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ABSTRACT

The final report of a project designed to review that status of reading achievement, instruction, and teacher education represents the results of a wide literature search covering the years 1960-70. A search of the ERIC system was supplemented by use of general and specialized references. Documents dealing with the subjects of literacy, instructional methods and materials, and teacher education were analyzed using the Gephart Covergence Technique and summarized for this report. Conclusions from the project were (1) that improvement in reading achievement is still needed for the g neral population, (2) that methods of teaching reading currently in use do not vary much in their effectiveness, (3) that no broadly accepted model for reading methods is available, a (4) that a comprehensive synthesis of research findings in readi g i not possible at this time. Appendixes contain forms used for anal and tables of results. Also included is a bibliography of approximately 1,800 items, all of which were reviewed for the project. (MS)

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FINAL REPORT
Project No. 0-9031
Grant No. OEC-0-70-4792 (508)

THE INFORMATION BASE FOR READING

A Critical Review of the Information Base for Current Assumptions Regarding the Status of Instruction and Achievement in Reading in the United States

Reginald Corder
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1971

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
National Center for Educational Research and Development

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tute their approval of the synthesis statements appearing in the
report. These conclusions are the responsibility of the individual
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CHAPTER I

BACKGROUND -- THE PROBLEM

The work done under this project (Project 0-9031, "A Critical Review of the Information Base for Current Assumptions Regarding the Status of Instruction and Achievement in Reading in the United States") has involved a search of the literature relevant to three problems in the field of reading. These three problems are: 1) the determination of the extent and distribution of the "national reading problem"; 2) the determination of the "use frequency" and "use distribution" of instructional methods, approaches, procedures, materials, and equipment for reading instruction; and 3) a description of the nature and extent of current practice in teacher training in the field of reading.

The immediate background of Project 0-9031 lies within certain decisions taken by the U.S. Office of Education to undertake a Targeted Program of Research and Development in Reading and to utilize the Convergence Technique for the planning and management of this program of research. This background is described rather completely in the Final Report of Project 8-0737, Application of the Convergence Technique to Basic Studies of the Reading Process (Gephart, 1970a), also supported by the National Center for Educational Research and Development of the U.S. Office of Education.

One of the recommendations of Project 8-0737 was for the immediate initiation of three projects which were conceived as being vital to the improvement of reading achievement in the United States. The three projects recommended were (pp.203-4):

1. A literature search, analysis, evaluation, and synthesis on phenomena in the reading process, learning to read, and language development related to reading.

2. A search, analysis, evaluation, and synthesis of literature and existing survey data on the level of reading achievement and the nature of the instructional effort.

3. Development of a criterion measure for assessing reading achievement which is predictive of performance on the reading tasks encountered in our culture.

The Final Report of Project 8-0737 further indicated the profound belief that "the current state-of-the-art in reading is such that these three projects are necessary for either this or any other programmatic attempt to increase reading (p. 204)." Underlying this belief seemed to be five assumptions:

1. Improvement in reading seems to have reached a plateau.

2. Differing methods for teaching reading do not produce significantly different results.

3. A broadly accepted model of reading, showing its constituent elements and their interactions, does not exist.

4. Summaries of research on reading indicate that most of the research in the field has been done in a manner that prohibits synthesis.

5. Previous attempts to concentrate emphasis on reading, undertaken on the part of funding agencies, have produced proposals for research on parts of the problem with little hope for cumulative resolution of the total problem (pp. 2-3).

It was these conditions (assumptions) which led to the recommendation by the Project 8-0737 group that the Convergence Technique should be used in future programmatic efforts in the Office of Education.

As described by Carrese and Baker (1967), Convergence Technique is a systems approach derivative developed for the express purpose of planning and managing complex research programs, particularly when a large number of unknowns exist in the basic foundations of the research. It was first used, apparently, in the National Cancer Institute of the National Institute of Health. As applied to the field of reading research, Convergence Technique would be utilized to determine what has and what has not been demonstrated empirically in the achievement of "functional reading competence". A Targeted Program of Research and Development on Reading would then be developed by the USOE to achieve a systematized approach to model building and instructional system development in the achievement of functional reading competence by "100 per cent of all people (not in permanent care institutions) over age 10... (Gephart, 1970a, p. 16)."

The recommendations by the Gephart study group (Project 8-0737) for immediate initiation of three projects vital to the improvement of reading achievement resulted in the USOE submitting in April, 1970, Requests for Proposals to conduct the three basic studies. As described in the RFP 70-6, the basic assumption underlying the work to be done under what came to be Project 0-9031 is that there exists a significant, quantifiable deficit between the present state of reading ability in the U.S. and the individual and social literacy needs of the populace. Operationally, the work of the project was conceived as an attempt to determine, through a critical examination of current literature, to what extent this assumption is valid.

More specifically, the RFP 70-6 directed the project to the following tasks:

1. To determine the extent and distribution of the national reading problem by identifying, analyzing and summarizing existing survey and test data which indicate the reading ability of various populations in the U.S. according to

   a) learner characteristics such as sex, age, race, I.Q., etc.; and

   b) environmental characteristics such as socio-economic status, geographic area, languages spoken in home, level of formal education attained by parents, etc.

2. to determine the use frequency and use distribution of instructional methods, approaches, procedures, materials and equipment for reading instruction by pursuing the following questions:

   a) What methods, materials, approaches, equipment, and procedures are used to teach reading in the U.S., and to what extent are the major items in these categories used; i.e., how many learners are exposed to them;

   b) Which methods of reading instruction are built upon essentially different pools of basic knowledge;

   c) How much time and resources are expended directly upon developmental reading instruction and remedial instruction; and

   d) What relationships between methods of reading instruction and reading achievement of the various subgroups in the populations can be shown?

3. To describe the nature and extent of current practice in the training of those who teach reading by examining

   a) the requirements of all 4-year institutions which train at least 100 elementary school teachers per year; and

   b) the certification standards for elementary school teachers, reading specialists, and reading super-

visors in the 50 states and the District of
Columbia.

It was not the purpose of this project to conduct new research
or new surveys, but to search for and analyze existing documents to
determine to what extent basic assumptions could be validated.

