools, or materials used
as adjuncts to the lesson. In at least one case, the power of
the props introduced in the lesson to induce behaviors which
were inappropriate to the lesson, was so great as to make the
total session uncodable. The influence of the props upon the
course of the lesson was noted to a greater or lesser degree in
most of the lessons in the study.

Playroom toys, such as the teeter-totter, might be

considered appropriate props for lessons in which new concepts
are taught or old ones enlarged upon, so long as the children
may expect to employ them in the familiar way to develop these
concepts. If, however, they must refrain from using the prop
in the familiar way, e.g., from climbing upon this beloved
toy whose best known purpose is to be sat upon, the children
are being asked to exercise unusual constraint. If, in
addition, an object such as the teeter-totter is employed
in this manner within a space which is too small to accommodate
it along with the teacher and children who are to use it,
pandemonium is (and was) the likely result. Similarly, balls
are appropriate props for use in a lesson which allows them
to be bounced, passed, or tossed. They have been observed
in this study to be inappropriate props when they are presented
for comparison but withheld from children. Such is the case
in a lesson during which the children are asked to state which
of two balls is the "bigger one" and which the "littler one",
but are not allowed to touch the balls even when they reach for
them.

Objects which produce sounds are good props for
a lesson in which the children are asked to identify the ob-
jects from the sounds they make. Their implementation becomes

-54-

inappropriate, however, when the children are still not

permitted to see them -- to confirm their identification --

after they have served their original function. Foods, such as

apples, are indispensable props when the intent of the lesson

is eating and, perhaps, comparison of flavors, juiciness, and

textures. They become inappropriately irresistible when the

children are expected to compare and discuss but refrain from

eating.

In order to obtain a rating of the valence or

coercive value of the props, a description of the props

and of the plans for the lessons in which they were to be used

(a total of 31 lessons) was presented to a panel of six judges.

The props were rated on a four-point scale, ranging from a

judgment that the props were highly conducive to behaviors

appropriate to the lesson purpose, and that they had low valence

or coercive power toward non-task-oriented behavior, to an

opposite judgment that the props were highly conducive to

behaviors which are inappropriate to the purpose of the lesson

and had low valence or coercive power toward task-oriented behaviors.

The highest rating, indicating that the props used are considered

to be the most conducive to appropriate behaviors within the

context of the lesson, was given a value of ten points, and

TABLE 2

Prop-Rated Lessons   N=22

Spearman rank-difference correlations (r_s) of prop-rating
and behavior modes with task-involvement and deviancy
behavior.

	Appropriate Involvement	Low Deviancy
Prop Rating	.669**	.530**
Percent Passive	-.194	-.063
Percent Cog./Verbal	.021	-.129
Percent Cognitive	.179	.033
Percent Active	.222	.249
Percent Cog./Act.	.540**	.548** (not including Gross Motor)
Duration	.217	.276
Mean C.A.	.041	-.015
Proportion Female	-.106	.118

Duration with mean C.A.: r_s = .188
Duration with prop. male = .256
Duration with prop. female = .289

** p < .01

-56-

the lowest rating was given a value of one point. Intermediate
ratings were seven points and four points. An average of the
six judges' ratings for each of the lessons was obtained and
could thus be placed anywhere on a continuum from one through ten.

High coder ratings of props were consistently and
powerfully associated with appropriate lesson involvement and
with very low rates of deviancy behavior on the part of the
children in a group of 22 lessons for which statistical in-
dependence from other teacher effects was established (Table #2).

Coding the Dependent Variables

The behavior of the children within the task-setting
now constituted the dependent variable under study. The
behavior was measured in two sub-categories: (a) proportion
of appropriate involvement (AI), defined as behavior pertinent
to the learning situation and the purposes of the lesson, or as
behavior which is expected within this task-setting; and (b)
the rate of deviancy behavior (DR), defined as behavior which
interferes with another child's appropriate involvement in the
lesson or with the teacher's progress in the presentation or
development of the lesson.

In the first of these sub-categories, the appropriateness of task-involvement was recorded for each child in the totality of every session. A technique of consecutive sweeps was employed for this purpose. That is, the children in the session under study were observed for the entire duration of the lesson and the level of task-involvement recorded, one child at a time in a fixed and repetitive order. Children were observed consecutively but not for a specific or measured period of time. Observation of each child who was visible was maintained each time only until a judgment could be made in regard to appropriate (or other) involvement. The judgment was recorded by means of a mark in the appropriate column, and observation was then shifted to the next child in order. This method is called "point-time sampling" by Gordon (1966) and used by Kowatrukul (1959).

The second subcategory of behavior studied was Deviancy, here defined as any behavior which interferes with another child's involvement in the classroom activity or with the teacher's progress in the lesson. No differentiation was attempted between "aggressive" and "non-agressive" behaviors. Here, also, an attempt to record differentially between task and non-task deviancy was abandoned.

Coding for deviancy consisted purely of an
absolute count of deviancies for the entire duration of each
lesson. A simple weighting for number of children affected was
achieved by inscribing a mark in the proper column. A deviancy
rate per child per minute for each session was computed by
the formula $DR = \frac{TD}{C} \div (time)$. That is, Deviancy Rate is
equal to the total number of deviancies divided by the number
of children, and that quotient again divided by the actual
duration of the lesson in minutes and fractions.

Results and Discussion

Although the activity-type classifications are
differentiated by their generated modes of behavior, it has
been seen that they are not significantly different in regard
to mean levels of Appropriate Involvement or Deviancy. That
is to say that while modes of behavior (active, passive, cog-
nitive) differ according to lessontype, the level of children's
appropriate involvement in the lesson and the amount of deviancy
behavior do not. On the other hand, there is a broad range
of ratings per lesson for each of the behavior modes within
classifications. For example, among the Concept-Builder lessons,
ratings of Passive behavior mode range from 0 to 86.67 percent,

-59-

with a mean of 49.93 percent.

Table 3 shows the Spearman rank-difference correlations between the behavior modes and the children's behaviors for the thirteen Concept-Builder lessons. Significant negative correlation exists between the percentage of Passive mode alone and Appropriate Involvement (p < .05), suggesting that a high level of passivity without cognitive demand tends to result in low rates of appropriate involvement in the lesson. The total percentage of cognitive-demanding modes, however, is positively related to Appropriate Involvement, while the ranking of the combined percentage of the Passive and Cognitive modes is seen to be significantly correlated with appropriate involvement and with low rates of deviancy (p < .01)

The Cognitive-verbal mode, from the point of view of muscular employment, remains similar to the Passive mode, which may explain why C/V only approaches significance in its relationship with Appropriate Involvement (p < .10). The Cognitive-Active mode, on the other hand (CA), bears significant relationship both to high Appropriate Involvement and to low deviancy (p < .05). Thus, it would appear that the addition of some types of movement-activity, in combination with cognitive-demand, may result in higher levels of Appropriate Involvement

TABLE 3

Concept Builder Lessons (CB)   N=13

Spearman rank-difference correlations (r_s) of behavior modes with involvement and deviancy.

	Appropriate Involvement	Low Deviancy
Percent Passive	-.538**	-.209 (% Passive Only)
Percent Pass. + Cog.-Verbal	-.104	-.225
Percent Cog.-Verbal	.374*	.088 (% C/V Only)
Percent Cog.-Active	.593**	.495**
Percent Cognitive	.495**	.154 (incl. C/V,CA,AC)
Percent Pass.+ Cog.	.846***	.736***
Mean C. A.	.779***	.581** (oldest ranked high)
Prop. Female	-.177	.155
Duration	.593**	.764*** (longest ranked high)

Duration with Mean C.A.; $r_s = .628$**

   * approaches significance with $p < .10$
  ** $p < .05$
 *** $p < .01$

and lower levels of deviancy.

A significant relationship is also noted between mean chronological age and appropriate involvement (p < .01), and between mean C.A. and low deviancy (p < .05). This may be an indication of the importance of keying cognitive level as well as the activity level of the lesson, to the age of the children in the group. The significant correlation between lesson duration and the behavior variables is undoubtedly due to the fact that the student teachers are specifically instructed to bring the lessons to a close whenever it is clear that the situation is getting out of hand. This is done both to protect the children from beeing needlessly exposed to excessively disturbing conditions and to defend the student-teachers against unnecessary damage to their relationship with the children.

The correlations between independent and dependent variables in the Listen, Look and Talk Lessons are presented in Table 4. For none of the major variables does the correlation even approach significance. It should be recalled, however, that these lessons are frequently controlled by the use of a picture book, or by the childrens' interest in the story or its plot. Even here, however, there would appear to be at least a

-62-

TABLE 4

Listen, Look, and Talk Lessons   (LT)   N=16

Spearman rank-difference correlations (r_s) of behavior
modes with children's task involvement and deviancy.

	Appropriate Involvement	Low Deviancy
Percent Passive	.009	.168
Percent Active	-.091	-.179 (all active modes)
Percent Cognitive	.206	.085 (all cog. modes
Percent Cog. Verbal	.147	.047
Percent C/V + Pass.	.259	.256
Percent Active + Cog.	.293	.187
Percent Passive + Cog.	.291	.212
Duration	-.165	-.018 (longer ranked high)
Mean C. A.	.218	.171 (older ranked high)
Prop Female	.202	.518*

Note: * $p < .05$

tendency, although it does not approach statistical significance, toward a positive relationship between the degree of Cognitive demand and appropriate involvement, especially in combination with physical activity, as well as with low deviancy.

In the MG lessons (Table 5) as in the Cln Concept Builder lessons, the percent Passive approaches significant correlation with high Deviancy, while the total Cognitive mode is highly correlated ($p < .01$) with Appropriate Involvement and with low Deviancy. Passive and Cognitive modes combined are once more associated with Appropriate Involvement and low Deviancy, with the push apparently coming from the Cognitive-Verbal and Cognitive-Active modes ($p < .01$). Once again, Gross Motor and Active-Non-Cognitive modes are negatively correlated with the dependent variables; that is, they are associated with low levels of Appropriate Involvement and with high Deviancy Rates ($p < .05$).

While it was considered desirable to study the effects of the independent variables in the total group of forty-eight sessions, it was not possible to establish statistical in-dependence from teacher-effects for the entire group. (Chi square = 4.08 for Appropriate Involvement, and 5.36 for Deviancy

TABLE 5

Make and Do A-Go-Go Lessons (MG)   N=19

Spearman rank-difference correlations (r_s) of behavior modes with task-involvement and deviancy.

	Appropriate Involvement	Low Deviancy
Percent Passive	-.214	-.342*
Percent Active	-.167	.012 (incl. all active modes)
Percent Cognitive	.605***	.611***
Percent Cog. + Act.	.470**	.500** (not incl. Gross Motor - GM)
Percent Cog. + Act.	.228	.360* (incl. GM)
Percent Locomotor	-.461**	-.389**(GM and A/NC)
Percent Pass.+ Cog.	.483**	.505**
Percent Cog/Verbal	.837***	.552***
Percent Cog/Active	.598***	.481**
Mean C.A.	.296*	.176
Proportion Female	-.478**	-.226

  * approaches significance, with $p < .10$
  ** $p < .05$
  *** $p < .01$

rate; with one degree of freedom, these chi squares are significant at p.<05 and force rejection of the hypotheses of independence). Indeed, remarkable naiveté would be required for any assumption that differences of personality and individual approach by teachers could fail to affect the behaviors of the children! This was observably true and must logically be considered true, even though activity-setting factors were powerful enough to permit establishment of statistical independence for the three sub-groupings.

The decision was made to select six sessions from those taught by each of the student teachers for a total of thirty-six. Selection was kept random by coin-toss with replacement. That true randomness may have been achieved is suggested by the fact that the sample thus obtained includes eleven Concept Builders, twelve Listen and Look, and thirteen Make and Do sessions. In addition, the means for all the variables are remarkably similar to those obtained for all forty-eight sessions.

Table 6 shows the results of the comparisons of rankings in this larger grouping, disregarding activity-setting classifications. All relationships are found to be in the same direction as those noted for the subgroupings. Most interesting

TABLE 6

All teachers, six sessions each; Total $N=36$ [a]

Spearman rank-difference correlations (r_S) of behavior modes with task-involvement and deviancy.

	Appropriate Involvement	Low Deviancy
Percent Passive	-.279*	-.307*
Percent Cog. Verbal	.469***	.155
Percent Cog./Active	.354*	.263#
Percent Cognitive	.562***	.286*
Percent Active	-.410**	-.160 (includes GM)
Percent Cog. + Pass.	.396**	.131
Percent Cog. + Active	.537****	.473*** (omit GM)
Mean C.A.	.295*	.187
Proportion Female	-.119	.140

duration with prop. male, r_S = -.119
duration with prop. female = .168
duration with mean C.A. = .038

(a) thirty-six sessions selected at random by coin-toss, confined only to six sessions per teacher.

  # approaches significance, $p < .10$.
  * $p < .05$
  ** $p < .01$
  *** $p < .005$
  **** $p < .0005$

is the association of percent Passive in this larger grouping with low levels of Appropriate Involvement and High Deviancy rates ($p < .05$), and the continued association of total percent Cognitive with high levels of Appropriate Involvement ($p < .005$) The combination of Cognitive demand with moderate physical activity (Gross Motor omitted) shows highly significant association with Appropriate Involvement ($p < .0005$) and with low deviancy rates ($p < .005$).

In addition to the classification of lessons according to activity-setting, the data for the forty-eight lessons were divided for purposes of analysis into five groups according to sex-ratio: (1) those sessions in which proportions of boys and girls were approximately equal (e.g., two plus two, two plus three, or three plus four); (2) those in which there were more boys than girls but in which at least one girls was present; (3) those groups in which there were more girls than boys but which included at least one boy; (4) lessons attended by boys only; and (5) lessons attended by girls only.

Over the forty-eight lessons included in the study (Table 7), girls tended to be slightly more appropriately involved (4.91 percent) than boys, while boys show overall a higher rate

TABLE 7   Comparison of <u>Mean Appropriate Involvement</u> levels between boys and girls, according to proportion of boys and girls in each lesson. N = 48 lessons.

		Mean Appropriate Involvement	
<u>Proportions equal</u>	<u>N lessons</u>	<u>Boys</u>	<u>Girls</u>
Concept-Builder Lessons	2	83.21	83.47
Listen, Look and Talk	6	86.26	83.92
Make and Do A-go-go	4	61.32	70.09
Total	12	77.44	79.24
<u>More boys than girls</u>			
Concept-Builder Lessons	2	100.44	97.68
Listen, Look and Talk	2	82.03	80.94
Make and Do A-go-go	3	103.52	103.56
Total	7	95.76	92.70
<u>More girls than boys</u>			
Concept-Builder Lessons	5	63.12	71.70
Listen, Look and Talk	4	76.85	81.22
Make and Do A-go-go	8	71.39	81.48
Total	17	70.24	78.54

(difference between boys and girls for this group of seventeen lessons significant, $p = .025$; one-tailed sign test).

<u>Boys only</u>	8	82.91	
<u>Girls only</u>	4		90.60
Total and Great Mean Boys: 44		78.56	
Girls: 40			82.43

(difference between boys and girls for all lessons significant, $p = .00023$; one-tailed sign test). (Siegel, 1956).

of deviant behavior (21.15 percent). Girls'appropriate involvement levels, also, were found to be higher than the boys' appropriate involvement levels in twenty-three of the thirty-six lessons in which both boys and girls were simultaneously present. This difference between the sexes is significantly greater than might be expected through chance ($z=3.5$; $p=.00023$) according to a one-tailed sign test (Siegel, 1956). Boys' deviancy rates (Table 8) were higher than girls' rates of deviant behavior in twenty-two of the thirty-six lessons ($z=3.167$, $p=.0007$, one-tailed).

The sharpest difference between the boys and the girls in appropriate involvement levels is found in those lessons attended by a larger proportion of girls than boys. This is a group of seventeen lessons which includes five Concept-Builders, four Listen-Look lessons, and eight Make and Do lessons. The probability that girls were more frequently appropriately involved than boys, in those lessons where girls were in clear majority, is significantly beyond chance at the 2 1/2 percent level (sign test, one-tailed). Boys' deviant behavior rates, for those lessons where girls are in the majority, are 61.39 percent higher than girls' rates for deviant behavior.

TABLE 8. Comparison of Mean Deviancy Rates between boys and girls, according to proportion of boys and girls in each lesson. N = 48 Lessons.

Mean Deviance Rates

Proportions equal	N lessons	Boys	Girls
Concept-Builder Lessons	2	3.965	2.068
Listen, Look and Talk	6	1.290	2.760
Make and Do A-go-go	4	3.911	3.922
Total	12	2.160	2.840
More boys than girls			
Concept-Builder Lessons	2	1.323	2.285
Listen, Look and Talk	2	1.036	6.480
Make and Do A-go-go	3	4.273	2.285
Total	7	.947	1.578
More girls than boys			
Concept-Builder Lessons	5	3.067	1.471
Listen, Look and Talk	4	6.270	5.954
Make and Do A-go-go	8	3.885	1.654
Total	17	4.206	2.606

(difference between boys and girls for this group of seventeen lessons approaches significance, p = .072; one-tailed sign test).

Boys only	8	3.086	
Girls only	4		2.225
Total and grand mean.			
Boys:	44	2.978	
Girls:	40		2.458

(difference between boys and girls for all lessons significant, p = .0007; one-tailed sign test). (Siegal, 1956).

Statistical significance was not established

for behavior-differences which appeared to be related to

differences in sex-ratio except as reported above. Tabled

directions, however, suggest that girls tended to be slightly

more appropriately involved but also more deviant (31.48

percent) when sex-ratios were approximately equal. Boys

appear to have been slightly more appropriately involved

and girls to have been sharply more deviant (66.62 percent)

in those lessons in which boys were in clear majority.

Trends toward generally more appropriate involvement

on the part of girls overall are seen to be continued where

sex-ratio differences are examined in the context of activity-

setting classifications. The difference is narrower, however, in

the Listen, Look, and Talk lessons than in the slightly more

child-involving Concept Builder lessons. Rates of deviant

behavior, in fact, are lower for boys than for girls in the

more passive Listen/Look lessons. The tendency for the sex-group

which is in the minority to demonstrate lower rates of appropriate

involvement and higher rates of deviancy is maintained.

The effect upon behavior of the activity-setting,

that is of the activity-level which is generated by activity-type, is shown clearly by the comparison in Tables 9 and 10. Table 9 combines the data for the twenty-nine Concept Builder and Listen/Look lessons, and shows that the effects of sex-ratio upon the rates of appropriate involvement and deviant behavior continue in the already noted direction. The overall means for Appropriate Involvement and Deviant behavior suggest little difference between the sexes over the twenty-nine lessons in the combined, relatively passive grouping. The more active Make and Do lessons, however, charted in Table 10, find boys for the first time consistently lower in appropriate involvement and consistently higher in deviancy rates. The differences between boys' and girls' appropriate involvement rates and deviant behavior rates are significantly greater than might be expected through chance, at $p = .018$ (one-tailed sign test).

Sex differences. The questions of sex role differences and their possible effect upon children's behavior at the preschool level would appear to be an area in which the need for research is far from exhausted. The suggestion springing from the data herein that imbalance in the proportions of boys and girls in a classroom setting may trigger inappropriate and deviant behaviors

TABLE 9. Comparisons of Boys and Girls Appropriate Involvement and Deviancy levels, according to activity-type classifications.

Listen, Look and Talk lessons and Concept-Builder lessons, combined. N = 29 lessons

	N	Mean Approp. Involvmt.		Mean Deviancy Rate	
		Boys	Girls	Boys	Girls
Proportion equal	8	85.49	83.81	1.959	2.587
More girls	9	69.22	75.93	4.490	3.452
More boys	4	90.07	84.56	.589	2.191
Total	21	79.39	80.57	2.783	2.882
Boys only	5	80.77		2.525	
Girls only	3		91.77		2.893
Overall Mean:		79.68	81.97	2.788	2.893

TABLE 10. Make and Do A-go-go lessons. N = 19.

	N	Mean Approp. Involvmt.		Mean Deviancy Rate	
		Boys	Girls	Boys	Girls
Proportion equal	4	61.32	70.09	3.911	3.922
More girls	8	71.39	81.48	3.885	1.654
More boys	3	103.52	103.56	1.424	.762
Total	15	75.13	82.86	3.400	2.080
Boys only	3	86.47		1.849	
Girls only	1		87.10		.000
Overall Mean:		77.02	83.12	3.142	1.950

Difference between boys and girls in 19 Make and Do lessons significant for both appropriate involvement and deviancy, p=.018; one-tailed sign test (Siegel, 1956)

Differences between boys and girls, comparing combined LLT/CB lessons to MG lessons: for Deviancy, p<.05; approaches significance for appropriate Involvement, p<.10. (X^2, df=1).

in the members of the minority sex group is a tentative

hypothesis which begs for further investigation.