CHAPTER II

METHOD OF RESEARCH

Overview

The charge of the Office of Education to this project was to
determine whether or not an accurate appraisal of the status of
reading achievement and reading instruction in the United States
could be documented by an examination of existing literature in
the field of reading. The issues delineated for examination were:
the present levels of reading skill in the population; the methods
and materials currently used in reading instruction; and, the ways
in which teachers are trained for the teaching of reading. To
determine if accurate appraisals could be made concerning these
issues, the project staff had to resolve two major problems. One
was to develop and implement a comprehensive and systematic method
for the selection of the literature for the bibliography of the
project. The other was to design and implement a procedure for the
systematic review and analysis of that literature. Guidelines for
both processes were those provided by the writing of William Gephart
(1970a). The procedures he proposed for a literature search (pp. 60-
68) afforded direction for the selection of materials to be reviewed
in this project. Selected sections of those procedures, as well as
the elements he proposed for profiling the methodological adequacy
of completed research, were used as the foundation of the review
process itself (pp. 207-213).

Two professional committees were used to guide the collection of
materials for review and to monitor interpretations of evidence. The
first, a "technical review" committee composed of staff members from
Educational Testing Service, designed, implemented, and monitored a
documents review process, and developed a program of procedures for
the selection of the literature to be reviewed. This committee in-
cluded research specialists as well as an experienced public school
educator and an experienced teacher trainer. The second, a "logic
committee", composed of acknowledged experts in fields related to the
tasks of the project (reading instruction, teacher training, linguis-
tics, demography), provided a combination of professional judgments
which shaped the literature search and selection process.

The specific procedural and process charges to the members of
the technical review committee were:

    a. to develop, for each of the project tasks, the guidelines
        for the literature search and the review process;

    b. to devise a review format appropriate for the systematic
        analysis and evaluation of the literature selected for the

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project;

c. to design a literature search consistent with the scope and nature of the tasks of the project;

d. to select a group of readers (document reviewers) and design a training program for them;

e. to monitor the reviews produced by the readers for accuracy and completeness;

f. to monitor the literature search process for adequacy of scope in relationship to the tasks of the project, and;

g. to prepare interim and final syntheses of the literature reviewed (three members of the committee each selected one of the task areas on which to concentrate).

The logic behind the formation of the logic committee itself was that some method had to be provided for the selection of specific items in the voluminous literature on reading in order to reduce the problems of document review to manageable proportions. It was felt by the project staff that the best entries could be provided through the combined professional judgments of acknowledged experts in the three tasks. The selection of best entries was the major function of this logic committee. From a pool of thousands of document abstracts and titles gathered by the project staff, members of the logic committee selected for relevance, rated according to probable quality, and assigned to project tasks the hundreds of items included in the final bibliography.

In addition to this principal function, the logic committee also functioned as an advisory group for all phases of the project. Its members reviewed and reacted critically to the designs for both the literature search and the review form. The committee generated references, suggested additional materials when needed, and recommended background documents for each task to the appropriate author-member of the technical review committee.

The actual critical review of all documents selected by the logic committee for possible inclusion in the final bibliography was done by a committee of readers trained in the use of a standard review format developed for this project. As readers completed the review of a document, each completed review form was given to the appropriate author-member of the technical review committee for use in one of the final synthesis statements (Chapters 3, 4, and 5 of this report).

In summary, to enhance the probability of providing from a literature search adequate documentation for the tasks of the project, it was necessary to design a procedure for the systematic and reliable

review and analysis of the many types of documents pertaining to reading. It was also essential to develop a rationale and process for the selection of the literature reviewed. The design for both the selection of literature and the criteria by which the material was reviewed and analyzed will be described in this chapter.

The Development of Guidelines

A series of guidelines was designed to provide definitions of the subparts of the three tasks of the project. For task one (the determination of the extent and distribution of the national "reading problem"), it was necessary to identify, analyze, and summarize the existing survey and test data and technical literature in which the reading ability of various population groups in the United States was reported. The analyses required by the USOE dealt with learner characteristics (such as age, sex, and mental ability), and characteristics of learners' environments (such as socioeconomic level, geographic area, occupation and education of parents, and the language spoken in the home). These population and environmental characteristics were the elements of the guidelines for task one.

For task two (the determination of the frequency of the use and distribution of instructional methods, approaches, procedures, materials, and equipment for reading instruction), it was required to determine the conceptual basis upon which instructional approaches, materials, and equipment had been developed and used. The task was concerned not only with a census of instructional materials, but also with the determination of the convergence or disparity in the conceptual bases of the variety of instructional methods utilized in reading instruction. A further area of investigation was to determine whether or not documentation existed for the assessment of the time and resources expended in utilizing the several methods. The enumerative sections of the task were the sources for the guidelines.

For task three (the determination of the nature and extent of the current practices in training those who teach reading), the existing requirements for training teachers of reading were examined. The components included the state department of education standards used to certify teachers as adequate in the instruction of reading, the requirements of local educational agencies for acceptable competency of those who teach children and adults, the recommended or required practices of reading instruction by state and local educational agencies, and the current practices used in the training of reading instructors. Particular attention was directed toward determining the congruencies of the state mandates for teacher certification in reading, the institutional requirements for the training of instructors in reading, and the practices which actually exist in training classroom teachers. The enumerative sections of the task were the sources of the guidelines for task three of the project.

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The complete set of guidelines for the three tasks of the project became an integral part of the "search list" of the format used for the analysis of all documents reviewed for the project. As readers completed a review form, the information from each search list was coded and compiled on master lists. These ma er lists were then used as monitoring devices by which the quantitative adequacy of the tasks of the project could be assessed.

Literature Search and Selection

Several processes were involved in the development and implementation of a comprehensive system for the selection of the literature to be reviewed for the project. One ongoing process was the preparation of preliminary lists of references which appeared to be relevant to the tasks of the project. As each preliminary list was prepared, it was submitted to the members of the logic committee for their individual evaluation on both probable relevance and quality dimensions.

The preliminary lists for review were generated in several ways. The first list was compiled through a computer-assisted search of all document titles in the ERIC collection. Using the elements of the review form search list as descriptors (reading achievement, reading methods, materials, reading teachers, etc.), a list of documents with their abstracts was produced from this collection. A hand search by the project staff of the 1960 to 1970 Psychological Abstracts, Sociological Abstracts, and the Dissertation Abstracts provided additional abstract material for inclusion on the preliminary lists.

In addition to abstracts, the project staff systematically collected citations appropriate to the tasks from the major indexes to the literature in the field published in the last decade. These included the Education Index, the Library of Congress Check List of State Publications, the United States Government Research and Development Reports, and the United States Government Monthly Catalogs. Other sources for the staff-developed lists included the publications of selected educational research laboratories and centers, documents from the publishers of reading materials and reading tests, and materials suggested by selected individuals with specialized knowledge. The latter group included members of the logic committee itself as well as directors of ERIC centers.

As the preliminary lists were developed, they were submitted to members of the logic committee for evaluation as to probable relevance and significance to one or more of the tasks of the project. Individual evaluations of the logic committee members were combined. The documents on which there was consensus as to merit became the bibliography to be reviewed for the project and were assigned to readers. No document was reviewed without having been evaluated and assigned to task by all members of the logic committee, although some references

were included on which there was not total agreement as to worth
or relevance. In some instances, when no abstract was available,
the judgments of the logic committee were based on "face validity"
provided by the title and author and journal reputation.

Monitoring the Developing Bibliography

The monitoring process by the staff occurred continually
throughout the project and took several forms. Every annual re-
view of reading research published in the last decade was search-
ed for relevant references not already included in the preliminary
bibliographic lists submitted to the logic committee. Any cita-
tions which seemed appropriate to the staff were submitted to the
committee and evaluated in the regular manner. The same process
was used to examine and select citations from occasional reviews
of the literature, documents appearing in the published ERIC
bibliographies after the initial computer-assisted search, and
other bibliographies provided by educational and research organi-
zations.

A second form of monitoring employed was the comparison,
midway through the project, of a list of the journals cited in
the project bibliography with that of Summers (1968, p.33) delin-
eating the journals cited in the 1956 to 1966 data base for the
ERIC collection. Any journals of the 40 included most frequently
in the ERIC data base which had not appeared in the project bib-
liography were searched for relevant articles.

The final form of monitoring was one previously described
It involved the use of the guidelines for each of the project
tasks. The information from the search list of each reader-com-
pleted review was transferred to master charts. When too few or
no articles were found in any single category of the guidelines,
the members of the logic committee were asked for suggestions as
to how to best refocus the search process.

The Review Format

It was essential to the project to develop a review form
which would be a vehicle for the systematic, comprehensive, and
reliable analysis of all documents read for the project. The
goal was to design a form with explicit criteria for rating and
analyzing many kinds of materials. The format was developed and
modified during the first few months of the project and in its
final form represents the combined suggestions of the logic
committee, the technical review committee, and the project re-
viewers or readers. The form has several sections.

The cover was designed as a general guide to the quality of
the reviewed article and to the relationship of the document to
the tasks of the project. It was to be filled out in a specified
sequence and to represent, in briefer form, the more detailed
analysis within the body of the review. A copy of the review
form along with directions and general suggestions to readers are
included in Appendix A.

The search list contained the guidelines, outlined and
abbreviated, for all of the project tasks. The first section of
the search list consisted of elements related to the first pro-
ject task, the levels of reading achievement in the United States.
These elements were included under the headings:

    1. (school) levels;
    2. age;
    3. sex;
    4. S.E.S.;
    5. ethnicity;
    6. geographic area;
    7. all measures of learner potential; and
    8. all measures of learner achievement.

The next section contained elements which pertained to the second and
third project tasks, methods and materials of instruction and teacher
training. They were included under the headings:

    1. costs of instruction;
    2. materials of instruction;
    3. methods and types of program;
    4. teacher characteristics and teacher performance
        as a consequence of instruction.

The quality of the research was profiled in the last sections of
the search list. Three ordinal scales were used to objectify the
examination of the quality of the data generation procedures of
the research (Gephart, 1970a). The three research dimensions
investigated, when appropriate, were: the representativeness of
the sample studied; the adequacy of the description of the treat-
ment used; and the reliability and validity of the measurement
instruments used in the study.

Results of this part of the profiling procedure are represented on
the cover of the review form by question four. The Gephart ordinal
scales are presented in detail in Appendix B.

The next portion of the review form included an abstract
section and a results section. Readers included in the abstract
section a description of the purpose, method, and general results
of the research; the conclusion the author drew from the results;

and the reader's own critique of the document. The results
section was to be used for a more comprehensive discussion of the
research and was to include any specific findings. These two
sections were intended to be complementary so that together they
constituted a verbal (abstract) and numerical (results) descrip-
tion of the article.

The last pages of the review form included a section for
listing any relevant data tables from a document. The readers
reproduced the tables, annotated them for clarity and interpre-
tation, and attached them to the review. Another section was for
the inclusion of descriptions of any useful or innovative ideas
from a study, such as implications for further research or ideas
not tested by an author. Any additional bibliography which ap-
peared relevant to the project was listed in the last part of the
form. Members of the project staff compared these reader-devel-
oped lists of references to the existing bibliography selected by
the logic committee, eliminated duplications, and compiled lists
of the remaining references for later presentation to the logic
committee.

Selection and Training of Readers

The critical review of all documents selected by the logic
committee was done by a committee of readers. The readers were
doctoral candidates from a wide variety of disciplines including
psychology, educational psychology, education, sociology, anthro-
pology, political science, English, and the law. All of the
readers had had some background in social science. Each applicant
for the position of reader was required to write a sample review
of the same article, using the standard review form. Each review
was evaluated subjectively by at least three members of the techni-
cal review committee and the project readers were selected on the
basis of the quality of the sample reviews.

Those who were selected as readers participated in several
group training meetings. The nature of the project and the kind
of information which the project staff hoped to collect were ex-
plained thoroughly. Members of the staff examined carefully the
early reviews of each reader and met individually with readers
when any further training was necessary. In addition to being
trained to make the judgments apparent in the review form, readers
were provided with the Gephart descriptions of data analysis pro-
cedures (1970a, pp. 211-222). A discussion of the Gephart descrip-
tions was used as a training vehicle to provide readers with in-
formation needed to judge the appropriateness and the adequacy of
the data analysis procedures described in the research documents.

Reader evaluations of the data analysis component of the

reviewed research appeared in the answer to question five on the cover sheet of the review form.

All reviews were scanned by members of the project staff during the process of transferring information from an individual review form to the master lists used for monitoring the literature search process. The reviews were routinely distributed to the appropriate author-member of the technical review committee. Each author read all of the reviews for his task. If there were any problems, the reviews were returned to the readers for clarification. If more than one reader appeared to have similar difficulties with the review process, general training sessions were repeated.