The finding is reported for the present study that

girls tended overall to be more appropriately task-involved

and boys to be more deviant in their behavior. These directions

are maintained, and the magnitude of the difference sharply

heightened, in the more active Make and Do A go-go sessions.

In the Listen and Look sessions, the highly passive and cog-

nitively undemanding sessions, the girls were seen to be slightly

more appropriately involved than the boys but sharply more deviant.

These findings meet an interesting parallel in

the report by Charlesworth and Hartup (1967), who studied

the manner in which children's behaviors were reinforced by the

responses of their peers within the nursery school. They report

that girls engaged in mutual social reinforcement behavior

more than boys in sedentary activities, while boys "engage

in a larger proportion of social reinforcing peer interaction

during dramatic play than girls." When the findings of that

study are related to those of the present study, it can be seen

that our girls reinforce each other both in appropriate involvement

and in deviant behaviors during the sedentary Listen and Look

lessons. The same was clearly true for the boys in those lessons

which involved more dramatic play and motor activity. In fact, these influences seem clearly to differentiate between the more passive and the more active lessons in terms of the different levels of appropriate involvement and deviant behavior induced by them in boys and in girls.

Conclusion

It has been shown that the modes of behavior --- levels of physical and cognitive activity---generated in each of the lesson types during the introduction to the lesson significantly differentiate each of the activity-setting classifications from the others. It is also shown that the average level of child-initiated behaviors---task involvement and deviancy behaviors--- for each classification does not vary significantly from the average level for all groups. This is taken to be a clear demonstration of the assumption that "the behavior of the child at a particular time does indeed depend more directtly upon the situation than upon the setting in which it takes place". (Wright, 1960). It is to the nature and conditions of the situation, therefore, that we must turn in order to understand the behaviors. The results of this exploration are reasonably consistent in their message. They in-

dicate that nursery school children observed in the course

of this study within an activity-setting in which they are

physically passive and cognitively uninvolved, except when their

attention is held by an audio-visual device such as the story

book, are not likely to be highly appropriately involved in

the lesson activity. They are also more likely to interfere

with another child's lesson - involvement or with the progress

of the lesson than they might be in a lesson which demands of them

a more active participation. Results also indicate with

relative consistency that activity settings in which large

motor or locomotor activity is induced, when this activity

is not directed by or in the control of the child's response

to the lesson's cognitive demands, may be expected to generate

low levels of appropriate task-involvement as well as high

levels of deviant behavior on the part of the children.

On the other hand, when the passive mode of be-

havior is appropriate to the task-pattern, and when it is in

combination with demand for cognitive commitment, high levels

of appropriate involvement and low levels of deviant behavior

result. Likewise, when moderate physical activity is appropriate

to the task pattern, and when excessive locomotor behavior in

such activity is avoided, appropriate involvement and low

deviancy rates result. Even more dramatically demonstrated

is the likelihood that, when moderate activity levels are

combined with a demand for cognitive involvement on the

part of the child in the type and level of his physical activity,

very high levels of appropriate task-involvement and very low

deviancy rates result.

Kounin stated (1966) that the "...management of

behavior in classrooms ... is a function of the techniques

of creating an effective classroom ecology." The study here

reported may claim little more than exploratory value, and

is on much too small a scale to pretend to predict for other

settings. Certainly, the suggestions that sex-group imbalances

influences behavior in these groups requires more investigation

before inferences may be considered. If the results of the

present study may in any way be generalized, however, it

would seem to behoove the nursery school teacher to select

with care the materials which are to be present in the setting

or employed within the context of a lesson. Careful structuring

of the activity - setting and selection of the objects within

it, as well as thoughtful pre-planning toward the maintenance of

age-appropriate cognitive stimulation and activity levels,

appear to be the master keys to the inducement of

appropriate task-involvement and the avoidance of deviant

behavior on the part of pre school children within a learning-

activity setting.

Epilog

In the study which has been deøscribed, we find

ourselves looking at broad aspects of the behavior-setting;

for example, types of lesson-activities and the kinds of props

used in the context of the lesson. We are looking, also, at

the behavior of the children within the context of these setting

factors.

In reality, however, we are looking at the total style

with which a teacher has structured a situation, utilized the

materials of the lesson, or involved the children -- in terms of

the behaviors of the children within that total context. We

are here measuring behaviors of children, rather than of

teachers, but mindful of the fact that the teacher, and her

methods of inducing and inhibiting behavior, is a crucial force

in this ecology.

It must be one of the more obvious truisms occurring

to anyone watching different teachers in their classroom be-

haviors that there are distinct differences in the ability of

teachers to affect children's behaviors in desired directions. Are these due to differences in teacher personalities?

It would seem more fruitful to study the kinds of things that effective teachers do, rather than to concern ourselves with the differences in teachers' personalities. That is, if we can define the differences. At the same time, it would be useless to deny that the investigators in this study were deeply impressed with what seemed to be an over-riding quality in one student teacher who stood sharply out from the others in her superior effectiveness. This singular quality, if one attempts to define it, might be described as "respect for children as worthy individuals," and seemed to be returned in kind by the children in their response to their teacher.

This "respect" on the part of the teacher was manifested in her consistent habit of addressing each child by name, of looking directly at the child, even orienting her body toward the child with whom she was speaking, and in her reasoned deference to the children's interests in the direction of her lesson. It was manifested in her intuitive reinforcement by word and glance of desired behaviors, and in her warm but firm discouragement of behaviors which were undesirable or dis-

ruptive. Her respect for the children and their individual abilities was further manifested in her consistent demand for thinking activity, in her persistent and thoughtful challenge to each child to explain what he meant in his remarks, or to put into words the meaning of his physical movement. In short, she elicited from the children, most effectively, all those kinds of behaviors which we were finding to be most clearly associated with high levels of appropriate involvement and low levels of deviant behavior.

Truly, this teacher behaves as she does because it is part of her personality development, but it is her behavior which is effective in producing desirable learning-oriented behaviors in the children. It is her behavior that is worthy of study and, perhaps, of emulation. Further understanding of this broad concept of respect, if that is what it is, and of the effects of these specific behaviors upon others in the school setting, demands further research. So also does the question whether evaluation or study of these behaviors can or should be separated from the continuing attempt to gain understanding of the construct "personality."

REFERENCES

Barker, Roger G. 1960, "Ecology and Motivation." in Jones, Marshall R., (ed), Nebraska Symposium on Motivation, 1960. Lincoln, University of Nebraska Press.

Barker, Roger G. 1965, "Explorations in Ecological Psychology." American Psychol., 20: 1-14.

Barker, Roger G. and Wright, Herbert F. 1955, Midwest and its Children, Evanston; Row, Peterson and Company.

Bloom, Benjamin S. 1964, Stability and Change in Human Characteristics. New York; John Wiley and Sons.

Body, Margaret K. 1955, "Patterns of Aggression in the Nursery School." Child Development. 26. 3-11.

Boyd, Robert D. and Devault, M. Vere, 1966, "The Observation and Recording of Behavior." Rev. of Educ. Res., December 1966, 36, 5, 529-51.

Charlesworth, Rosalind, and Hartup, Willard W. 1967. "Positive Social Reinforcement in the Nursery School Peer Group." Child Development., 38 (4), 993-1002.

Fawl, Clifford, L. 1963, "Disturbances Experienced by Children in their Natural Habitats." in Barker, Roger G., The Stream of Behavior, New York, Appleton-Century-Crofts.

Gellert, Elizabeth, 1955. "Systematic Observation: A Method in Child Study." Harvard Educ. Rev., 25, 179-195.

Gordon, Ira J. 1966, Studying the Child in the School. New York, John Wiley and Sons.

Gump, Paul, and Sutton-Smith, Brian. 1955, "Activity-Settings and Social Interaction: a Field Study." Amer. J. Ortho-Psychiat., 757-760.

Hartup, Willard H., and Coates, Brian. 1967. "Imitation
        of a peer as a function of Reinforcement from the
        Peer Group and Rewardingness of the Model."
        Child Development, 38, (4) 1003-1016.

Hartup, Willard W., Glazer, Jane A. and Charlesworth,
        Rosalind. 1967, "Peer Reinforcement and
        Sociometric Status." Child Development, 38. (4),
        1017-1024.

Hunt, J. McVickers, 1961, Intelligence and Experience.
        New York, Ronald Press.

Kounin, Jacob S. 1966, "An Analysis of Teachers' Managerial
        Techniques." A paper delivered at the annual meeting
        of the American Psychological Association; New
        York (Mimeographed).

Kounin, Jacob S., Friesen, Wallace V., and Norton, A.
        Evangeline. 1966, "Managing Emotionally Disturbed
        Children in Regular Classrooms." J. Educ. Psychol.,
        57, 1-13.

Kowatrakul, S., 1959, "Some Behaviors of Elementary School
        Children Related to Classroom Activities and Subject
        Areas." J. Educational Psychol., 50, 121-128.

Law, Norma S., 1963, "Report on Wayne State University Nursery
        School at Jeffries Homes, 1957-1963." Submitted
        to the administration of Wayne State University,
        Detroit. (Mimeographed)

Marshall, Helen R., and McCandless, B. R. 1957, "A Study
        in Prediction of Social Behavior of Pre-School
        Children." Child Development., 28, 149-159.

Medley, Donald M., and Mitzel, Harold E. 1963. "Measuring
        Classroom Behavior by Systematic Observation." in
        Gage, N. L., (ed.), Handbook of Research on Teaching.
        Chicago; Rand, McNally.

Moustakis, Clark E., and Schalock, Henry D. 1956, "An
        Objective Method of the Measurement and Analysis
        of Child-Adult Interaction." Child Development,
        27, 1090-134.

Olson, W. C., 1931. "A Study of Classroom Behavior."
        J. Educ. Psychol., 22, 449-454.

Patterson, Gerald R., Littman, Richard A., and Bricker,
        William. 1967. "Assertive Behavior in Children:
        A Step Toward a Theory of Aggression." Monog of
        Soc. for Res. in Child Development, 32, 5
        (Serial No. 113).

Read, Katherine H., 1966. The Nursery School. Philadelphia,
        W. B. Saunders.

Schoggen, P., 1964, "Mechanical Aids for Making Specimen
        Records of Behavior." Child Development, 35, 985-989.

Sears, Pauline S. and Dowley, Edith M., 1963. "Research
        in Teaching in the Nursery School." in Gage, N. L.
        (ed.), Handbook of Research on Teaching, Chicago;
        Rand, McNally.

Willems, Edwin P. 1965, "An Ecological Orientation in
        Psychology." Merrill-Palmer Quarterly, 11, 317-343.

Wright, Herbert F., 1960, "Observational Child Study." in
        Mussen, P. H., (ed.), Handbook of Research Methods
        in Child Development. New York, John Wiley and Son.

MATERIALS AND PROCEDURES FOR ASSESSING

COGNITIVE DEVELOPMENT IN PRESCHOOL CHILDREN

Masako N. Tanaka
Educational Testing Service
Princeton, New Jersey

A little more than 5 years ago, the New York City Board of Education
approached Educational Testing Service with a request to cooperate in a joint
effort. They asked us to find ways to help their first-grade teachers better
understand and assess the intellectual development of their children so that
they could teach each child more effectively. The result of these efforts was
the development of the "Let's Look at First Graders" materials.[1] More recently,
the Early Education Group has been working with 4 and 5 year old children, and
we continue to be convinced of the necessity to involve the teacher directly in
the assessment process. It is our hope that, by relating theory to practice,
we can help to produce a more effective combination of testing and teaching.
In a sense, we are interested in repeating history: if you recall, historically,
the first intelligence tests were validated against teacher judgment.
Unfortunately, since that time, there has been an increasing distance between
the test-maker and the test-user and tests have been used largely as measures
of achievement rather than for diagnostic and instructional purposes. Thus
the traditional testing at the end of the year offers little useful information
to the teacher regarding the instruction of her children during the year.

Our concern with the use of evaluation which would be useful to the
teacher has been implemented in several different ways during the past few
years. One approach we have used has been to ask teachers to tell us about

---

[1]These materials are currently available through ETS. Inquiries should
be directed to: Cooperative Tests and Services, Educational Testing Service,
Princeton, New Jersey 08540.

what they have observed in their classrooms. For example, "What kinds of things have you seen a child do that made you think..."that child is 'smart'?" During the New York City project, we interviewed more than 100 first-grade teachers and collected behavioral illustrations which were then incorporated into a teacher's guide for directed observation. This guide drew heavily on the theoretical framework of Jean Piaget, the eminent Swiss psychologist, and it was our attempt to translate theory into teacher language.

One of the unexpected dividends from these visits to schools was an incident that illustrates how much we still have to learn about what may be referred to as the quality of children's thinking. The class was out on the playground and we were chatting with the teacher. A little boy came running up, all excited, and said "Teacher, Teacher, Jimmy is shaking a worm in front of the girls and making them scream!" The teacher tried to calm him down and asked: "Do you think that's a bad thing to do?" "Yes, ma'm!" he said, "Worms don't like that!"

Another approach to help teachers develop useful evaluation techniques was to suggest various ways of eliciting meaningful intellectual behavior. It is apparent that some behavioral signs cannot be seen by just waiting for them to happen. Some of them—often important ones—have little chance of happening in the ordinary course of events in the classroom or on the playground. It is also apparent that there are some children who simply withdraw from the usual classroom situation and reveal little overt behavior of any kind. In this approach, we incorporated various materials, games and activities which were designed to elicit particular kinds of behavior. The choice of which behaviors to elicit was largely influenced by theoretical considerations, e.g., some of these tasks were adaptations of Piagetian measures and others were developed from disciplines such as psycholinguistics.

-86-

Still another approach to assessment has been the development of a more objective and perhaps more "test-like" set of materials called the Written Exercises. The Written Exercises are similar in some ways to existing tests, but they contain at least two important distinctive features. First, the exercises are related to various theoretical concepts in the behavioral guide. Specifically, they are designed to tap the child's understanding and developed ability in the areas of:

> Shapes and Forms
> Spatial Relations
> Time Concepts
> Mathematics
> Communication Skills
> Logical Reasoning

Secondly, they are designed to give the child extensive practice before any "measure for the record" is made. In each of the areas listed above, there are actually five exercises, one to be given on each day of the week. The first three are for practice and instructional purposes; only the results of the last two assessment exercises are recorded by the teacher. By this procedure, the child is given an opportunity to become familiar with the mechanics of "test-taking" and some experience with those concepts which we consider important enough to test. The use of this approach is particularly helpful to those children who have had little experience with paper and pencil tasks.

For each set of written exercises, the administration manual gives instructional suggestions on how to use the first three exercises for instruction. We have been fortunate in having other investigators conduct research using our materials, and it is particularly gratifying to report on the work done with the written exercises by Nadine Lambert and her students (University of California). In one study, they used the 4th and 5th exercises as pre- and post-measures. The group below the 25th percentile on the pretest was

given instruction with the first three exercises, following the suggestions in the manual. There had been significant differences of race and socioeconomic status in all six areas of the pretest, but all of these differences were drastically reduced in the posttest, so that many of them were no longer significant. This suggests that "teaching toward the test" by giving instruction on how to understand test directions such as "find the one that is most like..." may be an important factor in affecting a child's performance.

Thus in our work with teachers, we have been concerned with the development of measures which give teachers information which may be used for instructional purposes. We are particularly interested in sensitizing teachers to the need to look at a child's performance under a wide variety of circumstances. Surely, if there is a need for instructional programs geared to meet the needs of individual learners, there is an equal need to consider the use of individualized assessment, that is, to look at a child's performance in many different ways. For example, in looking over much of the research on perceptual development in children, it is apparent that in order to make comparisons, we need to identify three different types of performance. First of all is child A, who cannot do the task regardless of the kind of material and circumstances. Then there is child B, who can do the task, but only under certain kinds of presentations and with certain kinds of materials. And then surely there is child C, who can perform on a task and demonstrate his competence regardless of the circumstances. It is child B who represents a large proportion of any group of children, and he is the child who is the victim of the usual testing procedure. For example, such a child may be given one test on classification skills and if he fails, it is assumed that he cannot classify. In general, the conditions and parameters of a particular test are carefully described by the investigator or test-developer, but it is a rare teacher who remembers that a test is limited to a particular set of materials and a particular set of procedures.

-88-

The preschool child is especially vulnerable to this type of misuse of test results because the usual time limitations of the one-to-one testing situation severely restricts the number and variety of assessment procedures possible.

In contrast to the researcher, the preschool teacher is in the unique position of having the opportunity to observe the child in a variety of situations over a long period of time. Thus in our work with teachers, we are suggesting the use of various combinations of assessment techniques. Such procedures as the following may be embedded into the curriculum and provide constant feedback into the instructional program:

1. The use of observation in routine classroom situations (e.g., sorting behavior in putting materials away).

2. The use of structured situations as additions to routine classroom activities (e.g., using a double easel to set up a task to observe spatial egocentrism, that is, the child's ability to visualize another point of view).

3. The use of demonstrations based on translations of Piagetian tasks (e.g., water level and conservation tasks).

4. The use of games which may be played by large groups, small groups and individuals (e.g., Directions Card Game from the New York City materials).

5. The use of classroom materials which are systematically varied (e.g., classifying with actual objects, photographs, pictorial materials, abstractions, language, etc.).

6. The use of different ways of asking the question (e.g., varying the verbal content of tasks, looking at category range as well as sorting behavior, etc.).

7. The use of different types of performance

   a. In terms of the type of task, i.e., some tasks ask for preferential behavior, whereas other tasks ask a child to respond to a "demand" situation. For example, the first type of classification task asks the child to demonstrate how he <u>likes</u> to put things together, and the second type insists that he find "all the things that are red."

   b. In terms of the mode of response, e.g., pointing, marking a multiple choice item, constructing a response using language or actual materials. The type of response required of the child often determines the level of difficulty of the task--<u>recognizing</u> the correct answer in a multiple choice item is usually less difficult than <u>constructing</u> the correct response.

8. The use of different ways of looking at the child's answers:

   a. If the child answers correctly, how sure is he of the answer? Example: the use of clinical probing on some tasks patterned after Piaget's approach.

   b. If the child gives a wrong response, in what ways is he wrong? The understanding of the child's wrong answers is a critical factor in the development of appropriate instruction. Example: the classification Block Test in the preschool research at Educational Testing Service.

It is my personal belief that an educational researcher must feel a responsibility to work with teachers to find ways of implementing theory in the classroom. The following slides will illustrate some of our attempts in this direction:*

------

*Comments on slides given extemporaneously.

Slide Presentation

1. Samples of children's drawings on the Water Level Task (adaptation of Piagetian task).

2. Spatial egocentrism tasks.

   a. Diagram for using a double easel as classroom activity.

   b. Sample test items from the Written Exercises.

3. Time sequence tasks.

   a. Student and teacher sets of sequence cards: used to elicit oral language as well as ordering behavior.

   b. Sample test items from the Written Exercises.

4. Classification tasks.

   a. Directions Card Game, with sets and subsets based on color, shape and number discrimination. Feedback is built in.

   b. Classification Block Task: Set of four picture blocks which may be sorted by color, shape, utility, category, two-attributes and three-attributes.

5. Language tasks.

   a. Samples of ETS Language Comprehension Cards (adaptation of Roger Brown's task on receptive language understanding of tenses, prepositions, negations, etc.)

   b. Samples of ETS Story Sequence Cards: Sets of picture cards used to observe sequence comprehension, oral recall of story, and child's story telling with own selection of cards.

6. School Path Task. (Pegboard adaptation of Piaget's distance conservation task.)

UNITED CEREBRAL PALSY OF QUEENS YOUNG INFANT PROGRAM

Mrs. Dolores M. Goidel, Ed. M.
Director of Children's Services
United Cerebral Palsy of Queens, Inc.
Jamaica, New York

INTRODUCTION

Now that education for culturally disadvantaged children is a fact, a new challenge arises for educators: To find the way to get right on target in supplying <u>early</u> recognition and learning to the physically handicapped child who is culturally disadvantaged. His deprivation is all-consuming because he cannot explore his environment on his own. He is not disadvantaged due to his socio-economic structure (although in many cases, even that can add to the child's burden), but due to his physical and neurological structure.