Reliability

Two hundred documents from the project bibliography were reviewed independently by pairs of readers as a basis for obtaining reliability estimates among readers. Each of the 200 documents was read by any "reader one" and then any "reader two" of the project readers. The variables selected for examination were those on which reader agreement was necessary for either the operational or analytical aspects of the project. The computational formula used for the correlation coefficients was that suggested by Hays (1963, p. 506). There were 400 ratings on each of the variables examined. The operational variables from the cover sheet of the review form for which reliability coefficients were computed were:

1) acceptance or rejection of any article as relevant to the tasks of the project ($r_{xx} = .76$);

2) assignment to one or more of the tasks of the project ($r_{xx} = .79$).

The analytical variables examined were the ordinal scales from the search list representing the quality of data generation procedures in the reviewed articles (Gephart, 1970a). They were:

1) "representativeness" of units studied rated on a five point scale ranging from, "An unidentified group of subjects was studied" to, "The entire population was studied" ($r_{xx} = .72$);

2) The type of "treatments" experienced by the units rated on a six point scale ranging from, "Something of an undescribed nature was experienced by the units studied" to "A theoretically based treatment was administered and described and controls were employed for mediating vari-

ables identified in the theory AND for variables extra-
neous to the theory that might have an effect"
$(r_{xx} = .62)$;

3) The type of "measurement" used rated on a five point
scale ranging from, "Data generated through an ad hoc
instrument with either no supporting evidence as to
validity and reliability or evidence indicating poor
validity and reliability on either a commercially stan-
dardized or ad hoc instrument" to, "Data were gathered
through the use of either a commercially standardized or
ad hoc instrument AND data are presented which establish
high validity and reliability for its use in this measure-
ment task." $(r_{xx} = .89)$

The detailed scales are included in Appendix B.

Assuming that the level of training was somewhat constant
on all of the Gephart ordinal scales, one possible explanation for
the gradient of reliability coefficients obtained would be that
the readers experienced more difficulties with the descriptions of
"treatments" than they did with the definitions provided for
either "representativeness" or "measurement" dimensions. However,
the reliability coefficients obtained were sufficiently high to
suggest that this part of the profiling procedure can be done
reliably.

The sequence in which any review was to be completed was to
detail the search list before the more general questions on the
cover were answered. Gephart concluded, in his section on profiling
completed research, that when a study had been analyzed and profiled,
it had been described on the following bases:

1) "Is it (1) a test of a hypothesis, or (2) an answer to an
empirical question?
2) If it is a test of a hypothesis, is the strength of con-
clusions: I The hypothesis is very little more credible;
II more credible; or III very much more credible?
3) What is the quality of the data generation procedure....?
4) Is the data: (a) appropriately analyzed; or (b) inappro-
priately analyzed." (1970a, p. 213)

These questions with minor modifications were on the review
cover as:

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(Now Complete Search List Pages 2, 3, 4).

III. (Answer to Question I is yes) The hypothesis is supported
     by the author's conclusion(s)?

     Not Supported___ Somewhat Supported___ Supported

IV. (Answer to Questions I or II is yes) Was the quality of
    the data generation procedure Appropriate___ Inappro-
    priate___ N.A.___

V. (Answer to Questions I or II is yes) Was the data
   analysis

   Appropriate___ Inappropriate___ N.A.___

VI. This article describes the status of Task I___ Task II___
    Task III___

Although the use of this section was not intended as a test
of the adequacy of the profiling procedure for this project, it
can, in effect, be viewed as such. When the inter-reader reliability
coefficient on the general question of data generation procedure
(IV above) was computed, it was .55. It would appear that more
specific definitions enhance the level of agreement; that is, read-
ers were less able to handle the general questions of adequacy than
they were the detailed ordinal scales on which the generalization
was based.

To explore this question further, the inter-reader reliability
coefficient for the cover question (V above) concerning the appro-
priateness of the data analysis was computed (r_{xx}= .54). As de-
scribed previously, the readers were given as part of their train-
ing the Gephart materials on profiling data analysis procedure.
These results suggest that profiling procedures, when clearly
specified on ordinal scales can be used reliably by trained read-
ers, but, that these procedures may or may not generalize to the
broader questions of adequacy. If these profiling procedures are
to be used further as evaluation tools, some attention should be
given to the redefinition of the "treatment" dimension. Gener-
alizations, with or without the support of subparts need to be
tested and refined further. Analogs to the data generation pro-
cedures should be developed for data analysis procedures to what-

ever degree it is possible. If definitive sets of profiling
scales for data analysis were necessarily fragmented or incom-
plete, even tentative scales relating the more conventionally
used sorts of analyses to research designs would be useful.
A tested set of profiling procedures could become basic tools
in the armamentarium of current and future researchers.

Summary

The purpose of this project was to determine whether or not
an accurate appraisal of the status of reading achievement and
reading instruction in the United States could be determined and
documented by an examination of the existing literature in the
field of reading. The issues examined were: the present levels
of reading skill in the population; the methods and materials
currently used in reading instruction; and the ways in which
teachers are trained for the teaching of reading.

Two professional level committies cooperated in the develop-
ment and implementation of the processes and systems necessary
to the collection, analysis, and final synthesis of the appro-
priate literature. A committee of readers, doctoral candidates
from a variety of fields, reviewed all documents selected for
inclusion in the bibliography of the project.

Preliminary lists of materials relevant to the tasks of the
project were assembled. Each member of the advisory committee,
composed of acknowledged experts in the field, rated for quality
and relevance citations to be included in the bibliography.
Documents on which there was positive consensus were reviewed by
readers. The project bibliography was continually monitored for
comprehensiveness both in relationship to the tasks of the project
and to existing reviews of research in reading.

Every document reviewed for the project was subjected to the
same reviewing process in which it was judged for relevance,
assigned and specifically related to the tasks and subtasks of
the project, profiled as to the adequacy of the research, and
summarized.

Two hundred documents from the project bibliography were re-
viewed independently by pairs of readers as a basis for obtain-
ing reliability estimates among the project readers. The vari-
ables selected for examination were those on which reader agree-
ment was necessary for either the operational or analytical
aspects of the project. The reliability coefficients for the
variables selected for examination were:

reject/accept	.76
assignment to task (s)	.79
representativeness	.72
treatment	.62
measurement	.89

Of the tens of thousands of documents considered, 1,855 were selected to be reviewed for the project. This included 329 reviewed for task I, 741 for task II, 173 for task III, 120 covering tasks I and II, 56 covering tasks II and III, 31 covering tasks I, II, and III, 7 covering tasks I and III, and 398 which were either not assigned to task, or were judged by readers as not relevant to the tasks of the project.

The processes and systems described in this chapter were developed to effect a comprehensive search and systematic review of literature appropriate to the three issues described by the United States Office of Education. The collection and analysis processes were intended to provide the structure necessary for a synthesis and critical review of the information base for current assumptions regarding the status of instruction and achievement of reading in the United States. Those critical reviews follow.

CHAPTER III

THE READING PROBLEM IN THE UNITED STATES

The reviewer's charge was to survey the literature published
in the United States between 1960 and 1970 to determine the extent
of the reading problem in the country; and to identify, analyze,
and summarize existing survey and test data which indicate the
reading ability of various populations in relation to the "indi-
vidual and social needs" of the populace.

The literature from 1960 to 1970 was selected by reason of
its probable relationship to any reading problem in the United
States which might currently exist. However, in order to put the
current status of reading achievement into historical perspective,
it also became necessary to review a select number of landmark
documents which refer to populations of earlier periods (for
example, Ginzberg and Bray, 1953).

Prior to the review, it was assumed that a significant
literature existed which documented the reading ability of various
subpopulations as a function of sex, age, race, socioeconomic sta-
tus, etc., and that various standards of reporting utilized in this
literature could be equated to individual and social needs. In
the actual review process this assumption was not met in fact.

Unfortunately, Gephart's formulation (1970a) holds true for
the literature that has been surveyed for this project.

> "Many statements have been made which assert that our society
> has a reading problem. These assertions have been made with
> sufficient authority and frequency that they have been
> accepted as fact: a reading problem exists. What is the
> desirable level of reading competence to be achieved by the
> individual in our society? Even more basically, what level of
> reading competence is necessary to function in our culture?
> Neither of these questions has been answered on either an
> empirical or logical basis. Reading and reading achievement
> have been the target of measurement efforts over the years,
> but the data do not answer the two questions cited above." (p. 46).

Hardly any of the literature available for review in this
project was concerned with how well a defined group of individuals
read in comparison with a criterion of individual or social need,
but many documents were concerned with whether one group performed
better or worse than another. There is a body of literature com-
paring boys and girls or Negroes and whites or Indians on the reser-
vation and Indians off the reservation, but very little on how well
Negroes or Indians or any other defined group read except in refer-
ence to some other population.

The documents provided the reviewer did not indicate the
level at which an individual should read in order to meet his
individual and social needs. The literature that seems most
relevant is expressed primarily in terms of the application of
one or more reading formulas to assign a grade level of difficulty
to a particular book, article, or passage (Chall, 1958). The
assumption is then sometimes made that such a rated passage or
article is somehow relevant to need. As an example of such an
approach, Kern et al (1970) have recently published data showing
the reading difficulty of various army technical manuals. That
these are written at a school grade equivalent far above the
reading grade level which men in the various specialties
ordinarily attain is assumed to be evidence of a discrepancy
between need and achievement.

However, there exists neither a good estimate of the reading
ability necessary to function satisfactorily in modern society
nor a satisfactory estimate of the absolute reading achievement
of reasonably defined subgroups in the United States.

Since educational researchers in the United States have not,
in general, been concerned with the reading problem as defined in
the USOE proposal ("to determine the quantifiable deficit between
the present state of reading ability in the U.S. and the individual
and social needs of the populace"), an attempt will be made here,
first, to derive an estimate of reading deficit by utilizing grade
level definitions of reading achievement as standards for meeting
individual and social needs. Secondly, an attempt will be made
to determine the extent of the deficit of various groups in the
population when compared to these standards. Estimates of the
distribution will be made primarily on the basis of two kinds of
information, distributions of years of education completed and
grade equivalent scores on nationally normed tests of reading
achievement. The review will focus on information available from
the fourth grade to adulthood, since the available data base is
concentrated within this range.

Before examining the information on norm-referenced tests,
however, it is important to review the significant data base for
educational achievement in the United States which may be derived
from the decennial censuses and the periodic Population Reports
of the United States Bureau of the Census. These census data pro-
vide most of the reliable information that exists on the educational
achievement and state of literacy of various subgroups of the total
population. Both the number of years of education completed and
the status of literacy can be categorized by a large number of
demographic variables. Analyses and reports of the complete 1970
census were not available for this review. The data to be reported
on level of educational attainment are based on sample populations
studied in 1969 and 1970.

There is also a literature, varying greatly in quality, which
compares the relative performance of various groups on standardized
reading tests and other measures of reading. This literature is
fairly consistent in confirming that reading achievement is related
to such factors as age, years of education completed, socioeconomic
status, minority group membership, language spoken in the home,
"intelligence", rural-urban status, and region of the country. The
effects of these factors on reading achievement have been documented
in such studies as the Coleman study (1966) and Project Talent (1964).
The evidence is clear that reading performance is related to the
same factors that relate to economic and social deprivation in the
United States.

Those groups which are the target for the War on Poverty, for
example, are the same groups for which levels of educational and
reading achievement are lowest. The War on Poverty has attempted
to devise a criterion that will determine when the war on poverty
has been won, such as an income of $4,200 per year for a family of
four living in an urban area. Presumably, if every family had
this (or some other) minimum income, the war would be won. The
minimum level of reading achievement necessary to meet the
"individual and social needs of the populace" has not been so
defined. Until this is accomplished, studies of how well different
subpopulations read can be only relative.

Thus, the extent of the reading problem in the United States,
as defined in this review, will, of necessity, be subjective and
discussed in relative terms based on varying standards of minimal
or desired reading achievement that do not necessarily have wide
endorsement.

Levels of Literacy

There have been some attempts to define a reading achievement
goal in absolute terms. These goals have generally related to such
concepts as literacy or functional literacy defined as years of
education completed or grade equivalent on a standardized reading
test.

UNESCO has provided a definition of literacy which has been
adopted by all its member states. It defines as literate a person
"who can, with understanding, both read and write a short simple
statement on his everyday life". (Literacy 1967-1969, UNESCO,
1970, pp. 1-113).

The U.S. Census Bureau has adopted a similar definition of
literacy (U.S. Bureau of the Census, Current Population Reports,
Series P-20, No. 217, p. 5) -- the ability to read and write a
simple message in any language. For census purposes, all individuals

with more than five years of schooling are counted as literate.
Those with less than five years of schooling completed are asked
if they can read and write in any language. If the answer is
yes, the respondent is classified as literate; if no, illiterate.
Neither the UNESCO nor the U.S. Census Bureau definitions appears
to be particularly relevant to defining the reading problem in
the United States, since ability to read and write a simple
message alone probably would not enable an individual to meet his
"individual and social needs".