It is not easy to decide just what kind of pre-school curriculum will work best. Since no two youngsters are handicapped in the same way, there is no pat method to follow. A program, that contains sensory motor stimulation, perceptual training, self-help, and enrichment experiences, which is geared to the cognitive needs of the disadvantaged, is important. Because of their lack of ability to achieve according to adult expectations, there is a need to establish a pattern for: (a) behavior, (b) movement (c) learning and (d) a motivational drive for future achievement.

The parents learn to experience a series of victories and
failures. They have to watch the painful, slow progress of their
child. It is, therefore, not enough to change the parents' feelings
of guilt and frustration to those of passive acceptance. What they
need is a longitudinal program which assists them to understand,
accept, plan together and work in the limitations of their child,
and to learn improved means of coping with the problems developing
out of their child's disabilities. At the same time, the handicapped
infant and young toddler should receive early stimulation leading
toward improved awareness and interest for his environment,
independence in A.D.L., social adjustment and sensory exploration.
Many youngsters have spent too many years without stimulation, flat
on their backs. In an effort to do something about the problem
United Cerebral Palsy of Queens for the last three and a half years
has been operating an experimental program constructed to meet the
needs of the total family.

YOUNG INFANT PROGRAM STRUCTURE

Parental over-protection, which later many professionals see
manifested as the children's fear to use their bodies, has not been
firmly transmitted to the infant age group as yet. The handling
patterns can be changed if a program of help is offered to parents
as well as to the children.

The basic structure of Y.I.P. provides a three day a week
service from 9:00-12:00 for twenty five physically handicapped
children and their mothers. They are referred to our Center by
community agencies and hospitals where the children are in the process

-93-

of being diagnosed. Counselling and guidance are conducted three mornings a week under the direction of the Psychiatric Social Worker. Two parent sub-groups of ten mothers each meet Monday or Tuesday and in larger educational groups twice a month on Thursday. The major thrust in this activity is that of providing supportive counselling in a group frame work, enabling the mothers to cope more successfully with their role of mothers and wives. On the second day of mothers' attendance, they are assigned a morning of mother service in the classrooms or therapy rooms of our older handicapped school population. This experience provides them with the opportunities to observe the developmental sequence in older children and to assume an active role in the total agency program. The fathers are scheduled for two evening discussion group meetings each month. We find that special group sessions limited to fathers provide unique opportunities. I. To see what knowledge has been transmitted from the mother, which, in turn, encourages better husband-wife communication. 2. To develop a father-child relationship. 3. To balance the mass guidance given to single members of the family, which, in most cases, is the mother. We have just initiated couples group meetings as a result of the request of some of the parents.

While the mothers receive the services noted above, the children, who are all under medical supervision at approved hospital centers in our Metropolitan area, are being worked with by a team of seven advanced graduate students from the Departments of Special

Education and Early Childhood from Metropolitan Colleges and Universities. Their work with the children is supervised by myself and (on the spot) by our language and educational therapist. We have a ratio of one teacher to four children. I will discuss curriculum later.

United Cerebral Palsy of Queens employs a Registered Nurse as a Home Service Coordinator. She travels to the infants' homes to instruct or check on prescriptive home programs related to activities of daily living. She gives advice on modifying equipment and home physical handling of the child. This service has provided a supportive re-inforcement for the mothers in their work with their child.

Since teaching and evaluating young multi-handicapped children is so difficult, we have found that it is important for staff to become trained in observation while working with the youngsters. Decisions should always be qualified by the complicating factors: 1) the extent of the disability which modifies other behavior, 2) fatigue due to working under a severe handicap, and 3) the lack of adequate experiences imposed by the handicap. After each teaching session, staff had made it a practice to immediately recap the morning's activities. Comments are notated in reference to child's response and teaching methods. Further modifications or additions are added to the curriculum at this time. Although a curriculum is set, it is continually being created and adapted by total staff as they gradually observe and evaluate the youngsters at work and at play.

Recommendations as to further medical testing may be suggested and our Social Worker will make the necessary arrangements. Twice a month our staff is brought up to date on the mothers' and fathers' reactions. In this way we guard against teachers becoming too child centered and reenforce the team process.

CURRICULUM AREAS

Handicapped children start life with certain inborn physical and mental potentials that can become retarded due to developmental lags. Their biological time schedule is impeded. Teachers and therapists must know the normal maturational timetable so that they can introduce and teach the developmental stages. We must create ways of stimulating, reinforcing, structuring and modifying the children's environment, so that motivation, adaptation and learning can proceed with as few gaps and frustrations as possible. Normal infants gradually become master of their bodies as their reflex and their undirected movements are replaced by voluntary ones under their control. At a year, 18 months or older some of our motor handicapped children can not even lift their heads to look around. They cannot support their weight on their forearms. Those children should be placed on a mat with a padded roll under their arms for support in order to develop motor patterns and strength. They should be helped to roll over from stomach to back and back to stomach, providing them with motivation to do so. Sitting is also a very important area of evaluation so that they can feel secure and view the world from another position. Creeping and crawling should be

done as a group activity to develop more body movements. Some will need to be manipulated so that they can get the idea. A physical therapist should be consulted for proper reciprocal pattern. If children can ambulate independently or with assistance, opportunities should be presented to them so that they can gain further mastery.

The snack period is an excellent time to evaluate any eating and drinking difficulties. The activity can be done in a group, awakening the children to new tastes, textures, and feelings. If children need to gain control over their speech musculature, sucking and sipping activities should be encouraged. The teacher may have to cup a child's lips to give him the idea of puckering, at the same time pushing down on the cover of the cup to force liquid to the surface. Tell the child to kiss the straw (if he knows what a kiss is). If a cup is introduced for the first time, put water or juice in it. For the infant who needs more sucking, we have found the cup should be used as a bonus and not a substitute for the bottle. Utensils can be introduced and adapted for the beginning of self-feeding. We believe that if we encourage activities like this when the child shows readiness, we can help the child to learn that he can do some things for himself. This will build the first layer of independence. An occupational therapist can be consulted for detailed instructions.

When the children first enter the room, they can be taught to take off their hats. The severely involved child can be made aware of the action by doing it with your hand on his. The more able child might learn to take off his coat. Some children can manage

-97-

at least one sleeve. At the end of the session, the process should be reversed. Remember it is easier for the young child to undress than dress. Consistency and independence should be encouraged.

Clean-up time gives us a wonderful opportunity to demonstrate cause and effect. "What do we do when our hands are dirty?", the teacher asks. "We wash them to make them clean." Discussion around water, "hot, cold, soap, etc."

The beginning language comes when the child makes a sound and that sound brings a response from his parent or teacher. He may not continue to make sounds unless he experiences its power. His babbling activities should be encouraged and imitated so that he will have an interest in continuing. Our group oral activities include the naming of objects, pictures, people and body parts.

Each child has a notebook with pictures, of his family and familiar items. It is used for individual language stimulation. Some children, with normal hearing, due to severe involvement of the speech musculature, may never be able to speak intelligibly. Their inner language must be developed to the fullest. Through matching and categorizing activities, etc., this will provide them with the ability to think. They should be talked to even though a feed-back is not possible. The teacher must take the time and interest to know the child so that she can establish a means of communication. When our children show a speech readiness, we provide them with individual speech therapy.

The children of the Young Infant Program are trained by some of the Montessori principles. They are given many exercises allowing

-98-

for the development of sequential movements which stregthen memory
and help them to learn their body parts in relation to space. Some
of the Montessori tools have helped the children learn how to control
fine motor movements and to coordinate eye and hand. Children learn
order when a portion of the activities are structured to firm rules,
dealing with the use of the didactic materials as well as respect
for the rights of others in the group.

One of the glaring lacks in the education of the handicapped
has been the absence of a curriculum that teaches such children to
think and to draw conclusions. Because of this, our Young Infant
Program utilizes some of the Piaget's principles. We feel it is
never too early to develop thinking patterns in the children so
that they can draw upon their senses in order to reach conclusions.
Our children learn that an object can have more than one property
through the use of a one-for-one matching and a multi-sensory
approach. When teaching the common fruits to a $2\frac{1}{2}$ and 3 year old,
an apple was first introduced. It was looked at, handled, smelled
and tasted. The second fruit, a banana, was introduced in the
same manner. Later in the unit, both were exhibited and experimented
with in the same way so that discrimination could be tested. Many
levels of development were discovered during these lessons. Not
all were able to perceive the differences. Variables are introduced
gradually to aid us with our educational differential diagnosis.

The actual validity of our teaching methods used by our teachers
can only be determined when they are confronted with the child and
his limitations. They should be flexible and inventive enough to

-99-

try almost anything that will enable the child to respond in some revealing way to the activity. The teachers should follow any lead or clue the child gives and be ready to respond to it. The children's sitting position should be made comfortable so that they are not expending all their energy in fighting for their balance. One child may need an adapted chair with arms, foot rest and seat belt. Some sit better in braces if they have them. The children may also need a brief relief from the strain of sitting. We do a great many of our activities on the floor.

The teacher may have to actually help the child to grasp and close his fingers around objects to steady his hand and head. They may have to manipulate the activity with a child, guiding his hand so that he can experience a measure of success. The child's response to his success may also indicate his insight into the task. This is much more significant than his inability to perform the task unaided.

Unless there is a definite sign of readiness, toilet training should not be undertaken. A Home Program is established by our Home Service Coordinator. The mother is instructed in the use of the proper toilet seat - the need for consistency without a battle of wills. The use of training pants (no diapers) and a proper name for the function are of great importance. Parents should be warned that the apprehensive child may be frightened by the flushing or the height of the seat. In order to maintain a carry-over, the nurse will acquaint the center staff with the child's toileting habits. In this way, we have given aid in toilet training of most of our children in the center.

CONCLUSION

The object of the Young Infant Program is not to make the young children robots that automatically are programmed to our commands. Instead, we wish to help them through the patterns of developmental maturation. This requires that their teachers and parents respect and value the children's personalities providing them with a self-concept that transcends the extent of their handicap. We hope that this program will help to prevent what we have too often been faced with in the past, the unattainable and unrealistic goals that have been imposed upon the handicapped child by parents and educators.

THE BRITISH INFANT SCHOOL PROGRAM

CHARMAINE YOUNG

Sylvia Hucklesby

University of Illinois, Urbana

The British Infant School serves children ages five to seven years. Since there is no one program followed by all schools, this presentation will describe all the signification manifestations of the Infant School Movement. It has grown gradually and in an eclectic manner since World War II. It represents a large part of the public school system of England .(1/3 remodelled, 1/3 affected, 1/3 unchanged) and takes a variety of forms in an increasing number of schools throughout the country.

In the past quarter of the century in England, there has been a steady decline in rigid intellectual training in early childhood programs. Culturally, there has been no pressure on educators to step up the intellectual achievement in Elementary Schools, but rate a wide spread National concern to desegregate the social classes and eliminate early acquistion of academic skills at the expense of emotional, social, and aesthetic development.

The assumptions of teachers who have worked to develop the Infant School have been affected by the National climate. BritainIs voice in International affairs will no longer be materially determined. The English who believe Britain still has a voice realize that her influence depends upon what she has to say. Creativity and divergent thinking have become very important goals for Education.

There is concern for whole-child development for indepndent thought and action. There is an assumption accorded support by the theories of Jean Piaget that children grow in a natural sequence of stages. It is not in the interest of the child for the teacher to accelerate the emergence of these stages. The principal assumption that pervades the Infant School model which is different from other models is that, given freedom and appropriate environmental stimuli (including those coming from the teacher) the child can be trusted to develop self-paced and self-motivated in the way most suitable for him. Since no child is quite like any other child, no very specific expectations can be held concerning the individual style which determines what, how much, and when he will learn. The far reaching implications of this assumption have resulted in the uniqueness of the heterogeneous grouping, the integrated character of the curriculum and informality of the program. structure which are all designed to allong each child to develop in his own way. Careful observation of the child gives the teacher the clues to the discoveries of his individual needs.

GOALS

The British Infant School has as its primary long-term goal the preparation of children for life through living. An important goal, therefore, is to design the environment so that the child can interact freely with it in the greatest number of ways possible in order that he might express himself.

The short-term goals grow out of the observation of this interaction. The child is taught to understand only what he is ready to believe.

The words "understanding" and "believing" themselves indicate classroom goals. Teachers agree with Piaget that understand and believing of what they learn, depends upon the stage of development which they have reached. Attempt is made to maximize the characteristics of each stage in exhaustive horizontal development.

CURRICULUM

The Infant School is child centered, and the teacher plays an active role in the classroom. Great use is made of materials but these are very often obtained from the real world. The children gain practical life experience through helping other children as well as by seeking help of others in actual life situations. The children learns as much from interacting with each other as they do from the materials. Careful preparation of the classroom by the teacher is, nevertheless , an important part of curriculum design.

The Infant School requires that the child be allowed to function in a large number of ways in a variety of situations. This is done by use of an integrated curriculum. The child's interests are the starting points for his progress in school. He is free to explore any aspect of his surroundings in all its possible ramifications. The freedom in the curricular experiences enables the teacher best to capitalize on the child's desire to learn. It also enables her to study the child as he expresses himself in his behavior so that she can steer him to experiences that will be most beneficial to his development.

Academic skills of reaching, writing, and math are considered very important in the Infant School. Concern for their emergence in the child, however, does not stem from an early learning goal. The optimum time for each child is sought. When that time comes, if the enviornment has given the appropriate stimulus, the child will express the desire to become master of a symbols system. At this point the child can learn fast and make extensive use of the materials provided for his stage of learning.

Reacing is encouraged by the provision of manu bppls. both stories and informative books, displayed attractively on open shelves --forming on one side a secluded corner, colorfully furnished with inviting cushioned chairs and a soft carpet. Similarly with number concepts, there are many attractive games to play at the classroom "Shop" or in the staging of a dramatic performance with seat bookings and programs for sale. Intellectual learning is centered around concept formation and to this end the child has materials to manipulate by himself, e.g., sand, water, blocks, woodwork bench, paint, paper , crayons and pencils, all of which provide multiple learning experiences.

Subject areas do have their manifestation in the provision of work surfaces around the classroom for particular activities such as weighing and measuring; experimenting with pulleys, batteries, or magnets; making collages, painting, or using clay; and displaying collections. Materials used in these activities will come from junk materials collected from home. Junk material, besides being inexpensive, has the value of not being directive to the child as to its possible uses, thereby giving him the greatest freedom for creativity.

Learning in human relations, role identification, imitation, creativity, languate--- all have their expresion in a corner provided for dramatic play. This is usually an area marked off by a screen with window forming a "Wendy House." In it are dress-up clothes and toys suggestive of play situations.

Creative self-expresion through movement, drams, music, art, and writing is a
very important part of the curriculum. It provides the teacher with deep insight
into the individual child. Physical education, in additition to movement, takes
place through experiences with gymnastic and playground equipment encouraging
climbing, swinging, balancing, and general large muscle control.

Writing has been left until the end of curriculum description because it grows
out of all the other activity described. The children are shown the value of
written communication in as many situations as possible. There is little train-
ing in caligraphy since written language is considered primarily communication,
and provided that it is legible, size and style are considered matters of personal
preference. Writing has the important function in the classroom of being a means
of recording experience. It focusses the child's attention on what he has
achieved, provides a record for the teacher, tells her what the child has
discovered, whether it is factual reporting, recording communication, or creative
expresions.

1.   Charmaine Young is a graduate Assistant in Special Education, Institute
        for Research on Exceptional Children.   University of Illinois, Urbana-
        Champaign Campus.
2.   Sylvia Hucklesby is a Graduate Assistant in Early Childhood Development ,
        The Department of Elementary Education at the University of Illinois
                                    Urbana-Champaign, Illinois

Note: Bibliography may be obtained by writing to the Authors.

Demonstration classes of the model described above are open to visitors.
If interested, contact Professor Bernard Spodek, Department of Elementary
Education, The University of Illinois, Urbana, Illinoic 61801.

Promoting Emotional Growth in Early Childhood

Uvaldo H. Palomares, CoDirector
Human Development Training Institute
San Diego, California

"Everybody is so different--but still we're so much alike", thought Beverly. "We all like to feel good--but different things give a good feeling to people." Seven year old Beverly has just returned to her desk after participating in another "Magic Circle", an experience she has enjoyed daily since pre-school when her school adopted the Human Development Program. Last week the "Magic Circle" activities had led Beverly to observe to herself that there was only one her-- although that both pleased and intrigued her. She has become self-confident to the point that she is glad to be herself, yet respects others for their own individuality. Beverly is progressing in her emotional development as planned.....

HUMAN DEVELOPMENT TRAINING INSTITUTE
4455 TWAIN AVENUE—SUITE H
SAN DIEGO, CALIFORNIA 92120

The

HUMAN DEVELOPMENT TRAINING INSTITUTE

introduces the

HUMAN DEVELOPMENT PROGRAM

The Human Development Training Institute was formed in 1967 for the purpose of training educators to facilitate the emotional development of children through effective communications. The strategy is to utilize the cumulative, sequential daily activities outlined in the Human Development Program lesson guides. The vehicle is the "magic circle" --a technique incorporating group dynamics for children in the classroom.

THE HUMAN DEVELOPMENT PROGRAM...

is a curricular approach for the elementary classroom which is designed to give children the opportunity to become constructively involved in developing their own personal effectiveness, self-confidence, and an understanding of the causes and effects in interpersonal relationships. The program capitilizes on the basic drives of children to achieve mastery and gain approval. The program is predicated on the assumption that the development of a healthy self-concept is the incentive for children to strive for further self-realization; and success increases motivation for further success in an ever-upward spiral.

The Human Development Program incorporates what master teachers do every day to instill responsibility and self confidence in children in a systematic plan thus reducing the chance factor for growth in the affective domain. The organization of the lessons anticipates and provides for sharpening of the tools needed for effective adjustment before those strengths are needed for success in academics and the other challenges of life. The child learns to appreciate what others do for him. And he is permitted to be honest about his resentments, instead

of learning to deny their existence or to repress them. For <u>twenty minutes</u> <u>each</u> <u>day</u> the learning climate for the children is open and free. Security is in the "magic circle."

THE MAGIC CIRCLE

In the "Magic Circle" the children and their teacher, who serves as leader, verbally explore themselves and each other each day through group interaction in activities related to specific goals. These goals are met by using group techniques tailored for elementary school children.

Throughout the twenty minute session an atmosphere of acceptance prevails. Children are encouraged to share their feelings genuinely and to learn to listen and observe others.

The teacher's role is to begin the activity by explaining the topic for discussion and if necessary to demonstrate what is expected of the children by "going first". After each child has had an opportunity to participate the teacher helps the children to review and summarize what was learned in the session. Progressively the teacher says less in each session--giving more of the responsibility to the children as they are ready to assume it. Sample "Magic Circle" topics are:

"It made me feel good when..."

"I made someone feel bad when I..."

"Something I do very well is..."

"What can I do for you?"

In pre-school and Kindergarten the children participate in "Mastery" sessions in the "Magic Circle" which are specifically designed, by giving them deserved positive feedback, to enhance their feelings about their own ability to manipulate their environment, thus building their self-esteem.

<u>Methods</u> <u>in</u> <u>Human</u> <u>Development</u> are the materials teachers use as guides in their daily application of the program. These materials are to be followed as closely

-107-

as each teacher feels the need. The above sample "Magic Circle" topics are from Part II, the manuals containing activity cues, described next under "The Materials" in this information leaflet.

The training of teachers in the Human Development method is also described herein under the title The Institute .

THE MATERIALS

The HDP materials include a theory manual, lesson guides for each grade level describing 180 daily activities, and rating scales. The theory manual is a concise statement of the learning theories supporting the theoretical foundations of the program. Written for professional educators, the manual draws on the work of noted authors in the areas of psychology and education. The lesson guides are written in the same style and format used in school district curriculum guides for teachers. Objectives, procedures, materials needed, and problem areas are discussed succinctly. The rating scales were designed for teachers to subjectively assess individual student progress in eleven areas: 1) awareness of self, 2) considerateness, 3) eagerness, 4) effectiveness, 5) flexibility, 6) inter-personal comprehension, 7) self-confidence, 8) sensitivity to others, 9) spontaneity, 10) stability, and 11) tolerance. The rating scales guide the teacher in making subjective evaluations of student progress in the affective domain.

The Future

The Human Development Program materials have been completed through the third grade. Because each sequential level is researched thoroughly in successive grades, materials for the fourth, fifth, and sixth grades will not be ready until 1971.

HUMAN DEVELOPMENT PROGRAM

Levels, Group Arrangements, Strategies, and Objectives

Level	Grade	Age	Groupings	Strategies	Objectives
I	Pre-School	4	Single Circle 8 - 14	Encouragement to talk-listen-succeed	Improve ability to sit still, listen and express; develop self-confidence and understanding of inter-personal interaction. Tolerance for individual differences.
II	Kg.	5	Single Circle 8 - 14	Talk-listen-succeed Deal with negative as well as positive aspects.	Develop self-control and self-confidence. Increase understanding of social interaction, individual differences, tolerance. Increase verbal expression and listening skills.
III	First	6	First One circle 8-14; then add self-controlled outer ring till whole class is in two rings.	Discuss ambivalente in feelings thoughts, behaving; effective and ineffective behavior; reality and fantasy. Social variables of inclusion - exclusion.- warmth - coldness, decision making. Begin leadership experiences.	Effective self-control, ability to comfortably experience ambivalence, improve reality testing, self-confidence, effective meeting of needs, increase responsibility, tolerance, empathy, skill in making helpful suggestions. Sharing in decision making and recognition of leadership abilities.
IV	Second	7	Whole class in concentric rings. Teacher and child leaders alternate.	Teacher leads one-third of new sessions. Child leaders are guided by teachers in remainder, Continued presentation of awareness, coping, social inter-action. Character development is fastened by challenge, commit-tment, and confrontation of peers.	Effective self-control, articulation of wide range of experiences in positive and negative feelings, thoughts, behavior. Self-confidence, positive self-concepts, personal pride, esteem. Distinguish between reality and fantasy. Motivation to be responsible, productive, kind. Share in decision making. Leadership as service, not exploitation. Ability to make helpful suggestions to guide leaders to better functioning.
V	Third	8	Whole class in concentric circles. Teachers and child leaders alternate.	Further challenge to self-sufficiency, integration, honesty. Emphasize awareness, responsibility, keeping commitments. Challenge to overtly recognize differences between and interest across the sexes.	Self-control as a matter of personal pride. Verbal facility, skillful and tolerant listening. Ability to tolerate ambivalent feelings in self and others with skill in detecting discrepancies between verbalizations and performance. Wise decision making and responsible, constructive leadership. Courage in taking the initiative to build good social relationships.

A book directed toward parents to compliment the HDP operating in the school will be available in mid-1970. The book for parents will include specific activities for children which the parents facilitate. The assumption underlying the total school-home approach is that effective communication supporting responsible behavior must be practiced in both home and school to achieve maximum results.

THE INSTITUTE

The Human Development Training Institute was established to enhance communication and humanistic understanding among all human beings. The intent is to deal with the human dilemma of trying to understand what other people are thinking or feeling while at the same time, communicating our own thoughts and feelings.

Although HDTI recognizes the fundamental need to help all people to better communicate with each other, its central theme is improving the communication process between educator and child and children among themselves. It does this by providing a 24-60 hour teacher training institute to help teachers, themselves, be more open and receptive to their own feelings and thoughts, and to the feelings and thoughts of children. The institutes parallel the Human Development Program teachers will be using with children in their classroom. Although the teacher training institutes may be altered to meet the specific requirements of each district, they consist of the following set of experiences.

1. Teachers are exposed, on a small group basis, to a series of experiences aimed at helping them become aware of their feelings, thoughts, and behavior.

2. Along with these experiences, the teacher is given knowledge of what she is experiencing and of the skills it takes to help others develop an awareness of their feelings. This is accomplished through feedback sessions after small group

communications experiences and through a minimum of well-planned lectures.

3. Finally, demonstrations by the instructors with representative children from the participant schools are held, both to model techniques and help teachers appreciate the legitimacy of such communicative experiences with children.

This triad of experiences are repeated in all three areas of the Human Development Program theoretical foundation; awareness, mastery (self-confidence), and social interaction.

Similar but slightly longer institutes are held with counseling, supervision, and administrative personnel who provide support and follow-through for the teachers as they implement the Human Development approach with children.

The institutes are conducted by HDTI consultants who are psychologists in private practice or on school staffs, school counselors, other public school personnel, or college professors. Each consultant has been thoroughly schooled in the program and theory and is experienced as a group facilitator/educator. Eventhough the first institute held in a school district may utilize all "outside" consultants, subsequent institutes may be conducted by "in-home" trained consultants with a minimum of "outside" assistance.

Institute details. The following information is given describing the institutes:

1) Most institutes are held in three or four successive days but many are held on successive weekends. (See samples attached)

2) One day in-service programs should be scheduled during the school year following the initial institute if the program is to be effective.

3) College credit in some cases may be arranged for institute participants only at extra charge.

-111-

4. The scale below describes size/cost for HDP introductory workshops
and full institutes:

COST PER PARTICIPANT

		Introductory Workshops		Full Institutes		
Participants	(*)	1 Day	2 Days	3 Days	4 Days	5 Days
1-50	(3)	$35	$48	$60	$70	$78
51-75	(3)	$34	$47	$58	$68	$76
76-100	(4)	$33	$46	$56	$66	$74
101-125	(5)	$32	$45	$54	$64	$72
126-150	(6)	$31	$44	$52	$62	$70
150-200	(7-9)	$30	$43	$50	$60	$68
over 200		$29	$40	$40	$50	$60

* Number of consultants participating in program.

Total cost/participant includes consultant fees, travel, etc. Plus
a theory manual, rating scales, and one level of lesson guides for each
participant. Deduct $15 each if HDP materials are not needed. One day in-
service programs cost $150/day for each "outside" consultant plus travel
and expenses.

All institutes and workshops are designed to meet the needs of the
school district, the physical setting, number of participants, and availability
of children for demonstrations. School districts wishing to initiate institutes
should contact HDTI for individualized proposals. The consultants may change
the format of the institutes to achieve maximum results.

OTHER SERVICES

The Human Development Training Institute offers training programs for
teacher aides (paraprofessionals), teachers in bilingual-bicultural programs,
migrant education, and pre-school education. Other services which may be
contracted through HDTI include curriculum development, school/community
research projects, pupil assessment, and program development/contract federal
proposal writing. HDTI also has developed communication models for upgrading
interpersonal relationships among adults and industrial/educational organizations.

SAMPLE

20-24 Hour Institute
Split Sessions - Two Weekends
50 Participants

Friday

6:30 - 7:30 p.m.	Introduction	
7:30 - 8:30	Micro lab (inner-outer groups)	
8:30 - 9:30	Overview of HDP materials	

Divide into Four Equal Groups

Saturday	Groups 1&2	Groups 3&4
8:00 - 9:00 a.m.	Awareness Presentation	
9:00 - 10:00	Awareness (group interaction)	Awareness Pres.
10:00 - 10:30	Demonstration with children	
10:30 - 11:00	Discussion	
11:00 - 12:00	Mastery Presentation	Awareness (group Interaction)
1:00 - 2:00	Mastery (group interaction)	Mastery Pres.
2:00 - 3:00	Social Interaction Pres.	Mastery (group Interaction)
3:00 - 4:00	Social Interaction (groups)	Social Interaction Presentation
4:00 - 5:00	(1/2 hour program implementation)	Social Interaction (groups)
5:00 - 5:30		Program Implementation

Friday

6:30 - 7:30 p.m.	Review of Program/Implementation	
7:30 - 8:30	Interpersonal Communications Presentation	
8:30 - 9:30	Micro labs	

Saturday	Groups 1&2	Groups 3&4
8:00 - 9:00 a.m.		Negative Awareness Presentation
9:00 - 10:00	Neg. Awareness Presentation	Awareness Groups
10:00 - 10:30	Demonstration with children	
	Discussion	
11:00 - 12:00	Awareness groups	Negative Social Interaction Pres.
1:00 - 2:00	Neg. Social Interaction Pres.	Neg. Social Interaction groups
2:00 - 3:00	Neg. Social Interaction groups	Program Implementation
3:00 - 4:00	Rating Scales	
4:00 - 5:00	Program Implementation	

3 Day Program
40-52 Participants
1 Professor, 2 Consultants

Note: The number of groups may be increased by multiples of twelve participants with one additional consultant for each two groups.

FIRST DAY

8:30 – 9:00	Registration (1)*
9:00 – 10:00	HDP Introduction (1)
10:30 – 11:00	Demonstration with students (1)
11:00 – 11:45	Discussion (1)

(Divide participants into I-II-III-IV Groups)

	Groups I and II	Groups III and IV
11:45 – 12:30	Inner-Outer groups (2-3)	Lunch
12:30 – 1:15	Lunch	Inner-Outer Groups (2-3)
1:30 – 2:30	Awareness presentation (1)	Materials overview (2-3)
2:30 – 3:30	Awareness groups (2-3)	Awareness presentation (1)
3:30 – 4:30	Materials overview (1)	Awareness groups (2-3)
4:30 – 5:00	Total Group: SUMMARY (1)	
7:00 – 9:00 Eve.	Free	Group Interaction (2-3)

SECOND DAY

	Groups I and II	Groups III and IV
8:30 – 9:30	Mastery Presentation (1)	
9:30 – 10:30	Mastery Groups (2-3)	Mastery Presentation (1)
10:30 – 11:30	Group discussion (1)	Mastery Groups (2-3)
11:30 – 12:30	Lunch	Group Discussion (1)
12:30 – 1:30	Social Interaction Pres. (1)	Lunch
1:30 – 2:30	Social Interaction Groups (2-3)	Social Interaction Pres.(1)
2:30 – 3:30	Discussion (1)	Social Interaction Groups (2-3)
3:30 – 4:30		Discussion
7:00 – 9:00 Eve.	Group interaction (2-3)	Free

THIRD DAY

8:00 – 9:30	Program Implementation (1)	
9:30 – 10:00	Student demonstration (1)	
10:00 – 11:30	Discussion (1)	
11:30 – 1:00	Lunch	
1:00 – 2:00	Rating Scales (1)	
2:00 – 3:00	Awareness groups**	Social Interaction Group**
3:00 – 4:00	Social Interaction groups**	Awareness groups**
4:00 – 5:00	Summary wrap-up (1)	

* (1) large meeting room
  (2-3) small group meeting rooms
** Led by participants in rooms 1-2-3

THE STAFF

Dr. Harold Bessell is a clincical psychologist/gestalt therapist in private
practice in La Jolla, California. President of HDTI, Dr. Bessell
has had many years experience as a practicing psychologist,
university professor, lecturer, and author.

Dr. Uvaldo Palomares, Vice President of HDTI, has had many years as a public
school teacher and more recently a professor in a college of
teacher education. A licensed clinical psychologist, Dr.
Palomares has authored and lectured on topics including
migrant education, tests and measurements, and bicultural/
bilingual education problems. Dr. Palomares is on numerous
national committees and is a consultant for the U.S.O.E.,
U.S. Office of Civil Rights, and H.U.D.

Dr. J. K. Southard, Executive Director of HDTI has had experience as a
public school teacher, principal, school district director
of research and program development and college professor.
Dr. Southard specializes in writing federal project proposals,
migrant education, school district program development and
evaluation, and public school finance.

The Consultants include college professors, public school pupil personnel and
guidance services personnel, and psychologists in private
practice. All consultants have a minimum of a masters degree.
The consultants have participated in HDP institutes and gone
through a training program. All are presently employed by
educational agencies or in private practice throughout the
United States.

ORDER FORM

Human Development Program

Item	Cost
Level I: The Pre-School Program	$15.00
Level II: The Kindergarten Program (Suggested for initial program in Elementary Schools K - 4)	$15.00
Level III: (Available in January, 1970)	$15.00
Levels IV and V: (In one book, available in January, 1970)	$15.00
Levels VI, VII, VIII: (Available in in 1971) Theory Manual	$10.00
The Rating Scales	$ 4.00
Individual student rating sheets: 50 Pkg.	1.00
Set #1: Theory Manual, Level I, Rating Scales	$24.00
Set #2: Theory Manual, Level II, Rating Scales	$24.00
Set #3: Theory Manual, Level III, Rating Scales	$24.00
Set #4: Theory Manual, Levels IV & V, Rating Scales	$24.00
Set A: Theory Manual, Levels I-II-III-IV-V, Rating Scales	$64.00
Set B: Theory Manual, Levels I and II, Rating Scales	$38.00
Set C: Theory Manual, Levels II and III, Rating Scales	$38.00
Set D: Theory Manual, Levels II-III-IV-V, Rating Scales	$52.00

5% discount for orders over 10
10% discount for 50 or more
Special rates for larger orders

Address orders or inquiries to:

Dr. J. K. Southard
Human Development Training Institute
4455 Twain Avenue - Suite H
San Diego, California   92120
(714) 283-7063
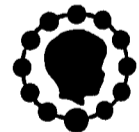
Human Development
Training Institute
4455 Twain Ave., Suite H   Dept. PT-1
San Diego, California 92120

Yes, I am interested in purchasing _____
set(s) of Methods in Human Development
at $24.00 per set.
☐ Check enclosed ☐ Please bill
Please send these materials to:

NAME:_____
POSITION:_____
SCHOOL:_____
STREET:_____
CITY:_____
STATE:_____ZIP:_____

THE YOUNG VISUALLY IMPAIRED CHILD

(With Particular Reference to the Age - Range 3 to 6)
Carol Halliday
Coordinator, Day Care Comprehensive Care Center
Lexington, Kentucky

When we think of the young visually impaired child between
the ages of 3 and 6, we are very much on the right course if we
picture first a child - then a child, one characteristic of whom
is his youngness, another his visual problem. As we know well by
now, however, it's not the given age of a youngster which defines
his functioning level, his abilities, his knowledges. Rather,
these are a composite of his inherent traits interacted with his
environment in all its ramifications. When we specify an age
range, then of 3 to 6, we can <u>assume</u> that certain vital experiences
have gone before so that a child is doing those things which we
know that many youngsters within this span can do - or we can grant
that such an assumption is far too <u>risky</u>. If we choose the latter
course, whether as teacher or as parent, we open ourselves to a
truer awareness of the <u>individual</u> youngster with whom we're con-
cerned. We turn ourselves into observers, creators, and enablers
of a "responsive environment" - attuned to specific functionings,
needs, attitudes, other characteristics, as they are expressed,
experienced and interacted with. This is true, whether we refer
to visually impaired children or to <u>any</u> child.

In order to work effectively in this manner, we must understand -
as best we can - the sequential growth and development of children

and the manners in which they learn. Texts in child development spell out these sequences regarding children, generally (Gesell, 1940; Illingworth, 1966). Our own observations, if we have been much with youngsters, will have bolstered our understandings of that which exists and our expectations for the future. We will dwell, then, not on the age as of key importance in understanding and teaching visually impaired children, but on saliencies regarding growth, learning, and development.

That sequences can be disrupted, however - that they do not simply unfold regardless of a given child's circumstances and make-up - is increasingly apparent. Expanding efforts with children called "culturally deprived" (Frost, 1968) often reveal certain lacks with regard to language, visual and auditory discrimination, creative thinking, decision-making, problem solving, understanding and use of one's body, self-concept, social "savoir faire," responsibility, structuring and ordering, etc., which point toward the absence or inappropriateness of experiences relevant to these areas. The results can be devastating. - We hear from J. McV. Hunt (1961) and others that there is a match which must occur, for best results, between what is learned and the readiness for that learning. If this match is, indeed, askew, there may be little learning resultant, in terms of that which otherwise would have been possible had timing been correct. - We are hearing more and more concerning the damage which poor nutrition spreads throughout

the minds and bodies of children, whose formativeness makes them
especially vulnerable. - We know, as well, of the devastation
which too little or too much concern, affection, direction, inter-
action with can have on youngsters.

We realize, then that it is possible to cause children to
not learn, to not develop properly - sequentially, even when they
are possessors of what seem to be sound bodies and minds. This
can be true at infancy, or at later ages. This is possible, too,
when youngsters have such characteristics in one or another way
beyond the usual - i.e., a visual impairment; that they may "not
learn" - may "not develop properly, sequentially," is as true as
it is of those children culturally deprived. Experiential limita-
tions can occur in the finest of homes or of programs, if the visual
impairment is allowed to throw perspective sufficiently out of line.
Their effects are geometrically compounding, if permitted to exist
unchecked and untreated. As teachers and/or parents, we need to be
aware of the potential for, and tendency toward, "normal" growth
and development of all children - even though a youngster may be
visually impaired, or even severely multiple-handicapped (Moor, 1968).
We then must become ever more cognizant of the possible trouble spots
which may arise if certain basic principles are not recognized and
acted upon.

Perhaps it will be most useful at this point to think in terms

of those aspects of children's development and learning, generally, which are recognized to be of major import. These would seem, in succinct terms, to be: physical well-being; movement; gross muscle use; sensory reception and involvement; self-care and intra-family/ intra-group responsibility; fine muscle use; the personal/social; language; attitudinal; the self-concept. Whether as parents or as teachers we must be concerned with children in terms of all these facets. If one is forgotten or neglected, the effects are pervasive within the framework of the "whole child." One aspect gone awry throws the entire human system off base. We call the results synergistic, just as we speak ever more knowledgeably about the synergistic ramifications which more than one major handicap imposes on a youngster.

A closer look now at each of these aforementioned facets of development and learning is appropriate - with particular attention given in terms of the effect which a visual impairment may have in each of these areas, thus on the whole child.. At this point, a defi- nition of "visual impairment" would seem fitting so that our concern will be mutually understood. We are speaking of children who: (1) have no vision at all; (2) have little vision and learn most easily and naturally by oher than visual means; (3) are greatly limited in one or another way as to effective visual functioning (i.e., regarding distance, scope, lighting), even after ophthalmological correction, to the point that they must be taught to make good use of their vision and/or have

their visual learning strongly enhanced or replaced by that of the other sensory mechanisms. Let us state, too, our awareness that frequently children born with one major impairment, in this day of growing medical know-how, have more than one. We are particularly directed, at present, to the child whose visual problem is not compounded by others. Many of the points made within this framework would - if elaborated upon - apply to multiple-handicapped youngsters, however.

To give us a further base of common useful knowledge, let's skim the surface of general learning principles relating to children (Ashton-Warner, 1963; Bruner, 1966). We can then integrate them with the ensuing comments regarding child development and learning as pertinent to visually impaired youngsters. In general, children thrive best when they progress from: activities involving more body involvement to those involving less; large muscle to small muscle use; the familiar to the unfamiliar; simple to harder tasks; immediate to more remote concerns; activities calling for a short attention span to those requiring longer; one concern to several concerns; thinking of self to thinking of others; things "lived" to things "thought"; using words as labels to using words as organizers and enablers of thought; "doing" to"sensing" to "symbolizing"; analysis to synthesis; "field dependence" (reliance on the immediate environment) to "field independence" (ability to rise above this immediacy);

identifying to comparing; taking apart to putting together; out-
lines to details; recognition of differences to recognition of
likenesses; recognizing to reproducing; recognizing opposites to
determining varying kinds of relationships; random ordering to di-
mension ordering to several-dimension ordering; categorizing to
establishing hierarchies; perceiving objects through the senses,
to noting their use, to naming them and their uses. - Keeping the
aforementioned generalities in mind, think then of the young child
who is visually impaired who falls by virtue of age into the older
preschool category. Whether this youngster is at home or in some
kind of organized program, the same sequential development, the
same learning principles apply.

Physical well-being was mentioned first in our previous "facets
of the whole" listing. This was purposefully done to stress the
importance of doing all possible, as a prime way of work, in terms
of meeting the child's general health needs (i.e., regarding adequate
diet, physical examination, corrective surgery). Only when appro-
priate remedial and preventive actions have been taken can the young-
ster begin at his highest "base" level. For the visually impaired
child, this is particularly essential. Our growing sophistication in
such matters will allow us to temper flat medical knowledge with edu-
cational know-how, thus permitting (for example) our understanding
that a child (particularly a little one) called "legally blind" may
indeed have quite a bit of usable vision.

With regard to _movement_, of vitalness to _all_ children (Cratty, 1967), let us herewith acknowledge its cruciality for those who are visually impaired (Cratty & Sams, 1968). With no vision or with little vision as motivator, these youngsters may very well move less at early stages. Unused to the pleasurable feels of different way of moving, they may lapse into relative passivity. Limited movement can result in a curtailed world view, can weaken one muscularly, can restrict one's kinesthetic knowledge of one's environment, can narrow understandings based on direct experience, can functionally retard one in many life-areas, can stress one's differentness from other children. Our challenge is to encourage movement in every way at our command.