During World War I, the U.S. Army defined functional literacy
as the equivalent of a fourth grade education. Ability to read at
the fourth grade level was presumed to allow the individual to read
and understand newspapers and to write letters home. According to
Folger and Nam (1967), from 12 to 25 percent of the soldiers inducted
into the Army during World War I at various camps failed to pass
this criterion.

The inadequacy of both the census and the Army definitions is
suggested by Ginzberg and Bray (1953) who indicate that the evidence
of functional illiteracy was much higher during World War II than
would have been predicted on the basis of literacy data and years
of education completed as reported in the 1940 census. Similarly,
during the Korean War and the Vietnam War, many more individuals
were identified as functionally illiterate than would have been
predicted on the basis of the U.S. Census.

While the military service has generally defined functional
literacy as equivalent to the level reached on completion of four
or five years of schooling,[1] other definitions have been proposed.
The Adult Basic Education Act of 1968 recommends achievement of
the eighth grade level as the target of the Adult Basic Education
Program. According to this definition, those individuals who do
not read at the equivalent of the eighth grade level suffer from
a reading deficit (U.S. Office of Education, Division of Adult
Education Programs, 1967).

The National Advisory Committee on Dyslexia (1969), in arriving
at an estimate of the reading problem in the United States, uses the
criterion of grade level deficit -- an individual whose reading
grade placement is two or more years below his age or grade place-
ment suffers from a reading deficit.

These definitions typically define reading deficit on nationally
normed tests in terms of the equivalent of grade achievement or on
the number of years of school completed or on a person's standing
with respect to some reference group. Reading deficit figures based

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[1] Currently, the Army gives literacy training to those whose
reading achievement on a norm-referenced test is below fifth
grade level and "graduates" those who achieve at that level.

on self-report (such as those of the U.S. Census) have obvious
problems associated with the reliability (unreliability) of the
informant, including his truthfulness and understanding of the
definition. Reading deficit figures based on definitions of grade
level deficit have other associated problems. With the increased
practice of moving pupils from grade to grade without respect to
achievement, the meaning of this type of deficit will depend pri-
marily on a school's promotional policy. Also, a two-year deficit
is related to the age and grade of an individual; it means some-
thing different at grade eight or ten than at grade four. While
all definitions may be inadequate, readily accepted standards of
reading achievement independent of the nationally standardized
tests do not exist, however, and documentation of deficit contin-
ues to be most frequently based on self-report figures.

There are under development several other approaches to
measuring reading achievement, however, which attempt to determine
what an individual should be able to do with respect to certain
specific reading tasks and them to determine whether or not he
can perform these tasks. This approach is being utilized by the
National Assessment of Educational Progress (1970) to develop
exercises in reading appropriate for given age levels. In the
National Assessment Project results will be reported not in terms
of norms but in terms of percent of a given age population able
to perform satisfactorily on a particular reading task. Data will
be available from this project at each of four age levels (9, 13,
17, and Adult), for subgroups categorized on such demographic
variables as region of the country, race, size of school, and
urban-suburban-rural location.

In addition to the National Assessment Project, other groups
are currently active in developing such criterion- or performance-
referenced tests (notably the Colorado State Department of Educa-
tion and the Instructional Objectives Exchange of the Center for
the Study of Evaluation at UCLA).

The USOE itself has recently funded a study (Contract No. OEC-
0-70-4791 (508)) to develop a measure of reading competence that is
based on a set of adult reading tasks selected to have favorable
returns to the individual and to society in general. This measure
will utilize the ability to perform specific reading functions
deemed relevant to functioning in today's world as evidence of
reading competence.

Since data from these criterion-referenced approaches are not
yet available to this project, the standards utilized for determining
the status of the reading problem in the United States will be:
literacy as defined by the U.S. Census Bureau; functional literacy
as defined by the number of years of education completed with emphasis

on completing less than five, eight, and twelve years of education; and grade achievement on nationally norm-referenced tests of reading at these levels.

Illiteracy in the United States

In the 1969 and 1970 populations studies of the U.S. Bureau of the Census, projections were made to estimate the incidence of illiteracy in the population as a whole from visits to approximately 50,000 housing units. Data were collected by an interview with an adult respondent, both with respect to himself and all other individuals residing in the housing unit who were 14 years old or over. The following definition of illiteracy was used:

> "...persons who were reported as not able both to read and to write a simple message either in English or any other language were classified as illiterate. Thus, illiterates include persons who are able to read but not write. Persons who formerly knew how to read and write but who were unable to do so at the time of the survey because of mental and physical impairment, such as blindness, were classified as literate. In the 1969 literacy survey, respondents were asked (1) if the persons could read and write the language now usually spoken in the home; (2) if the person could read and write English, if some language other than English was now usually spoken in his home; and (3) if the person could read and write the language now usually spoken in his home when he was a child, if some language other than English had been spoken" (U.S. Bureau of the Census, Current Population Reports, P-20, No. 217, 1971, p. 5).

All persons who had completed six years or more of school were assumed to be literate.

Appendix C presents the distribution of the estimated 1,443,000 illiterates in the U.S. by age, sex, and race based on this 1969 census definition.

Illiteracy rates. As indicated in Table 1, the illiteracy rate in the United States is currently one percent of the population 14 years old and over. In actual numbers, this is a population figure of 1.4 million persons. In the decade since 1959, the number of illiterate persons has decreased to the 1.4 million figure from 2.6 million, despite an increase in the number of persons 14 years old and over of 21.8 million.

TABLE 1

PERCENT ILLITERATE IN THE POPULATION, BY RACE, 1870 to 1969

(Data for 1870 to 1940 are for the population 10 years old and over;
data for 1947, 1952, 1959, and 1969 are for the population 14 years
old and over)

Year	Total	White	Negro and other races
1969	1.0	0.7	[1]3.6
1959	2.2	1.6	7.5
1952	2.5	1.8	10.2
1947	2.7	1.8	11.0
1940	[2]2.9	[2]2.0	[2]11.5
1930	4.3	3.0	16.4
1920	6.0	4.0	23.0
1910	7.7	5.0	30.5
1900	10.7	6.2	44.5
1890	13.3	7.7	56.8
1880	17.0	9.4	70.0
1870	20.0	11.5	79.9

[1] Negro only in 1969.

[2] Estimated.

Source: Current Population Reports, Series P-20, No 217, 1971

Illiteracy and education. As indicated in Table 2, with each increase in educational attainment as measured by number of years of school completed, the illiteracy rate declines. The illiteracy rates range from 57 percent of those with no years of schooling to about 2 percent of those with five years of schooling. The Bureau of the Census studies assume that 100 percent of those with six years or more of schooling are literate.