Gross muscle use calls for a variety of experiences, activities, materials, equipment. It involves large toys with which to play - on which to ride, climb, etc. The essentialness of learning to use large muscles well before refined use of smaller muscles can occur spells out the need for activities involving rolling, sliding, lifting, placing, carrying, lowering, punching, pushing, pulling; for large ball play; for the use of clay, sand, mud, paints, water, large chalk, large crayons. Limited vision must not exclude a child from any of the above - rather, it calls for creative showing as to how, where, when, whether at home or in a teacher-guided program.

Sensory reception and involvement refers to the imperativeness of each child's using his sensory mechanisms to the fullest. We

are called upon to review general learning principles, in order
to realize how perceptual abilities develop. We are challenged
to assess, both medically and through behavioral observations,
how well those sensory mechanisms in question are functioning.
It is now known, for example, that the same visual acuity measure
in two or more   children tells not at all the same story
regarding how these youngsters use their vision. We know, too,
that visual use can generally be made more efficient if it is
developmentally taught (Barraga, 1963). Sharpening a child's
strengths while strengthening his weaknesses is the most effective
combination typifying good teaching. - Ridding the youngster's
working environment of the ambient noises which can dull perception
of one or another kind (i.e., tactual distraction through too much
at one time of interest to the fingertips; the constantly played
radio) is another important consideration.

Self-care and intra/family, intra-group responsibility present
areas of vital concern to the visually impaired child (Murray).
Abilities in both domains are most necessary for one's self-respect,
for the development of increasing independence and for recognition
by one's peers of one's competence and worth. Learnings regarding
self-care skills call for thoughtful and sensitive adult actions,
for patient showing and allowing for time to do and time to practice.
In the family/peer responsibility-sharing area, it's essential that
the visually impaired child begin early to help carry his share.

Starting with learning to find - then to put away - his toys,
helping pull off a coat, drying a dish, locating a dropped object,
then moving in a developmental way into tasks of more complexity
are of supreme importance to all children. The visually impaired
child must be taught these things, more explicitly than many.

Fine muscle use can develop from the base of good large muscle
use, but needs specific opportunities for development - even teachings-
in progressively-refined ways. Activities involving simple tactual
discrimination on a single relatively gross dimension, learning to
pound, to turn a knob, to use soap, to put on hand lotion, to take
simple things apart - then put them together, to move a large crayon
within a large template, all come before the more elaborate tasks
of using scissors around a heavy pattern, of tying shoes, of fastening
small shirt buttons, etc. Individual attention, specific instruction
will be necessary - much more so than for the youngster whose casual
distance glance gives him much useful information on which to build.
There are many educational materials available for these purposes,
intended for children generally. Often these can be used, meaningfully,
as they are - or can be modified in one or several ways to improve
their relevancy. The American Printing House for the Blind is in the
process of making available some early childhood materials whose
qualities are designed to be especially helpful to children with
visual impairments. *(They will prove pertinent, as well, to children generally,
however.)*

The personal/social facet of the child's being is that which,

m

-125-

along with language, accounts for much of his humanness. It is intertwined with every part of his being. The ways in which the youngster develops in these lines depend heavily on his meaningful experiences with family and peers from earliest childhood. Curtailed vision can keep one from awarenesses that enable one to relate comfortably and alertly with others. It can - almost from life's beginning - cause lessened interactions between child and adult caregiver (Fraiberg, et al, 1969). Certain social graces, significant to persons' enjoyment of each other, are not picked up casually by the visually impaired child and must be taught. Attention to one's appearance, relatively easily given visually, must be attained through diligent application of effort. Crucial to the whole concern is the affording of numerous chances to be with peers, as well as with adults. The sharing, through early childhood education programs, with peers of varying abilities and characteristics is basic to the growing understanding of self and others. With visually impaired children this doesn't just happen - or happens less frequently than is so with many children.

Language, intelligence and learning are being tied together ever more firmly by those who are concerned with early learning. Ways of developing language are being pursued, within the family and early childhood education settings (Cazden, 1968; Levenstein, 1969). Debate continues, regarding visually impaired children, concerning the necessity of tying words to firsthand experiences as contrasted

to their use for communication value (Dokecki, 1966; Harley, 1963).
It is obvious, however, that the more direct experiences children
have which can give them word meanings which in turn can enable
increased inter-personal contact, understanding and relating the
more knowledgeably social will be their development. Our responsi-
bility to provide and interpret these is a prime one, whether at
home or in other "program" settings.

The attitudinal domain is interwoven throughout every aspect
of the whole child. It is essential that the visually impaired
youngster have tangible evidence of the reliability of his world -
both regarding persons as well as things - so that the trust (spoken
of by Erikson) can be built within him which is essential to his
well-functioning (Maier, 1965). Limited vision may indeed curtail
curiosity, may allow one - from superficial viewing - less choice
regarding leisure (free time) activity, and may open the way to
certain repetitive actions (mannerisms) which stimulate and please
if other activities are minimal. Such negative effects may be pro-
hibited, however, and highly positive ones attained, through the
purposeful plans and actions of aware adults. Respect for others,
stemming from a growing respect for self, and thoughtfulness can
evolve in the visually impaired youngster as they should in all
children. Adults at hand must seize the moment and help teach
these kinds of understandings as they would other kinds. - Perhaps

special stress should be placed, however, on learning to make
decisions, to ask for needed help (in a way that maintains one's
good feeling about one's self), to solve problems of increasing
complexity in a simple, basic way. The visually impaired child,
usually more than his sighted peers, needs to be taught about
causes-effects, order in his universe, the structures of and re-
lationships between and among the diverse parts of his world. - A
final point made in this vast and vital area has to do with the
influences which the varied expressions of others have on one's
functioning and on one's feeling about one's self. We read of the
effect of teacher expectancy on children's performance (Rosenthal
and Jacobson, 1968) and have but a glimpse of the magnitude. The
visually impaired child who hears himself spoken of in pitying or
awed or deprecating manner will be influenced accordingly. The
task of the caring adults around him is not only to nurture in him
a positive, realistic feeling of worth. We must also educate, con-
stantly, those within his acquaintance - circle to his basic childness,
his humanness, his uniquenesses, his worth.

Relfect for only a moment on that which has gone before. Note
that all the points raised, the comments made could be stated - in
regard to their core meaning - concerning children, in general. Whether
youngsters have no obvious handicaps or have severe and multiple ones,
the principles of sequential development and growth and of develop-
mental learning must be known and employed. A mother of a 4-year old

child severely visually and auditorially impaired said recently, when asked how her child functioned as well as he did: "I just look at him each day and watch what he does. I think - what can he learn tomorrow that's a little more than he knows today? Then I try to teach him!" Thus children learn - all children - some faster, some slower, some through one sensory means, some through another. The principles are there for us all to use.

In view of that which we know and in which we believe, our challenges then - whether we think of the young visually impaired child from the vantage point of parent or of teacher - are:

1. teach to his childness - while as fully as possible
    considering his unique needs regarding learning and
    living;

2. be developmental - in experiences provided, as well
    as in the kinds of teaching done;

3. consider the visually impaired youngster as teacher
    himself - his ways of learning, with little or no
    visual use, can open the world further to others in
    its other-than-visual characteristics;

4. push for including children with differences in the
    various situations in which we find ourselves; in edu-
    cation settings, the early childhood years are partic-
    ularly suited to this since formal academics - often
    calling for different technological learning means -
    are not yet involved;

5. make sure sufficient individual attention can be given the visually impaired child so that real learning can occur. This may mean in an education - program involving volunteers, parents, high school students, etc. - at home, it may call for more careful planning of time - use, or for other creative solutions;

6. beware of labels which categorize children neatly and refuse to acknowledge individual differences; help interpret to all with whom such is relevant the commonalities among children, generally - the special needs which visual impairments are likely to cause - the strengths and weaknesses of a given youngster, etc.

7. urge <u>local</u> interest and action concerning all the locale's children - urge state and federal interest and action regarding all children; push for the providing of appropriate programs for all preschoolers - especially for children with handicaps, helps offered in homes during earliest infancy are imperative;

8. work together - as parents and teachers - in concerted effort regarding those children with whom we are concerned.

<div align="right">

Carol Halliday
Coordinator, Day Care
Comprehensive Care Center
Lexington, Kentucky

</div>

BIBLIOGRAPHY REGARDING PRESCHOOL VISUALLY IMPAIRED CHILDREN

PERTINENT TO YOUNG CHILDREN, GENERALLY:

Ashton-Warner, S. Teacher. New York: Simon and Schuster, 1963.

Bloom, B. S. Stability and change in human characteristics. New
York: John Wiley, 1964.

Bruner, J., Olver, R. R., Greenfield, P. M., et al. Studies in
cognitive growth. New York: John Wiley, 1966.

Caldwell, B. M. Project Head Start Daily Program II. Washington,
D. C.: Office of Economic Opportunity (Project Head Start).

Cazden, C. B. Some implications of research on language develop-
ment for pre-school education. In Hess, R. D. & Bear, R. M. (Ed.),
Early Education, Chicago: Aldine Publishing Company, 1968. Pp. 131-
142.

Children's Bureau. Your child one to six. New York: Child Care
Publishers, 1962.

Cratty, B. J. Developmental sequence of perceptual-motor tasks.
Freeport, Long Island: Educational Activities, Inc., 1967.

Fraiberg, S. The magic years. New York: Charles Scribner's Sons,
1959.

Frantzen, J. Toys...the tools of children. Chicago: National Easter
Seal Society for Children and Adults, Inc., 1957.

Frost, J. L. (Ed.) Early childhood education rediscovered. New York:
Holt, Rinehart and Winston, 1968.

Gesell, A., et al. The first five years of life. New York: Harper
Bros., 1940.

Hoffman, M. L. & Hoffman, L. W. Review of child development research.
New York: Russell Sage Foundation, 1964.

Holt, J. How children learn. New York: Pitman, 1967.

Hunt, J. McV. Intelligence and experience. New York: Ronald Press,
1961.

Illingworth, R. S. The development of the infant and young child,
normal and abnormal. Baltimore: The Williams and Wilkins Co., 1966.

Kirk, S. A., Karnes, M. B. & Kirk, W. You and your retarded child.
Palo Alto: Pacific Books, 1968.

Levenstein, P. Cognitive growth in preschoolers through stimulation of verbal interaction with mothers. Paper presented at meeting of American Orthopsychiatric Association, New York, April 1969.

Maier, H. W. Three theories of child development. New York: Harper and Row, 1965.

Maslow, A. H. Toward a psychology of being. Princeton: Van Nostrand, 1962.

Orem, R. C. (Ed.) Montessori for the disadvantaged. New York: G. P. Putnam's Sons, 1967.

Pines, M. Revolution in learning. New York: Harper and Row, 1967.

Simpson, D. Learning to learn. Columbus, Ohio: Charles E. Merrill, 1968.

Watson, E. H. & Lowry, G. H. Growth and development of children. Chicago: Year Book Medical Publishers, 1962.

Wittes, G. and Radin, N. Helping your child to learn: The reinforcement approach. San Rafael, California: Dimensions Publishing Co., 1969.

PERTINENT PARTICULARLY TO VISUALLY IMPAIRED CHILDREN:

Barraga, N. Increased visual behavior in low vision children. Research Series #13. New York: American Foundation for the Blind, 1964.

Burlingham, D. Developmental Considerations in the occupations of the blind. In R. S. Eissler (Ed.), The psychoanalytic study of the child. New York: International Universities Press, 1967. Pp. 187-198.

Cratty, B. & Sams, T. A. Body-image of blind children. New York: American Foundation for the Blind, 1968.

Dokecki, P. R. Verbalism and the blind: A critical review of the concept and the literature. Exceptional Children, 1966, 32, 525-530.

Curriculum guide: Pre-cane mobility and orientation skills for the blind. Lansing, Michigan: Michigan School for the Blind.

Fraiberg, S., Smith, M. and Adelson, E., An educational program for blind infants. The Journal of Special Education, 1969, 3, 121-139.

Groves, D. & Griffith, C. Guiding the development of the young visually handicapped: A selected list of activities. Columbus, Ohio: State School for the Blind, 1968.

Harley, R. K. Verbalism among blind children. Research Series #10. New York: American Foundation for the Blind, 1963.

Rosenthal, R. + Jacobson, L. Pygmalion in the classroom. New York: Holt, Rinehart + Winston, 1968.

Imamura, S. Mother and blind child. Research Series #14. New York: American Foundation for the Blind, 1965.

Jernigan, K. Blindness: Handicap or characteristic? The New Outlook for the Blind, 1965, 59, 244-249.

Kurzhals, I. Fashioning learning opportunities for the child with impaired vision. The New Outlook for the Blind, 1968, 62, 160-166.

Lowenfeld, B. Our Blind Children. Springfield, Illinois: Charles C. Thomas, 1964.

Maxfield, K. E. & Buchholz, S. A Social maturity scale for blind preschool children. New York: American Foundation for the Blind, 1957.

Moor, P. No time to lose. (A symposium) New York: American Foundation for the Blind, 1968.

Murray, V. Hints for parents of pre-school visually handicapped children. Philadelphia: Association for Education of the Visually Handicapped.

Nolan, C. Y. & Ashcraft, S. C. The visually handicapped. Review of Educational Research, 1969, 39, 52-70.

Norris, M., Spaulding, P. J. & Brodie, F. H. Blindness in children. Chicago: University of Chicago, 1957.

Spencer, M. Blind children in family and community. Minneapolis: University of Minnesota Press, 1960.

Visually Handicapped Children, Birth to Three Years

Winnifred Connelly, M.P.H.
Child Development Project
University of Michigan Medical Center
Ann Arbor, Michigan

All of us present are interested in visually handicapped children and feel friendship for them. Our work, in Selma Fraiberg's educational program for blind infants in Ann Arbor, has concentrated on infants blind from birth. The children cannot call on any previous visual experience. There are a fortunate few who have light perception. Others may gain vision as a new sense, for instance, after cataract operations, which are being done earlier in the first year when possible. For those who do have light perception, or even color perception without form, the world out there becomes real in another way and they have an advantage which shows up in differentiation of self and others, and dramatically shows itself in such activities as doll play.

I can feel the tugging of Joan's small hand. Joan was born with congenital glaucoma. At two years, she will take my hand and lead me where she wants to go. One day she led me into her mother's room to look at the large mirror. In it she can see reflected light and color and movement but no form. She likes to sit or stand in front of the mirror and wanted to share the game with me. Sometimes she will play with her shadow on the wall.

When she came to the clinic to see the eye doctor she could be quieted by being given a hand mirror. She holds it close to her face. The doctor quickly made an adaptation of looking over her shoulder and when he flashed his small light she saw it in the mirror, smiled and, understanding the reality causing the reflection, she turned to look at the light itself. The doctor's efforts now will be at saving what light perception she has. It is a wise doctor who adapts his exam to keep from startling a blind child. The pace can be slowed down.

Our work is aimed at developing the child's own abilities and autonomy in the real world. It is started as young as possible. The basic foundation is the relationship between infant and mother. This may be strained at first if a premature baby is not used to handling and if the mother is naturally depressed by having a blind child. She may be normal in every other way. For the purpose of this discussion we will focus on the one handicap rather than multiple disabilities.

The time for referral and support, guidance and demonstration for the parents of a blind infant is at the time the diagnosis is made. In other words, the earliest possible moment. If congenital glaucoma or some other conditions can be diagnosed at the time of birth that is the time to support the parents, for even at a time of shock and despair there is much that can be done for which the parents are very grateful. Occasionally, the blindness is not recognized till four months or even later. If a

mother in that situation becomes severely depressed this requires skillful handling and referral for treatment.

Parents may ask "How will the baby know me?" The intuitive mother will cuddle and hold her baby in the same way that she would a sighted child. For the totally blind child this is even more important. He will learn to know his mother by touch, voice and the kinesthetic sensations of handling during daily activities. But, as Selma Fraiberg says, "If there is tactile auditory insufficiency in the first months, it will prevent the blind baby from making the vital attachments to his mother and to the human world." Unfortunately we sometimes see children for the first time when they are already over a year in age. Occasionally there will be a difficult social situation in which a child has not received his mother's love. One little boy we call Jerry was neglected by his mother. He was then cared for by an aunt who took good care of him. But his mother regained custody and the series of changes has been too much for him and he appears to be disturbed. Even when a mother wants to give good care, if she does not have professional help or guidance during the first year time is lost that is very hard to make up. If we could only give one year of service and had to choose between the first or third year we would have no hesitation in choosing the first.

As reported in the recent article in the Journal of Special Education (1) "No educational strategies can succeed if the baby has not found meaning in his world through affectional ties to his parents. No toy will have value if the human figures in the baby's environment are not valued. No device will give meaning to sound if the human voice has not united sound with the totality of tactile intimacy, comfort and pleasure that can only be provided by a human partner." Parents will be rewarded by the infant's smiling to their voices and touch, so the language of smiling is not absent; it is learned through other cues. Of all the things that we have done to aid the early development of blind babies we place greatest value on our work in promoting the love bonds between the baby and his parents. Given this basic premise the blind infant can develop satisfactorily. The blindness need not handicap him in other senses. The other perceptions are not more sensitive to start with, hearing and touch for instance, but because they are used without sight, there is more attention to sound and the apparent sensitivity develops. This will be if there is not confusion of other noises and if the child can cause sound in musical toys and rattles.

The other basic necessity for the infant is to be allowed to act in a voluntary

way upon his own world. Even feeding is not a passive experience. Anyone who has seen an infant rooting for the breast knows nature did not intend feeding to be a passive experience. Or we can see an infant reaching actively for the bottle and soon placing both hands on the bottle, or one on the person holding him in her arms. If a mother holds the baby's hand still during feeding, even lovingly, she is preventing him from the first voluntary gestures. Love can be expressed in holding, but not in preventing hand movement. When he can hold the bottle himself, still in his mother's arms, he has the satisfaction of participating in the feeding and knowing who is the human provider. This tie is necessary and continues on through finger feeding and to self feeding later. There is rarely any difficulty chewing if solid foods are presented at the time of teething to an infant who has learned to participate. Since feeding is central to the first year much learning takes place around it.

When we look at toys for any age from the first four months on to age three years, there is a point of view from which to work. Freedom to explore the safe toy is a doorway to creativity that "learning the right way" cannot provide. For the developing infant there is no "right way". There are areas in life where this comes, much later, and always subject to change and adaptation. A previous head of World Health Organization has said that today a child needs ability to adapt to change to a degree never known before. Our world is changing so rapidly. For the blind child a wise balance exists between finding things in a familiar place and finding new opportunities. The toy with an attractive sound is indispensible to the blind infant, but only if he can act upon it. As an early example, there is the cradle gym which makes a sound when a ring is pulled. It is called an activator. The action blocks add much opportunity to investigate and cause a sound for the older child. Background noises of television and radio may please an infant but he cannot act upon them until he is motile. Creeping will come when the infant is motivated to reach toward a familiar sounding object that he has previously handled and enjoyed, and when he can identify approximately in space where the sound is coming from. For a long time the sound of a bell does not connote the object he just held. But by constant experience with that toy he will learn, at about 10 months, that the sound means that toy. It takes many weeks of learning to reach on sound cue and it must of course be built up on small successes, not countless frustrations. At the appropriate time the sound will cause him to reach for what we have not yet given him.

The baby who has all his wants supplied before he even knows he wants something does not learn his own ability to cause events. Even an autistic child may be said to "come to life" when he takes action on his own behalf. His attempts to cause mother to come, or to feed him, have meaning for an infant in a learning sense if the interval is very short between cry and the appearance of his mother or the bottle. If he has not had to ask for it at all he does not know he can cause anything. Food reaches his mouth by magic, not by his efforts. The sounding toy which he can locate provides him with the sense of object constancy which, once learned, can be tested in various ways by covers or barriers which may become more complicated.

We all have in mind many toys that we have used with blind children. The person who offers the toys to an infant is as important as the toy. The skill lies in interesting the mother to continue the interaction which may be demonstrated. This may mean giving much support to a mother who is not confident and whose vision of the future is clouded. There must also be opportunity for the baby to play when his mother is busy. Crib toys are needed, and the sounding cradle gym, which does not go away but is there when the baby raises his arms and hands. It gives him, not only much fun, but more information about his own actions as he learns to cause the sound. As soon as he can sit supported, we use a chair surrounded on three sides with a table surface, with a small rail that prevents objects from dropping over the edge, gives opportunity for manipulation of objects in a different plane. He reaches at midline and is certain to find toys there, on the table.

The gross motor milestones may come a little later for blind children but they will appear in order, if the child is given the opportunity. There is great pleasure for the blind child in dancing as we saw one girl doing just before her third birthday; it was rhythmical and free to a good nursery record. There is pleasure in singing along with the record too. Gross motor supersedes small manipulations when it has appeared and can be endlessly encouraged with benefit to later mobility. The child restricted from mobility has fewer outlets for energy and aggression and it may be turned inward.

As an example of this Jackie at 17 months had a severe set back. His mother was called away suddenly when her father died and was away several days. During that time Jackie was in the care of various friends and relatives who helped out in the emergency. When his mother returned she found Jackie had screaming fits which lasted for hours. There was brief consolation when his mother held him. She sought help

from Mrs. Fraiberg. From the observers she learned that it looked like helpless rage. She gave the suggestion that when Jackie started shouting his mother should provide him with pots and pans or banging toys and encourage him to pound them with his hands. Within a few days the mother phoned. The banging games had "worked like magic". The shouting had stopped and Jackie had taken to the pounding with an enthusiasm which surprised her. It created a noise but it was one she could tolerate. More than this, it provided adequate discharge of tension. He began to show signs of improvement, shouting was rare, clinging decreased and he was playing actively again. He used his pot banging only when he needed it. Later his mother gave him a toy punching bag he enjoys. He is a child who can fight back if necessary.

Unrealistic expectations of parents may be too high or too low. Both are frustrating. Each child is different. How is the mother, or her teacher to judge? The child will tell us, given the opportunity, in a permissive, tension free atmosphere. How do we know what is the appropriate toy? The burden is on the observer. A child may be rocking, out of boredom or loneliness. The rocking may cease when his attention is captured. It may drop out entirely, as we have seen, when mobility increases the range of the child's world. If the mothers or fathers time with the child is so important, they also are all different. With the intuitive mother a program of what might be called enrichment will enable her to do well. But what about the depressed mother of a handicapped child? Many, perhaps most parents, go through a period of depression when facing the knowledge that their child is blind. If professional help seems indicated, it is well to separate treatment for the adult from the encouragement to enjoy her child which will come as she feels better able to cope. Sometimes the opportunity to express her feelings in a non-judgmental atmosphere may be enough to allow her own strengths to emerge. Of course, the satisfaction of seeing the child's small gains in accomplishment will bring happiness, if it is understood. As long as a mother can care for her child, however, her place is right there with him.

In any case, a child cannot be treated successfully without the participation of his parents or foster parents. We do not place ourselves on opposite sides. Enlist their aid, welcome it and as they help it will help the child. If we can regard the parent as an asset, and as an extension of the program, we can assume that all are working toward the same goal.

In playing with a baby or pre-schooler, we always sit on the floor. This brings

us down to their height. Otherwise, their world is made up of legs of people and furniture, whether they can be felt or seen. The blind child appreciates this and will stand beside us, or sit there with a comfortable friendliness. Many so called lap games can be played on the floor while insuring more independence of movement to the blind child who can safely move around. A blind infant when placed prone on a blanket does not raise his head naturally because he does not have the stimulus of vision. If we are on the floor with him, stroking his head or just keeping in touch, he is more easily interested in a musical ball or toy that he can use both hands to play with when his head is raised. The musical ball rolls out of reach, but not far, and he will reach out, and this leads to creeping when he has matured to that point. Some blind children have the motor abilities but not the motivation for creeping.

Language makes its beginning in the first year, with cooing and then babbling in response to mother's voice. If we wait after speaking the baby will respond. He may initiate the conversation. If we speak with the infant in simple terms always naming the activities taking place, he will soon learn by our tone and later recognize the words. Language development follows the same general pattern of a sighted child but a little slower. There is not all the naming of objects that are seen that a sighted child asks for. With a warm relationship and conversation directed to the baby's pace and understanding they will soon imitate and experiment with sounds. If there is a continuous stream of conversation going over his head he will lose interest. All the hand games with nursery rhymes are interesting. One leads to naming eyes, nose, mouth and so on. Patty-cake is a perennial favorite, sung all the way through. Peek a boo can be played with touch.

If there seems a discouraging lack of progress in a child's interest and ability to manipulate toys and rattles there are many possible causes. Of course, we expect the child to be receiving medical care and periodic examinations. However, it is possible, even nowadays, for the child to be on an inadequate diet. The great lack may be protein. And we are not talking only of the economically deprived child. A so-called middle class mother may be stressing fruits and commercially prepared mixtures. The mixed meat and vegetable jars have less meat than we expect. To some extent, the baby, "eating from the table" has an advantage in that at least his family knows what he is eating. An increase in protein may soon produce an increase in body tone and vigor. A mother may be asked to keep a record for two days of what a child actually eats - not just what is offered.

We know two children who were kept too long on strained food. They were low on protein and missed the best time to start chewing - when the teeth come in. There is

an institution in Guatemala called Incap where much important research is done on nutrition by Dr. Cravioto and others. The child with severe protein deficiency can be cured by diet. But if the malnutrition occurred too young there is permanent damage that can never be repaired and the child remains at a retarded level. Do we need to mention that a child may also overeat and become obese, which has its dangers.

Some mothers are quick to say a child does not like a certain food and, of course, we all have preferences. A food should never be forced. However, if a new food is re-introduced casually and frequently a child comes to know and like it. This applies to new textures too. We have all seen the expression of a child given a new taste. It is total rejection. They may reject solids, too, if used to smooth consistencies. The child with siblings is in an advantageous situation. If everyone else enjoys a food, he soon will, too. If a baby gags at the first experience of solid food, that may represent rejection. If physically normal, they will learn by experience to enjoy it. We get different reactions to hard teething cookies. Some mothers say they are tasteless. But if a child will bite down hard on a teething ring he will bite on a hard cookie.

Bringing toys to the mouth is natural to all children. For the blind child it may develope usefully. When Jackie age 3 was first given wooden spools on a string he only took them off. The second time, and without any help he learned to thread them on. He held the spool in one hand and the lacing in the other. He lightly touched the spool to his mouth and then accurately inserted the lacing. He threaded several spools in this way. The touch to the lips may be as quick and light as a glance will be from a sighted child, and provides similar information.

And so the mother provides the early learning. If she does not understand this, the infant may remain unstimulated in his crib for most of his day, and he may appear retarded. We stress his learning to know his mother by her holding him for feeding. Some children who are raised where breast feeding is still natural will have an advantage. Singing and lap games create conditions for a dialogue between mother and infant. This achieves the first guarantees of a blind baby's development. They learn to associate pleasure and satisfaction with her person, to unite feeding and physical intimacy. A premature infant, coming home after two months in the hospital, requires tactful, gradual introduction to holding. They may give the appearance that they don't want to be held, due to lack of experience.

If the hands are free to explore, opportunities must be given. A cradle gym across

the crib is much enjoyed. When he raises his hands in random gestures, he will contact it. Those incorporating sound are most interesting to him. Any soft or stuffed toy is more interesting if there is a pleasant sound, one that does not require too early a skill in turning it on. It gives comfort too.

As soon as the child can sit supported, he needs experience in sitting. A blind infant of six months can get much learning from finding objects on a flat play table surface.

A playpen is essential. This provides a known space within which the baby can locate his toys, can roll over. At the time he is ready, it gives him a safe place to pull himself to sit and later pull himself to stand and cruise around the edge. He needs some time alone to amuse himself but much of his waking time is spent in company of parents or siblings. A child left alone too much is too inward turning. A balance is required. When he learns to walk the playpen is outgrown.

As a sighted child learns to use his hands he watches them. A blind child needs definite help in bringing the hands to midline. A ring on which both hands can be placed at one time helps. Also, of course, both hands can go to the bottle. The nursery game of patty-cake is helpful. It will lead to mutual fingering and then transferring and exploring shape, texture, moving parts of a variety of objects.

A dinner bell, with a wooden handle that can be chewed safely, has been found a very important tool of learning. Babies enjoy it and it can be used to initiate search on sound. At first, it will have to be touched to his hand. Later, at approximately ten months, he will reach out accurately to its position. This belief that the bell exists and he can reach it himself is a milestone. The baby who is rolling to prone and getting on all fours will creep to this bell when he is physically ready.

A blind toddler will walk around his house and learn his way. Then the playpen is no longer necessary. There is so much pleasure in walking for a toddler that he may temporarily lose interest in fine manipulations. He just wants to walk all the time. There are many large toys they can ride and enjoy while using the whole body. If taken outdoors everyday, a toddler is not afraid of outdoors, and is safely accompanied on small adventures.

Imaginative doll play goes thro various stages. The totally blind child is not interested early in doll play. Two children with light perception showed an interest in dolls around two years. Joan carries a doll happily. She will now brush her doll's

-142-

hair. Karen, who had a baby sister, calls her doll "Baby" and feeds her and puts her to bed. A totally blind girl, Cathy, did not seen interested. When asked if she wanted to give the doll a bath she stepped in the baby bath herself. There is difficulty in understanding miniatures. When Cathy was given a miniature Christmas tree she said "Feels like brush". Karen has a real dog but when given a small toy dog she felt it all over and put it down, not much interested. When her sighted sister picked up the toy and said "Doggie" Karen looked surprised. It is easier with some furniture, such as a chair, for a totally blind child to learn different sizes including the miniature. Nested cups may help. Joan is interested in shoes, her own, her doll's shoes and sometimes "dresses up" and wears her mothers shoes around the house.

Fear is not normally present if children have been allowed experiences under safe guidance. A blind child is very sensitive to the feelings of those around him. A mother may have to learn security herself in letting him progress. The child who is interested in a world that has been kind to him will seek new experiences.

If I may quote from Witter Bynner.

".......tho he lead them

He follows them

He imposes no weight on them

And they, in turn, because he does not impede them

Yield to him, content:

People do not tire of anyone who is not bent upon comparison."

(1) Fraiberg, Selma: Smith, Marguerite: Adelson, Edna "An Educational Program for Blind Infants" Journal of Special Education, Vol. 3, No. 2, Summer 1969

A Service for Pre-School Visually Handicapped
Children and Their Parents in a Metropolitan Area

Virginia Murray, Director
Delta Gamma Foundation for Visually Handicapped Children
St. Louis, Missouri

A Service for Pre-School Visually Handicapped Children

and Their Parents in a Metropolitan Area.

In 1950, when the St. Louis Delta Gamma alumnae sought a project in their field of aid to the visually handicapped, a survey revealed no service for pre-schoolers although the number had increased due to Retrolental Fibroplasia caused by the oxygen given to prematures. Many were retarded in functioning and peculiar in personality and agencies for the blind wanted a school for them. A teacher well grounded in Nursery Education and Family Living was hired and I succeeded her in 1955 with a background in Psychology, Social Work and nursery teaching. Each of us was sent for a course about pre-school blind children and one on diseases of the eye. In visits to nurseries around the country she was impressed by the greater stimulus to activity blind children received from the others in regular ones than in those for blind only. With guidance from the American Foundation for the Blind our free Parent Counseling Service was set up, based on monthly or oftener home visits in the Greater St. Louis area and office consultations for out of towners, with placement in nurseries for normal or retarded children and a liberal scholarship program.

My half-time assistant, chosen for her warmth and animation, has a degree in Home Economics and has taught in nurseries for normal and retarded children. She goes weekly or oftener to a few who need extra social or intellectual stimulation for special reasons.

Funds are raised by Delta Gammas through the sale of christmas trees and cards and from private contributions.

Although fewer are blind now, most of what we have learned applies to children who are partially seeing and deaf or retarded. To some parents even a relatively mild degree of visual loss is devastating and additional defects are an added blow. On learning that her baby was blind an older mother told me of taking to her bed for a week of vomitting and praying she would die. On hearing that hers was aurally and visually impaired a young mother felt her life was over and wanted to die and a nurse blamed doctors for keeping her blind son alive. Strong disappointment, fear and bitterness, plus guilt and shame for such feelings and because they feel somehow responsible, are universal in even the finest parents of severely handicapped children. We try to elicit expression of these

-145-

emotions and assure them that they are normal and not immoral, because when they are aired the intensity is usually reduced and they become more open to reassurance and information. They cannot react with love to the child while strong negative feelings are bottled up and they can be explosive.

At least for the first visit I try to come when fathers are there and continue at night or on Saturday every other visit, or monthly if both parents work, and go also to the homes of sitters. The sooner we reach the family after diagnosis, especially if the handicap is severe, the greater chance we have to prevent problems by restoring faith that this child can become an independent and productive person of whom they can be proud.

Fathers are apt to ask factual questions and I bring information about educational and vocational opportunities and the activities of our State Bureau for the Blind. One thought his son would sit at home until he was old enough to sell pencils and another asked whether he would some day need to live and work in a special place. Mothers may doubt their ability to train him and both are apt to fear he will be unhappy and retarded. Snap shots of our children, often doing things they thought impossible, bring hope and as we look at them I point out their achievements and problems and the kinds of handling we think can produce each. Amusing annecdotes help lift the gloom and accustom parents to talking more freely about the subject.

With a diagram of the eye I often explain conditions they were too upset to grasp or clear up misconceptions, such as that each can give an eye or that surgery can cure him. Until the facts and their responsibility for training him are accepted they will not be motivated to learn how to help him as he is, but this cannot be forced.

Aside from relieving parents' distress all of this is of the utmost importance because, as you know, anything that interferes with a baby's close relationship with his mother precludes normal personality and intellectual development. Blind babies have a pull toward autism, the tendency to live within themselves and respond more to internal than external stimuli, but if parental feelings assert themselves soon and they receive loving care and extra cuddling and talking to most will become loving and outgoing. Easily incurred passivity remains a threat to be combatted through much stimulation, but

-146-

it must be on increasingly mature levels. Most parents of handicapped children have difficulty in disciplining them and requiring the self-help of which they are capable because they want to make up with mistaken kindness and those who truly cannot accept them hide it from themselves by extreme solicitousness and indulgence. I try to implant the conviction that firm control and demands for increasing independence are not unkind and are acts of love which help the child to be and see himself as lovable and capable, while doing everything for him and making pitying remarks can slow his development and make him see himself as helpless, incapable and less lovable.

Because self doubting parents are ineffective, they must be convinced that they are the ones best qualified to teach him, with our help, because any young child learns best from his parents and he is not so different from others.

Through discussion and literature we help them to anticipate next steps and make suggestions for promoting development and avoiding or overcoming problems. We often bolster their resolve to handle him in desirable ways or to follow advice for overcoming problems long enough for success, in spite or criticism from others.

Pushing too hard, sometimes to reassure themselves or his normality, can produce delayed development and resistance to teaching, but the classic pattern of pseudo-retardation is one of too much restriction, protection and indulgence and too little expectation, stimulation and discipline. If slowness seems unrelated to handling we discuss his rate of growth and advise parents to expect behavior appropriate for his apparent mental level. We may need to interpret the value and limits of evaluation services and explain the difference between brain damage and general retardation. Questions about testing procedures and the concepts of mental age and I-Q are frequent.

Relatives, strangers, teachers and house parents feel free to criticize these parents. Althoughthe child's problems may be related to inadequacies in one or both calling for professional help, this is most difficult to interpret and for them to accept. If they are not ready or are unable to use our advice we should remember that most are trying to do the best they can and criticism may only increase their self doubt and resentment and and cause them to give up. Also, the child must do the growing and we do not know enough

-147-

about the effects of long illness, repeated surgery, brain damage, inborn tendencies to faulty personality, family problems and the influence of relatives to hold parents solely responsible.

We try to improve the "climate of growth" through suggestions, referral for medical and other services beyond our scope and aid in obtaining public benefits for which they are eligible. We find Public Health Nurses most helpful, especially with severe feeding problems.

Because St. Louis has three centers where aurally impaired children are served we offer less in this area, but we confer with therapists and work together. As a concrete form of help we loan educational toys, storybooks and action type records, materials of the Reading Readiness and Perceptional Motor sort and in some cases equipment such as high chairs, potty chairs and tricycles.

Parents must interest the very young child in our toys because few accept help from an outsider. First he must have learned to love so that he will want to please and he must have achieved the beginnings of independence, because, if he will not hold his bottle or retrieve dropped food he is not apt to use them purposefully and before he walks he is not likely to sit down long enough to be taught. He should have explored freely and examined, manipulated and compared objects and sensations. Many recoil from unfamiliar textures and resist having their hands touched but these aversions can and should be overcome with gentle persistence. Work with toys must not be a substitute for fun and experiences. He needs the same toys other children enjoy and we urge parents to acquaint him with all they do around the home, take him to stores and places of interest and encourage him to ask questions.

Partially seeing children may fear or be confused by what they see but they can learn and their ability to recognize pictured objects and interpret pictures can usually be increased surprisingly. Parents and teachers may need to be shown how close they must get to see things clearly.

After age two agemates are invaluable and worth seeking in a park if none live close. All children do not need nurseries but most could benefit from a safe place for active

-148-

play with friends who do not run away and the opportunity to adjust to another woman and to routines. We try to find a school nearby, often aided by our State Licensing Workers, and "sell" the child if necessary. We may accompany him for a short time until he and the teachers feel comfortable. We observe him and counsel with the staff periodically and report to parents his progress or shortcomings that can be overcome. We have placed over 100 children in about 50 nurseries.

With parents' consent, I write case histories for agencies and as Kindergarten approaches I help parents weigh educational programs and send a summary to the school they choose. During his first year I serve as liason between school and home, especially for parents who can seldom visit,to report on visits to his class and share their pleasure in all that he is learning. Sometimes I can make suggestions for overcoming minor problems and bolster their faith in measures the staff is employing or clear up misunderstandings. As he settles in school our contact tapers off or ends but they are free to call. We may continue to serve retarded children for several years until they are in school. In some cases the need for help in accepting and applying for institutionalization arises and this too can be a real service when necessary.

Jessie, a two pound premie referred at fourteen months, had only light perception due to Retrolental Fibroplasia. She lived in a blighted suburban negro community with her grandmother,a part time domestic and retired grandfather who shared in her care. Her early development was at least normal, with words at ten months, walking at fourteen months, sentences with proper use of pronouns by two and mastery of the many educational toys and tricycle we loaned by three. That summer I pursuaded her grandfather to install a low rail on outside stairs and let her go outside without help, but he continued to interfere with discipline and make pitying remarks. Her grandmother who understood some of the subleties that shape the self concenpt responded with a vigorous "You're not a poor little anything" when Jessie once parrotted dramatically, "I'm just a poor little handicapped child", but until she was past four she let her rule the roost and did not require the independence of which she was capable. At my suggestion she entered Sunday School at three but had a tantrum on leaving and did not resume until after my next visit

-149-

when I urged another trial with a warning that unless she left quietly she would not return. At three and a half she was accepted by a fine nursery after my talk at a staff meeting and offer to accompany her for a few days overcame the teacher's fear. The children did not question her race or blindness and a hair bow settled their doubts about her sex. In two years the only problem was a period of roughness in play, but at home she was increasingly unruly. She stubbornly resisted self help and was permitted the bottle until she decided to stop soon after I told her that now that she was in the older group I thought she was big enough to give it up, to which she replied, "I'm just a little girl". As kindergarten loomed her lagging social development was stressed and I worked with her with more advanced materials. She quickly responded when her weary grandmother became firm and was cooperative, well mannered and proud of her independence. On my last visit after a very successful year at our School for the Blind her grandmother gave eloquent thanks for the service which she felt sure saved them from spoiling her completely. Maria, a beautiful 6 year old who weighed in at a pound and a half, was born to refugee parents who spoke little English. She came home at 6 months but soon returned with pneumonia and on discharge they were told that she saw only light. Ignorant of what a blind child could do and frightened by her delicacy they kept her in a crib or pen until we met her at four. Elderly grandparents had come to live with them three months earlier and her mother went to work. They petted and talked to her, unlike her mother who claimed she had been too busy, but they demanded nothing of her. I found a volunteer social worker awaiting confinement who spoke Spanish. In talks with the mother on her day off and the grandmother she tried to inspire them to discipline and socialize her and played with Maria using our toys and my suggestions. I visited at night with the father who spoke more English. Maria ignored a stranger's greeting but it was easy to interest her in toys and she soon matched parts by color and named colors and objects in both languages. We loaned a potty chair and her grandmother undertook to train her and teach her to use a spoon. It took a year to persuade them to eliminate the bottle and although she ate french fries and crackers they never could withhold pureed foods when she refused other solids as advised by the pediatrician whose aid we enlisted. After three months my

-150-

assistant visited twice a week and often took her to parks and stores. She showed them that she was safe on stairs and would respond to firmness. Her vocabulary increased rapidly and she soon acquired many concepts and skills but her social development lagged severely. In a Pre-Kindergarten class at our School for the Blind she gained much in independence and self control with strong pressure by a warm teacher and proved able to read half inch letters. This year she does well academically in the Kindergarten and is outgoing and competitive but she needs to learn to play with children and acquire social graces. With some force by her strict teacher she recently ate a hot dog. Her parents attend P.T.A. meetings and are at least including her in family outings and expecting more of her.