Illiteracy and age. Tables 3 and 4 illustrate the relation of age and illiteracy. Illiteracy in the United States is obviously an age-related phenomenon. The illiteracy rate for those over age 65 (3.5 percent) is more than three times the rate of those between 45 and 64 years of age (1.1 percent), seven times the rate of those between 25 and 44 (0.5 percent), and more than eleven times the rate of those between 14 and 24 (0.3 percent). Of the 1,443,000 illiterates indicated by these population studies, more than one million (about 77 percent) are over 45 years of age.

Illiteracy rate and sex. As indicated in Table 3, only for Negroes is there a relationship between sex and illiteracy. The male Negro illiteracy rate is 4.3 percent while the female rate is only 2.9 percent.

Illiteracy rate and race. Tables 1 and 3 indicate that illit- rates are associated with race for the total population. The illit- eracy rate in 1969 was only 0.7 percent for whites but 3.6 percent for Negroes. There are about 891,000 white illiterates and 540,000 Negro illiterates. The differential in illiteracy rates is a function of age (Table 3), being higher in the older groups than in the younger groups. The differential is also related to years of schooling. Table 5 indicates that whites who are illit- erate are more likely than Negroes to have no years of schooling, but that Negroes who are illiterate are more likely than are whites to have one to five years of schooling.

Illiteracy and Spanish origin. The Current Population Report P-20, No. 213, of the U.S. Bureau of the Census (1971) provides data based on a sample survey which identified respon- dents with respect to Spanish origin. While the information was not categorized in the same way as other Population Reports on illiteracy, reasonable estimates can be made. Of the 9.2 million persons of Spanish origin, 62.5 percent (about 5.75 million) are 14 years of age and older. Approximately 9.3 percent of this group have completed less than five years of school compared to 4.1 percent of the U.S. population in the same age range, suggesting that the illiteracy rate for persons of Spanish origin is more than twice the rate for the population as a whole. Within the popula- tion of Spanish origin, educational attainment is lower for those of Mexican or Puerto Rican background than for those of Cuban,

TABLE 2

PERCENT ILLITERATE OF PERSONS 14 YEARS OLD AND OVER,
BY YEARS OF SCHOOL COMPLETED AND SEX: November, 1969

(Civilian noninstitutional population)

Years of school completed	Both sexes	Male	Female
Total........	1.0	1.1	1.0
No school years........	57.4	57.0	58.3
1 year.................	46.6	48.4	45.8
2 years	21.8	21.3	21.6
3 years	10.9	12.5	9.0
4 years	4.5	3.6	5.4
5 years	2.3	3.1	1.4

Source: Current Population Reports, Series P-20, No 217, 1971

TABLE 3

PERCENT ILLITERATE OF PERSONS 14 YEARS OLD AND OVER, BY AGE, RACE, AND SEX: November, 1969

(Civilian noninstitutional population)

Age and race	Both sexes	Male	Female
ALL RACES			
Total, 14 years and over.	1.0	1.1	1.0
14 and 15 years	0.3	0.3	0.2
16 to 24 years	0.3	0.3	0.2
25 to 44 years	0.5	0.5	0.5
45 to 64 years	1.1	1.3	0.9
65 years and over	3.5	3.4	3.5
WHITE			
Total, 14 years and over.	0.7	0.7	0.7
14 and 15 years	0.3	0.4	0.2
16 to 24 years	0.2	0.3	0.2
25 to 44 years	0.4	0.4	0.5
45 to 64 years	0.7	0.8	0.6
65 years and over	2.3	2.1	2.4
NEGRO			
Total, 14 years and over.	3.6	4.3	2.9
14 and 15 years	-	-	-
16 to 24 years	0.6	0.8	0.4
25 to 44 years	1.3	2.1	0.6
45 to 64 years	5.5	7.4	4.0
65 years and over	16.7	17.2	16.2

- Represents zero.

Source: Current Population Reports, Series P-20, No 217, 1971

TABLE 4

PERCENT DISTRIBUTION OF ILLITERATE PERSONS 14 YEARS OLD AND OVER, BY AGE AND SEX: 1969

(Civilian noninstitutional population)

Age and sex	1969
BOTH SEXES	
Total, illiterate..............	100.0
14 to 24 years	6.8
25 to 44 years	16.5
45 to 64 years	31.3
65 years and over	45.4
MALE	
Total, illiterate	100.0
14 to 24 years	8.6
25 to 44 years	16.7
45 to 64 years	36.3
65 years and over	38.4
FEMALE	
Total, illiterate	100.0
14 to 24 years	5.1
25 to 44 years	16.6
45 to 64 years	26.3
65 years and over	52.0

Source: Current Population Reports, Series P-20, No 217, 1971

TABLE 5

PERCENT DISTRIBUTION OF ILLITERATE PERSONS 14 YEARS OLD AND OVER, BY YEARS OF SCHOOL COMPLETED, RACE, AND SEX: 1969

(Civilian noninstitutional population)

Years of school completed and race	1969 Male	Female
WHITE		
Total, illiterate	100.0	100.0
No school years	60.2	70.4
1 year	8.0	5.2
2 years	10.2	10.9
3 years	13.7	7.1
4 years	4.1	5.0
5 years	3.7	1.3
NEGRO		
Total, illiterate	100.0	100.0
No school years	39.0	52.6
1 year	18.4	18.4
2 years	17.0	8.3
3 years	13.5	9.6
4 years	5.3	7.5
5 years	6.7	3.5

Source: Current Population Reports, Series P-20, No 217, 1971

Central or South American, or other Spanish. Consequently,
within the Spanish origin group, illiteracy is probably more of
a problem for Mexican and Puerto Ricans than for other Spanish
origin groups.

Illiteracy and geographical region. For the population
25 years of age and over, 7.5 percent of the population in the
South has less than five years of schooling as compared with
4.0 percent in the West, 3.7 percent in the Northeast, and 2.9
percent in the North Central. Similarly, the metropolitan areas
have a rate of 4.3 percent and non-metropolitan areas have a rate
of 7.1 percent (U.S. Bureau of the Census, Current Population
Reports, Series P-20, No. 207, 1970).