At four Joe's severe visual and oral defects and alarming illnesses were not his most severe problems. He was also hyperactive, destructive, impervious to discipline and treated people as objects except to seek help or, rarely, to snuggle against his mother. Unless he learns to love and want approval he will not be educable although at two he matched toy parts by color and soon by shape. This behavior may have an organic basis but his is not a demonstrative family and his parents need much help. For the past 3 months in twice weekly visits my energetic assistant has tried to make Joe feel that it is more fun to do things with a person than alone with a toy. Since abandoning over-zealous work with toys his mother often watches their antics for ideas to use in play with him. He laughingly accepted physical play such as being whirled in the worker's arms or bounced on her lap on the floor as she suddenly bent her knees and hugged him. When she playfully snatched a toy and ran he grimly pursued her, but soon laughed as he chased her and accepted a big hug and kiss when he caught her, although at first he would not seek her behind a door unless she had a toy. Recently he grabbed a loaf of bread from his mother and giggled as he hid with it and smilingly chased his little sister when she tried the game instead of screaming in anger. Our worker has rolled in leaves with him, inviting a neighbor boy to join them. She often kisses him on nose, ears and chin and beckons as she backs away and now he runs to her open arms for a hug

over and over. On some days he is calmer and more responsive than others and when he goes off to use a toy alone she sits beside him in parallel play, but several times he has looked toward a toy and chosen to accept her invitation to an activity. These are small indications of sociability on which we hope to build.

A Demonstration Project of Speech
Training for the Preschool Cleft Palate Child

Robert J. Harrison, Ph.D.
University of Miami School of Medicine
Miami, Florida

INTRODUCTION

THE FEW STUDIES WHICH HAVE BEEN MADE OF THE LANGUAGE AND SPEECH
PATTERNS OF PRESCHOOL CLEFT PALATE CHILDREN, NOTABLY THOSE OF BZOCH IN
1956 AND MORRIS IN 1960 , INDICATE THAT DELAYED AND DEFECTIVE PATTERNS
ARE LIKELY OCCURRENCES. ECKELMANN AND BALDRIDGE (1945), HAHN (1958)
AND BZOCH (1956) ALL DISCUSS THE NEED FOR EARLY ATTENTION TO THE SPEECH.
OF CLEFT PALATE CHILDREN. IN PRACTICE, HOWEVER, MORE ATTENTION IS
USUALLY GIVEN TO REMEDIATION RATHER THAN TO PREVENTION OF DELAYED AND
INCORRECT LANGUAGE AND SPEECH PATTERNS. THIS PROBABLY HAS BEEN DUE,
IN PART, TO THE IMMEDIACY OF THE PHYSICAL PROBLEMS WHICH REQUIRE ATTENTION,
AND FURTHER, TO THE DIFFICULTY ENCOUNTERED IN OBSERVING AND PROGNOSTICATING
LANGUAGE AND SPEECH DEVELOPMENT IN THE VERY YOUNG CHILD.

VERBAL COMMUNICATION, HOWEVER, IS NOT SIMPLY HELD IN ABEYANCE UNTIL
THE PHYSICAL RESTORATION IS COMPLETED. THE CHILD, EVEN THOUGH TEMPORARILY
EXPERIENCING A PERIOD OF PHYSICAL INCOMPETENCY, ATTEMPTS VERBAL COMMUNI -
CATION. INCORRECT SPEECH PATTERNS MAY DEVELOP AS THE CHILD TRIES TO
COMPENSATE FOR HIS PHYSICAL INADEQUACY. AS ERRORS BECOME STABILIZED AND
REDUCED TO AUTOMATICITY THEY ARE DIFFICULT TO ELIMINATE.

MOREOVER, DELAYED AND DEFECTIVE VERBAL COMMUNICATION CAN BE BOTH
SOCIALLY AND EDUCATIONALLY HANDICAPPING. A PILOT STUDY OF 50 SCHOOL AGE
CLEFT PALATE CHILDREN SEEN AT THE SOUTH FLORIDA CLEFT PALATE CLINIC SHOWED
48, OR 96% , EVIDENCED SOME SPEECH PROBLEM AND 23, OR 46 % OF THESE WERE
ACADEMICALLY RETARDED ONE OR MORE GRADES. THE CAUSE OF RETARDATION WAS
NOT DETERMINED, BUT SINCE ALL OF THE CHILDREN HAD NORMAL MENTAL ABILITY
IT WAS POSSIBLE THAT DELAYED AND DEFECTIVE VERBAL SKILLS WERE A CONTRIBUTING
FACTOR.

IF A PRESCHOOL PROGRAM OF LANGUAGE AND SPEECH STIMULATION COULD PREVENT OR MINIMIZE PROBLEMS ENCOUNTERED IN DEVELOPMENT OF VERBAL COMMUNICATION, IT IS PROBABLE THAT THE NUMBER EXPERIENCING EDUCATIONAL RETARDATION WOULD BE FEWER AND THAT THE AMOUNT OF REMEDIAL SERVICES NECESSARY DURING THE SCHOOL YEARS COULD BE SUBSTANTIALLY REDUCED.

THE PURPOSE OF THIS PROJECT WAS TO STUDY THE EFFICACY OF EARLY LANGUAGE AND SPEECH STIMULATION FOR THE PRESCHOOL CLEFT PALATE CHILD. SPECIFICALLY, THE OBJECTIVES WERE TO 1) EVALUATE THE NEED FOR LANGUAGE AND SPEECH STIMULATION, 2) DEVELOP A PRESCHOOL PROGRAM OF LANGUAGE AND SPEECH STIMULATION, AND 3) EVALUATE THE EFFECTIVENESS OF SUCH A LANGUAGE AND SPEECH STIMULATION PROGRAM.

EVALUATION OF THE LANGUAGE AND SPEECH SKILLS OF PRESCHOOL CLEFT PALATE CHILDREN

THE FIRST OBJECTIVE OF THE PROJECT WAS TO EVALUATE THE VERBAL COMMUNICATION SKILLS OF THE PRESCHOOL CLEFT PALATE CHILD. THIS WAS UNDERTAKEN TO PROVIDE A DETAILED AND THOROUGH EXPLORATION OF THE EXTENT TO WHICH THESE CHILDREN NEED A PROGRAM OF LANGUAGE AND SPEECH STIMULATION.

PROCEDURES

TESTS ADMINISTERED FOR EVALUATION OF LANGUAGE SKILLS WERE AS FOLLOWS:

SLIDE 1. THE LANGUAGE ABILITY TEST . THIS TEST WAS COMPILED FOR THE
1   PROJECT BY THE STAFF. TEST ITEMS WERE SELECTED FROM THE KUHLMAN BINET, THE STANFORD-BINET, FORM L AND FORM M OF TERMAN AND MERRILL, THE CATTELL, AND BAKER'S DETROIT TESTS OF LEARNING APTITUDE. THESE TEST ITEMS WERE CHOSEN TO OBTAIN AN OBJECTIVE MEASURE OF LANGUAGE BEHAVIOR. EACH ITEM WAS ADMINISTERED AND SCORED AS SPECIFIED BY THE SOURCE DIRECTIONS. THOSE ITEMS ARBITRARILY JUDGED TO REQUIRE THE SUBJECT TO COMPREHEND BUT NOT EXPRESS HIMSELF VERBALLY YIELDED A RECEPTIVE LANGUAGE SUBTEST SCORE WHILE THOSE JUDGED TO REQUIRE THE SUBJECT TO PRODUCE AND USE VERBAL LANGUAGE WERE USED TO DETERMINE AN EXPRESSIVE LANGUAGE SUBTEST SCORE. THESE TWO SUBTESTS COMBINED TO GIVE A TOTAL SCORE WHICH WAS REPORTED

AS A " LANGUAGE AGE".

2. THE VERBAL LANGUAGE DEVELOPMENT SCALE. THIS SCALE IS
ADMINISTERED BY INTERVIEW OF THE PARENT. IT PROVIDES AN EVALUATION
OF RECEPTIVE AND EXPRESSIVE LANGUAGE ABILITIES. A RAW SCORE IS OBTAINED
AND THEN CONVERTED TO A " LANGUAGE AGE"

3. THE PEABODY PICTURE VOCABULARY TEST. THIS IS A MEASURE OF
COMPREHENSION OF VERBAL LANGUAGE OR, AS DUNN CALLS IT, " HEARING
VOCABULARY". FOR THIS TEST A RAW SCORE IS OBTAINED WHICH THEN IS
CONVERTED TO A " MENTAL AGE".

SLIDE   MEASURES OF ARTICULATION SKILLS INCLUDED THE FOLLOWING:
.2
1. ARTICULATION TEST. ARTICULATION WAS EVALUATED USING A TEST
IN WHICH THE PRODUCTION OF 24 CONSONANT SOUNDS IN VARIOUS PROSITIONS
AND 33 CONSONANT BLENDS WERE ASSESSED. PICTURES REPRESENTING EACH
OF THE 100 TEST ITEMS WERE NAMED FOR THE CHILD BY THE EXAMINER. THE
CHILD REPEATED EACH TEST WORD THREE TIMES. EACH ERROR RESPONSE WAS
CLASSIFIED AS AN OMISSION, WHICH WAS CONSIDERED THE MOST SEVERE ERROR;
OR A SUBSTITUTION (INCLUDING THE GLOTTAL STOP AND THE PHARYNGEAL
FRICATIVE); OR AN INDISTINCT PRODUCTION, INCLUDING DISTORTION BY
NASAL EMISSION, WHICH WAS CONSIDERED THE LEAST SEVERE ERROR. THE BEST
PRODUCTION IN THE THREE ATTEMPTS WAS RECORDED.

2. AN INTELLIGIBULITY RATING . THE INTELLIGIBILITY OF THE CHILD'S
CONNECTED SPEECH WAS RATED BY ONE OF THREE SPEECH CLINICIANS PRIOR
TO ANY EVALUATION OF ARTICULATION SKILLS. PHRASES AND SENTENCES
WERE ELICITED BY ASKING THE CHILD QUESTIONS ABOUT PICTURES IN THE BOOK,
COME OVER TO MY HOUSE . INTELLIGIBILITY OF THE SPEECH SAMPLES WAS
RATED ON THE FOLLOWING SCALE: (1) EXCELLENT- ALWAYS INTELLIGIBLE;
(2) GOOD- USUALLY INTELLIGIBLE; (3) FAIR - INTELLIGIBLE; (4)
POOR- PARTIALLY INTELLIGIBLE; AND (5) UNSATISFACTORY - COMPLETELY

-156-

UNINTELLIGIBLE.

3. THE MIAMI IMITATIVE ABILITY TEST. THE ABILITY TO IMITATE
PRODUCTION OF 24 CONSONANT SOUNDS WHEN COMBINED WITH A NEUTRAL VOWEL
WAS DETERMINED BY HAVING THE CHILD " WATCH AND LISTEN" AS THE EXA-
MINER REPEATED EACH COMBINATION. AFTER THREE PRODUCTIONS OF THE SOUND
BY THE EXAMINER, THE CHILD WAS THEN INSTRUCTED, " NOW YOU DO IT."
THE CHILD'S RESPONSE WAS CREDITED AS ONE POINT IF CORRECT, ONE -
HALF POINT IF QUESTIONABLE, OR ZERO IF INCORRECT. ARTICULATORY
PLACEMENT AND ACOUSTIC PRODUCTION WERE SCORED SEPARATELY FOR
EACH SOUND.

OTHER INFORMATION COLLECTED ON THE CLEFT PALATE SUBJECTS INCLUDED
A) TYPE OF CLEFT,B) AGE OF SURGICAL CLOSURE OF THE PALATE, C)
NUMBER OF SURGICAL PROCEDURES, D) NUMBER OF SIBLINGS, AND E)
RATING OF SOCIO-ECONOMIC STATUS.

AUDIOMETRIC SCREENING DETERMINED HEARING LEVELS OF ALL THE
SUBJECTS. CHILDREN WERE EXCLUDED IF FOUND TO HAVE A HEARING
LEVEL POORER THAN 20 DECIBELS (ISO-1964) AT ANY FREQUENCY IN THE
500-2000 HZ RANGE OF THE BETTER EAR.

THE LEITER INTERNATIONAL PERFORMANCE SCALE OR THE MERRILL-
PALMER WAS USED TO MEASURE NONVERBAL MENTAL ABILITY. SUBJECTS
WERE EXCLUDED IF FOUND TO HAVE INTELLIGENCE QUOTIENTS OF 75
OR BELOW.

E-O-S-
SLIDE 3

RESULTS IN LANGUAGE SKILLS

LANGUAGE ABILITIES OF 137 PRESCHOOL CLEFT PALATE CHILDREN
WERE COMPARED WITH THOSE OF 165 NORMAL PRESCHOOL CHILDREN.

THE CLEFT PALATE CHILDREN WERE FOUND TO BE RETARDED IN BOTH
LANGUAGE COMPREHENSION AND LANGUAGE USAGE. RETARDATION WAS
DEMONSTRATED ON EACH OF THE LANGUAGE MEASURES WHEN THE SCORES OF
THE CLEFT PALATE SUBJECTS WERE COMPARED WITH THEIR CHRONOLOGICAL

AGE LEVELS AND , ALSO WHEN COMPARED WITH THE SCORES OF THE NONCLEFT
CONTROL SUBJECTS. ALTHOUGH THE LANGUAGE SCORES WERE PROGRESSIVELY
HIGHER AT EACH SIX MONTH AGE INTERVAL, THE SCORES WERE CONSISTENTLY
LOWER THAN THAN OF THE APPROPRIATE CHRONOLOGICAL AGE.

SLIDES
3,4,5

IT WAS CONCLUDED THAT THE CLEARLY DEMONSTRATED RETARDATION IN
BOTH RECEPTIVE AND EXPRESSIVE LANGUAGE SKILLS FOR THE PRESCHOOL
CLEFT PALATE CHILDREN INDICATES A NEED FOR AN EARLY PROGRAM OF LANGU-
AGE STIMULATION .

E-O-S-

ARTICULATION PATTERNS OF PRESCHOOL CLEFT PALATE CHILDREN.

THE ARTICULATION SKILLS OF 74 CLEFT PALATE CHILDREN 24 TO 72 .
MONTHS OF AGE WERE COMPARED TO THOSE OF 127 NONCLEFT CHILDREN OF
SIMILAR AGES.

IN TERMS OF BOTH ARTICULATION SCORES AND INTELLIGIBILITY OF
CONNECTED SPEECH, THE CLEFT CHILDREN WERE FOUND TO BE INFERIOR TO
THE NONCLEFT CHILDREN. ALTHOUGH THE CLEFT PALATE SUBJECTS IMPROVED
AT EACH AGE LEVEL, THEIR PERFORMANCE ALWAYS WAS POORER THAN THAT OF
THE NORMAL SUBJECTS. THE EXTENT OF THE DIFFERENCE BETWEEN THE TWO
GROUPS WAS UNDERSCORED BY THE FACT THAT THE FIVE TO SIX YEAR OLD
CLEFT PALATE CHILDREN DID NOT ATTAIN THE INTELLIGIBILITY OR THE
ARTICULATORY PROFICIENCY OF EVEN THE THREE TO FOUR YEAR OLD CONTROL
SUBJECTS. FURTHERMORE, IT WAS ALSO FOUND THAT THE CLEFT PALATE
CHILDREN, REGARDLESS OF AGE LEVEL, NEVER PERFORMED AS WELL AS THE
NONCLEFT CHILDREN IN IMITATION OF EITHER ARTICULATORY PLACEMENT OR
THE ACOUSTIC PRODUCTION OF SPEECH SOUNDS.

IN ADDITION TO MAKING A LARGER NUMBER OF ERRORS THERE WERE ALSO
OBVIOUS DIFFERENCES IN THE ERROR PATTERNS OF THE CLEFT AND NONCLEFT
SUBJECTS. ALTHOUGH SOME OF THE ERRORS MIGHT BE ATTRIBUTED TO VELO -
PHARYNGEAL INCOMPETENCY ON THE PART OF THE CLEFT SUBJECTS, OTHERS
REFLECTED A GENERAL PICTURE OF RETARDATION IN SPEECH DEVELOPMENT.

THE FINDINGS LED TO THE CONCLUSION THAT PRESCHOOL CHILDREN WHO
HAVE DEFECTS WHICH INVOLVE THE SOFT PALATE NEED ASSISTANCE IN LEARN-
ING LANGUAGE ARTICULATION SKILLS IF THEY ARE TO ACHIEVE SPEECH DEVELOPMENT
COMMENSURATE WITH THEIR POTENTIALS PRIOR TO ENTRY INTO THE PRIMARY
SCHOOL YEARS.

DEVELOPMENT OF A LANGUAGE AND SPEECH STIMULATION PROGRAM FOR PRESCHOOL CLEFT PALATE CHILDREN

A SEARCH OF THE LITERATURE REVEALED RELATIVELY LITTLE INFORMATION
REGARDING PROCEDURES TO ASSIST THE PRESCHOOL CLEFT PALATE CHILD IN
DEVELOPMENT OF LANGUAGE AND SPEECH SKILLS. THE PROCEDURES SUGGESTED
BY ECKELMANN AND BALDRIDGE WERE MORE REMEDIAL THAN DEVELOPMENTAL.
HAHN RECOMMENDED PARENTAL ASSISTANCE IN DEVELOPMENT BUT DEFERRED
DIRECT WORK WITH THE CHILD UNTIL THREE TO FIVE YEARS OF AGE. TEXT-
BOOKS ON CLINICAL PROCEDURES IN SPEECH PATHOLOGY GIVE LITTLE ATTENTION
TO SPECIFIC METHODS FOR HABILITATION OF THE SPEECH PROBLEMS OF THE
VERY YOUNG CLEFT PALATE CHILD. IT WAS NECESSARY, THEREFORE TO
DEVELOP AND ORGANIZE A PROGRAM OF LANGUAGE AND SPEECH STIMULATION
FOR THE PRESCHOOL CLEFT PALATE CHILD. THIS PROGRAM ALSO PROVIDED
A MEDIUM FOR EVALUATION OF THE EFFICACY OF EARLY STIMULATION FOR
THESE CHILDREN .

PURPOSE AND OBJECTIVES   THE SPECIFIC OBJECTIVES OF THE LANGUAGE
AND SPEECH STIMULATION PROGRAM WERE: (1) TO ALLAY PARENTAL
ANXIETY CONCERNING THE CHILD'S DEVELOPMENT OF LANGUAGE AND

SPEECH SKILLS; (2) TO DEVELOP THE CHILD'S CONFIDENCE IN HIS ABILITY
TO ACHIEVE INTELLIGIBLE VERBAL COMMUNICATION; (3) TO STIMULATE
THE DEVELOPMENT OF SPEECH AND LANGUAGE SKILLS COMMENSURATE WITH
THE CHILD'S ABILITY; (4) TO PREVENT OR MINIMIZE THE DEVELOPMENT
OF UNDERSIRABLE COMPENSATORY PATTERNS WHEN PHYSICAL INADEQUACIES
INTERFERE WITH THE NORMAL DEVELOPMENT OF ARTICULATION SKILLS.

THE ORGANIZATION OF THE PROGRAM WAS SUCH THAT THE CHILDREN WERE
SEEN INDIVIDUALLY FOR ONE HOUR EACH WEEK. THE MOTHER, OR THE PERSON
WHO SERVED AS THE MOTHER FIGURE, ATTENDED EACH SESSION WITH THE CHILD.

THE HOUR-LONG SESSIONS WERE DIVIDED INTO THREE EQUAL SECTIONS:
(1) THE CLINICIAN WORKED DIRECTLY WITH THE CHILD WHILE THE MOTHER
OBSERVED, (2) THE CLINICIAN COUNSELED THE MOTHER AND DIRECTED
HER PARTICIPATION IN THE LANGUAGE AND SPEECH STIMULATION ACTIVITIES,
AND (3) THE CLINICIAN OBSERVED AS THE MOTHER ASSUMED THE RESPON-
SIBILITY FOR THE STIMULATION.

THESE SESSIONS PROVIDED OPPORTUNITY FOR THE CHILD TO BECOME
ORIENTED TO THE PROGRAM; THE CLINICIAN TO BOTH DIRECT AND OBSERVE
THE CHILD'S RESPONSES; THE PARENT TO OBSERVE THE CLINICIAN AND THE
CHILD, AND THE CLINICIAN TO OBSERVE AND DIRECT THE PARENT'S
PARTICIPATION.

EVALUATION OF THE LANGUAGE AND SPEECH STIMULATION PROGRAM

IN ORDER TO DETERMINE THE VALUE OF THE LANGUAGE AND SPEECH
STIMULATION PROGRAM DATA WERE COLLECTED AND ANALYZED ON PRESCHOOL
CLEFT PALATE CHILDREN PARTICIPATING IN THE PROGRAM AND ON A CONTROL
GROUP WHO RECEIVED NO SUCH PROGRAM.

SUBJECTS   THERE WERE 97 CHILDREN IN THE MIAMI AREA REFERRED
TO THE DEMONSTRATION PROJECT AS POSSIBLE PARTICIPANTS IN THE LANGUAGE
AND SPEECH STIMULATION PROGRAM. 68 WERE ENROLLED IN THE PROGRAM.
DATA ARE REPORTED, HOWEVER, FOR ONLY THOSE CHILDREN WHO 1) HAD CLEFT
WHICH INVOLVED THE SOFT PALATE, 2) HAD UNDERGONE INITIAL SURGICAL
REPAIR OF THE SOFT PALATE PRIOR TO ANY TESTS FOR RE-EVALUATION,
3) WERE OF NORMAL MENTAL ABILITY AS EVALUATED BY A NONVERBAL MEASURE,
4) HAD RECEIVED NO PREVIOUS LANGUAGE AND SPEECH STIMULATION, 5) WERE
FROM HOMES WHERE ENGLISH WAS THE SPOKEN LANGUAGE, AND 6) WERE ENROLLED
IN THE LANGUAGE AND SPEECH STIMULATION PROGRAM FOR AT LEAST 12 MONTHS.
USE OF THESE CRITERIA TO SELECT THE SUBJECTS FOR WHOM DATA ARE RE-
PORTED LIMIT THE NUMBER OF EXPERIMENTAL SUBJECTS TO 20.

THERE WERE 97 CHILDREN OUTSIDE THE MIAMI AREA WHO WERE EVALUATED
AS POSSIBLE CONTROL SUBJECTS BECAUSE THEY COULD NOT PARTICIPATE IN
THE DEMONSTRATION PROJECT. THESE WERE ALL OF THE CHILDREN UNDER SIX
YEARS OF AGE WHO WERE KNOWN TO FLORIDA CRIPPLED CHILDREN'S COMMISSION
AS HAVING HAD CLEFT PALATES AND WHO COULD BE CONTACTED. THE SAME
CRITERIA USED TO SELECT THE EXPERIMENTAL SUBJECTS WERE USED TO SELECT

THE CONTROL SUBJECTS. RATHER THAN PARTICIPATION IN THE LANGUAGE AND SPEECH STIMULATION PROGRAM, HOWEVER, IT WAS REQUIRED THAT THESE SUBJECTS RECEIVE NO SUCH SERVICES. USE OF THESE CRITERIA LIMITED THE NUMBER OF CONTROL SUBJECTS TO 25.

PROCEDURES   THE TEST BATTERY ADMINISTERED FOR EVALUATION OF LANGUAGE AND SPEECH SKILLS WAS PREVIOUSLY DESCRIBED IN THIS REPORT.

HEARING WAS EVALUATED AT THE TIME OF THE ANNUAL TESTING. TWO CHILDREN WHO DEMONSTRATED A SENSORI-NEURAL LOSS WERE EXCLUDED. OTHER THAN THIS, HEARING LEVELS WERE NOT USED AS A CRITERIA FOR EXCLUDING OR INCLUDING SUBJECTS IN THE EXPERIMENTAL OR CONTROL GROUPS BECAUSE IT WAS ASSUMED THAT NEARLY ALL CHILDREN WHO HAVE PALATAL DEFECTS SUFFER EPISODES OF OTITIS MEDIA AND CONCOMITANT REDUCTION IN HEARING LEVELS. THE EFFECTS, THEREFORE, OF EPISODES OF REDUCED HEARING LEVELS PROBABLY WERE OPERATING FOR BOTH THE EXPERIMENTAL AND CONTROL GROUPS.

SLIDE 10   EVALUATION OF LANGUAGE SKILLS   AS SHOWN IN SLIDE 10, THE MEAN MECHAM LANGUAGE AGE OF THE EXPERIMENTAL SUBJECTS WAS 8 MONTHS BELOW THAT OF THE CONTROLS ON THE INITIAL TEST. WHEN THE SECOND EVALUATION WAS MADE APPROXIMATELY 11 MONTHS LATER, THE CHILDREN PARTICIPATING IN THE LANGUAGE AND SPEECH STIMULATION PROGRAM HAD GAINED 18 POINTS AS COMPARED WITH A GAIN OF 13 POINTS FOR THOSE NOT PARTICIPATING. NORMALLY, THESE LANGUAGE SCORES SHOULD BE EQUIVALENT TO THE CHRONO-LOGICAL AGE OF THE CHILD. THE MEAN SCORE OF THE EXPERIMENTAL GROUP ON THE SECOND TEST WAS ABOVE THE MEAN CHRONOLOGICAL AGE,THUS INDICATING EXCELLENT PROGRESS FROM THE STIMULATION PROGRAM. THE MEAN SCORE OF THE CONTROL SUBJECTS ON THE SECOND TEST WAS APPROXIMATELY SIX MONTHS BELOW THEIR CHRONOLOGICAL AGE.

SLIDE 11   THE MEAN SCORES OF THE TWO GROUPS WERE SIGNIFICANTLY DIFFERENT AT THE INITIAL TEST OF THE PEABODY BUT NOT SIGNIFICANTLY DIFFERENT

AT THE RETEST DESPITE AN 18-MONTH CHRONOLOGICAL AGE GAP IN FAVOR OF THE CONTROL GROUP. THE PEABODY SCORES OF THE CONTROL SUBJECTS WERE 9 MONTHS BELOW THEIR MEAN CHRONOLOGICAL AGE WHILE THOSE OF THE CHILDREN WHO PARTICIPATED IN THE PROGRAM WERE ONLY 2 MONTHS BELOW THEIR MEAN CHRONOLOGICAL AGE.

SLIDE
12
IN SUMMARY, THE RESULTS OF THE LANGUAGE TESTS INDICATED THAT THE CHILDREN WHO PARTICIPATED IN THE LANGUAGE AND SPEECH STIMULATION PROGRAM MADE GREATER GAINS ON EACH OF THE THREE LANGUAGE TESTS THAN DID THE CONTROL SUBJECTS WHO DID NOT HAVE SUCH A PROGRAM. AS A GROUP, THEY HAD ACHIEVED NORMAL LANGUAGE DEVELOPMENT.

SLIDE
13
EVALUATION OF SPEECH SKILLS   AS SEEN IN SLIDE 13, OUT OF A POSSIBLE ERROR SCORE OF 100, ON THE INITIAL TEST THE EXPERIMENTAL GROUP HAD A MEAN OF 81 AND THE CONTROLS, 73. THIS IS A DIFFERENCE OF ONLY 8 POINTS DESPITE THE FACT THAT THE CONTROL SUBJECTS WERE 15 MONTHS OLDER. WHEN RETESTED, THE EXPERIMENTAL SUBJECTS EARNED A MEAN ERROR SCORE OF 43 WHICH WAS SIGNIFICANTLY BETTER THAN THAT OF THE CONTROL GROUP MEAN OF 66. THE EXPERIMENTAL GROUP DEMONSTRATED A 33 POINT GAIN COMPARED TO A 7 POINT GAIN FOR THE CONTROLS.

SLIDE
14
ON BOTH OF THE SUBTESTS OF IMITATIVE ABILITY, THE BEST POSSIBLE SCORE WAS 24 POINTS. THE EXPERIMENTAL SUBJECTS WERE INFERIOR TO THE CONTROLS ON THESE TWO TESTS AT THE TIME OF THE INITIAL EVALUATION. AT THE TIME OF THE SECOND TEST, HOWEVER, THE MEAN SCORES OF THE EXPERI- MENTAL GROUP WERE HIGHER THAN THE CONTROLS EVEN THOUGH THE CONTROL SUBJECTS WERE 17 MONTHS OLDER THAN THE EXPERIMENTAL GROUP. THE CHILDREN WHO PARTICIPATED IN THE LANGUAGE AND SPEECH STIMULATION PROGRAM HAD GAINED 7 POINTS IN THE CONSONANT PLACEMENT AND 6 POINTS IN THE ACOUSTIC PRODUCTION SCORE WHILE THE CONTROLS IN THE SAME PERIOD OF TIME HAD GAINED ONLY 2 AND 1 POINTS, RESPECTIVELY.

SLIDE 15   AS SHOWN IN SLIDE 15, NONE OF THE EXPERIMENTAL SUBJECTS HAD AN INTELLIGIBILITY RATING OF ONE OR TWO ON THE INITIAL TEST, BUT SIX ATTAINED THIS LEVEL BY THE SECOND TEST. THREE OF 20 CONTROL SUBJECTS WERE AT THIS LEVEL ON THE INITIAL TEST AND ONLY TWO IMPROVED TO THIS LEVEL ON THE SECOND TEST. FURTHERMORE, ONLY TWO OF 13 CONTROL SUBJECTS IMPROVED THEIR RATINGS, WHILE SEVEN OF 14 EXPERIMENTAL SUBJECTS ROSE ABOVE THIS INITIAL LEVEL.

SLIDE 16   THE RESULTS OF EACH OF THE MEASURES OF SPEECH SKILLS INDICATED SUPERIOR PROGRESS FOR THOSE CHILDREN WHO PARTICIPATED IN THE LANGUAGE AND SPEECH STIMULATION PROGRAM COMPARED WITH THOSE WHO DID NOT.

CONCLUSIONS

PRESCHOOL CLEFT PALATE CHILDREN WHO HAD DEFECTS WHICH INVOLVED THE SOFT PALATE WERE FOUND TO BE RETARDED IN BOTH RECEPTIVE AND EXPRESSIVE LANGUAGE DEVELOPMENT. THEY WERE ALSO FOUND TO HAVE DELAYED AND DEFECTIVE SPEECH PATTERNS. THE CLEFT PALATE CHILDREN AT FIVE TO SIX YEARS OF AGE, DESPITE NORMAL MENTAL ABILITY, WERE NOT AS PROFICIENT AS THREE-YEAR-OLD NORMAL CHILDREN. DELAYS IN DEVELOPMENT OF VERBAL COMMUNICATION WERE EVIDENCED AT THE EARLIEST AGES AT WHICH THESE CHILDREN WERE EVALUATED. FOR SOME THIS WAS AS EARLY AS 18 MONTHS. IT WAS CONCLUDED THAT THESE CHILDREN NEEDED AND COULD PROFIT FROM A PROGRAM OF LANGUAGE AND SPEECH STIMULATION INITIATED IN INFANCY.

A RESEARCH AND DEMONSTRATION PROGRAM DESIGNED TO STIMULATE DEVELOPMENT OF VERBAL COMMUNICATION WAS CONDUCTED. PARTICIPANTS WERE INTRODUCED INTO THE PROGRAM AS EARLY AS POSSIBLE, PREFERABLY WHEN THEY WERE 18 MONTHS OLD. THE MOTHER, OR MOTHER FIGURE, WAS AN ACTIVE PARTICIPANT AND LEARNED HOW TO ENCOURAGE LANGUAGE DEVELOPMENT AND PROVIDE SPEECH STIMULATION. IN THIS WAY, THE ONE-HOUR WEEKLY SESSIONS WERE EXTENDED BY HOME STIMULATION.

CLINICAL OBSERVATION INDICATED THAT THE PARTICIPANTS IN THE

PROGRAM MADE PROGRESS THAT BROUGHT LANGUAGE SKILLS TO A LEVEL COMMEN-

SURATE WITH CHRONOLOGICAL AGE. DRAMATIC IMPROVEMENT IN ARTICULATION

SKILLS AND IN INTELLIGIBLITY OF SPEECH WAS ALSO NOTED. WHEN VELO-

PHARYNGEAL INCOMPETENCY OR OTHER PHYSICAL PROBLEMS WERE PRESENT THE

CHILDREN AND THEIR MOTHERS WERE TAUGHT TO ACCEPT NECESSARY DISTORTIONS,

E.G. NASAL AIRFLOW, IN PRODUCTION OF SPEECH SOUNDS. IT WAS OBSERVED

THAT THE CHILDREN WERE ABLE TO LEARN CORRECT ARTICULATION PLACEMENT

DESPITE MOST PHYSICAL INADEQUACIES AND, THUS, INCORRECT COMPENSATORY

PATTERNS WERE MINIMIZED OR PREVENTED.

COMPARISON OF TEST SCORES ON VARIOUS MEASURES OF COMMUNICATIVE

SKILLS OF PARTICIPANTS IN THE PROGRAM AND NONPARTICIPANTS CONFIRMED

THE CLINICAL IMPRESSIONS. THE PARTICIPANTS MADE EXCELLENT PROGRESS

WHICH WAS SUPERIOR TO THAT OF THE NONPARTICIPANTS DEMONSTRATING THAT

THIS TYPE OF PROGRAM FOR THE VERY YOUNG CLEFT PALATE CHILD, PROVIDES

EFFECTIVE ASSISTANCE IN OVERCOMING DELAYED LANGUAGE AND IN PREVENTING

ACQUISITION OF INCORRECT ARTICULATION PATTERNS.

THE STATISTICAL DATA, WHILE INDICATING THE BENEFITS OF THE PROGRAM,

WERE BASED ON ONLY 12 MONTH TEST-RETEST EVALUATIONS. THE CLINICAL

INDICATIONS AND LIMITED RETEST DATA AVAILABLE FOR LONGER PERIODS

SHOWED A CONTINUATION OF SIGNIFICANTLY SUPERIOR PROGRESS FOR THE

PARTICIPANTS.

New Techniques in Speech Therapy for Young Children

(Therapy Procedures and Parental Involvement)

Martha E. Brown
Chief Speech Therapist
Dallas Society for Crippled Children
Dallas, Texas

New Techniques in Speech Therapy for Young Children

(Therapy Procedures and Parental Involvement)

Several years ago a fellow therapist and I did some

some soul searching in regard to the results of our efforts

to stimulate speech development in young children. I had

been as successful as any other therapist, I felt, but

I was not able to convince myself that the small group

around a table or the hallowed "one to one" procedure

was getting really effective results before the M. A. of five.

The children would give back the words and dutifully play

the simple games, but they still had the same personality

problems and often refused to use speech other than at the

Clinic. Progress was slow, and all too frequently as they

reached pre-school or school, the mothers called to

complain of poor peer relationships and immature classroom

adjustment. The procedures we now use grew out of careful

re-evaluation of our therapy and follow-up.

We explored the backgrounds of many of our cases with

delayed speech for the variables that possibly contributed

to the condition which brought the referral of the children

to the speech clinic. Since we are all aware that the

conditioning of a young child begins the day he returns from

the hospital, think, if you will with me, for the variables

which "program" this child to handle the incoming data as he

grows and developes.

An incorrectly programmed computer will refuse the data or react in a bizarre manner to it, so with the child. Most every new parent is somewhat awed, maybe a little frightened, and can be almost overwhelmed by this small creature, but in spite of the fact that some child psychologists have commented in jest that the first child "should be disposable," most parents manage to create a climate in which fairly normal sequential development procedes.

However, if for any reason there are variables which seem in some way to frighten, to disappoint, to confuse or to anger the parent, incorrect programming begins. Such things as a traumatic delivery with early concern for the child's survival, any early convulsions, birth defects such as a cleft palate, Treacher Collins Syndrome, Spina Bifida, etc., or even a striking resemblance to a relative who is undesirable, and in some rare cases a child was not the sex desired, or even possibly a hearing loss, to name a few. Parents became indecisive and unsure in their management, so the pediatrician at first and subsequently the speech pathologist is consulted regarding delay in development of which language often is the first sign. If there is an obvious handicap this is blamed, but all too often the child seems physically normal in every way. Only the behavior reactions are similar in most of the children with delayedspeech and language regardless of the absence or nature and degree of a handicap.

We see, therefore, a silent group of children that are candidates for the group procedure we have used and modified

because it gets the desired results. It is effective in thedevelopment of the growth of the emmotional, intellectual, and performance levels.

The suggested approach is two fold. Assignment of the delayed speech child to a non directive speech stimulation group in the hands of competent therapists and parental support by another therapist who knows intimately the procedures being used with the child and the degree of his progress from day to day and week to week.

By the age of 18months to 2 years these children are found not interacting appropiately with peers or with adults. They have a behavior pattern dedicated to manipulating and controlling adults, consequently shutting out other segmants of the environment, precluding concept formation and the acquiring of normal play patterns and adequate language development.

The children are placed in a group situation with a large number of children in various stages of delay. Specific limits are enforced for safety and undirected behavior is permitted within the limits of the group structure. Early in therapy the children usually do one of two things They cry and scream, or they get in a corner and suffer silently. Since crying is emotionally healthy, it is not at all rejected but is regarded as the child's communication and treated accordingly. Please be aware that these children are not psychotic in the psychiatric sense, but their environment has

accentuated the normal give and take between parent and
child into a "bizarre demanding" on the part of the child.
They seem to be only aware of the adult figures and ignore
toys and peers.

As the child finds himself in this environment where
he is released from the need to control the authority figures,
the play patterns develop and speech and language development
emerges in that order.

Basically, we have tried to structure an environment in
which the physical space and materials, the children in the
group personnel, and the therapists blend to provide a climate
in which the development can emerge through natural
sequential play. Steps in play cannot be taught or skipped,
they must emerge. Materials are provided for constructive
happy occupation such as any pre-school child would enjoy.
Children as "crowded into small spaces so that interaction
must take place. It is imperative that the management of
the authority figures be consistent and other authority
figures such as volunteers and students are introduced so
that the child is compelled to accept direction from numerous
teacher figures. As a result, easy adjustment to pre-school
and church school follows.

Children must be allowed to make some mistakes, get
bumped a little, solve their small problems without comment
from the adults. Language from the adults is kept at a
minimum and the same language is used in specific situations
by all the therapists and assistants. The results are very

-170-

rewarding in terms of children who feel adequate, play happily and communicate.

Now for the second phase, which is really a diff̶e̶r̶e̶n̶t̶ _icult_ part of the therapy, has to do with parental involvement. When you suggest to a parent that the child is just going to learn to accept separation from the parent and learn to play, they vary in their reactions from disbelief to down right hostility. <u>This</u> is therapy!

Parent counselling takes the form of both group and individual approach. Initially the group procedures are explained to the parents in a group. We frankly tell them at first that they will be very sure nothing worthwhile is taking place. Informal weekly group meetings are held with the mothers under the direction of a competent Medical-Social worker while the children are in session for two hours. Various aspects of child development are discussed and parents are encouraged to voice opinions, ask questions, and to share their experiences.

Individual counselling is carried out by a speech therapist on a very informal basis. The mothers are given much approval and little bits of encouraging behavior is reported as it occurs. The parents are encouraged to ask questions and when possible, with our limited physical facilities, are shown what the children are doing. The parents are encouraged to provide parties for special occasions such as birthdays and holidays, and are invited to participate at this time with the children in the group. Children must

learn that Mama can stay or Mama can leave. Parents of older children still at the Clinic often are very helpful with parents of new clients in explaining steps of progress. The child's progress depends a great deal on our procedures which lead the parents to feel adequate, first as a person and then as a parent so that they proceed with confidence and a minimum of frustation in their daily handling of their child. We try to give the parent some comment regarding the progress of the child each day. One of the best tools to help in this area has been films of the groups in action which we have shown for the parents. This is one of the better ways to teach them the various improvement areas for which we are working. We make clear that after the child has learned to play and to relate effectively, he is ready to benefit from routine accepted speech therapy. Often speech and language emerge and none is needed.

In short, we try, as a team, to lead the child to a positive self concept, adequate play and communication levels, and the parents to an awareness that they can be concerned without being afraid, they can limit and discipline without rejection, and that their natural pride, their frustration and fears are known and felt by accepting devoted parents universally.

We are not always 100% successful, but it's rewarding to watch the development, and we do graduate to educational groups a greater percentage of talking children who adjust adequately to training programs.