Summary. Illiteracy, as defined by the Bureau of the Census,
is primarily a problem of years of schooling completed. For those
with five years of school or less, illiteracy rates drop sharply
as even a limited number of years of school increase. The effects
of age, sex, and geographical location probably reflect the cumula-
tive effects of the availability of education in the past 75 years.
With the almost universal availability of 12 years of free public
education in the U.S. today, the "production of new illiterates"
(as defined by the Bureau of the Census) is probably at a minimum.
Recent statistics indicate that only 1.14 percent of the population
aged 14 to 24 have not completed 5 years of school. This reflects
an illiteracy rate of about 0.3 percent for this age group.
Illiteracy as a significant problem in the United States today is
related to age, geographic region, and to specific ethnic popula-
tions.

It must be cautioned, however, that these statistics are based
on self-report, or answers to questions about literacy, not to
demonstrations of performance. The experience of the armed forces
in World War II and later indicated that the standard definitions
of literacy did not serve to delineate the limited ability of many
servicemen to communicate with their fellow men. Not only those
defined as illiterate by reason of a limited number of school years,
but some servicemen with education beyond this limited point, were
found to be incapable of performing military functions involving
reading and writing.

Training programs designed to give servicemen the equivalent
of a fourth-grade education succeeded in making them functionally
literate to the extent that they were able to read and understand
basic military communications and were capable of writing letters
home. Apparently, any difference between literacy at the fourth-
grade level as determined by the military and the requirements of
military life is evidence of a discrepancy between reading achieve-
ment and need in this context. For an American to participate
effectively as an economic and social individual in the America
of the seventies, much more than ability to read and write a

simple message is required, however.

Literacy, as defined by UNESCO and the Bureau of the Census, represents only the lowest level of understanding the written word and hardly represents an appropriate goal in a highly developed society.

Functional Literacy and Educational Attainment

UNESCO, the Bureau of the Census, and the U.S. Army, for example, have suggested that a minimal level of functional literacy is equivalent to the completion of four or five years of schooling. The Division of Adult Education of the U.S. Office of Education (1967) has defined the educationally disadvantaged population as those individuals 18 years of age and older who have less than eight years of formal schooling. Such persons are defined as functionally illiterate, meaning that many can read or write to some degree but are unable to become productive citizens in today's society (p. 9). The attention to high school graduation as the minimal standard is emphasized daily in this and other definitions of the level of functional literacy required in American life.

In this section, we will be concerned with the distribution of these three levels of educational attainment: completion of five years of school; completion of eight years of school; and completion of twelve years of school. These three levels appear to represent minimal, obtainable, and optimal goals for the short-term future. Those persons with less than five years of formal schooling are assumed to be functionally illiterate. No less than eight years of schooling may represent the level of functional literacy necessary to meet the economic and social needs of modern society, and twelve years of schooling appears to be the current goal in the United States.

Appendix D provides detailed figures on years of school completed for the U.S. population 14 years of age and older as of March 1970, by age, race, sex, type of residence, and region of the United States. For each of the three levels of education, the ordering of the scope of the problem is similar at all age levels. Since most individuals have completed their education by age 25, we will discuss educational attainment for the population 25 years of age and older to indicate the size and scope of functional illiteracy.

Educational attainment and age. Table 6 indicates the level of education of persons 25 years and older and of those in the 25 to 29 range as of March 1970. For the total population over 24 years old, 5.3 percent have not completed five years of school, but in the younger age range (25 - 29 years old) the rate is only 1.1 percent.

TABLE 6

PERCENT OF PERSONS 25 YEARS OLD AND OVER WHO HAD
COMPLETED A GIVEN LEVEL OF SCHOOLING BY AGE AND SEX,
MARCH, 1970

Age and Level Completed	Total	Male	Female
25 to 29 YEARS OLD			
Less than 5 years	1.1	1.4	0.8
Less than 8 years	3.7	4.2	3.0
Less than 12 years	24.7	23.3	25.6
25 YEARS OLD AND OVER			
Less than 5 years	5.3	5.9	4.7
Less than 8 years	14.4	15.4	13.4
Less than 12 years	44.8	45.1	44.4

Source: Current Population Reports, Series P-20, No 207, 1970

Among the total age group over 24 years old, 14.4 percent of the population has failed to complete eight years of school compared to 3.7 percent within the 25 - 29 age group.

Similarly, 44.8 percent of the entire population over 24 as compared with 24.7 percent of the age group between 25 - 29, failed to complete 12 grades of schooling.

Of the approximately six million persons over 14 years old who have less than five years of school, about 320,000 are under 25, and approximately four million are over fifty-five. As with the problem of literacy as defined in the Bureau of Census basic definition, the number of Americans with five, eight, or twelve years of schooling is highly related to age.

Educational attainment and sex. For the population between 25 and 29, fewer women than men have completed less than five or eight years of schooling, but fewer men have completed less than 12 years. For the entire age group over 24, women have a slightly higher level of attainment at each of the three levels of education completed.

Educational attainment and race. Table 7 indicates that the educational deficit is a more serious problem for Negroes than for whites, but that the differential is somewhat less for the younger age group.

The higher the educational attainment needed to meet the criterion of functional literacy, the greater is the Negro deficit compared to whites.

Sixty-six percent of Negroes compared to 43 percent of whites have less than 12 years of education. At the five-year criterion level the comparable figures are 15 percent for Negroes compared to four percent for whites. For the younger age group, the relative deficit has decreased for the five- and eight-year levels, but still remains large at the twelfth grade level. About 44 percent of Negroes in the 25 - 29 bracket have less than 12 years of education compared to 22 percent of whites.

Educational attainment and ethnic origin. Data on ethnic origin and educational attainment are reported in Current Population Reports Series P-20, No. 220. The complete table is reproduced in Appendix E. The data were collected in November 1969, and reports on the educational status of the following ethnic origins are included: English, German, Irish, Italian, Polish, Russian, Central or South America, Cuban, Mexican, Puerto Rican, and other Spanish. In general, only those groups of Mexican or Puerto Rican ethnicity show a deficit significantly different from whites. For the Mexicans, 45.5 percent have less than eight years of schooling and for Puerto Ricans the figure is 45.1 percent. For the other ethnic groups, the rates vary from 8.6 percent to 20.0 percent.

TABLE 7

PERCENT OF PERSONS 25 YEARS AND OLDER WHO HAD COM-
PLETED A GIVEN LEVEL OF SCHOOL BY AGE AND RACE FOR
THE UNITED STATES, MARCH, 1970

Age and Level Completed	All Races	White	Negro
25 to 29 YEARS OLD			
Less than 5 years	1.1	0.9	2.5
Less than 8 years	3.7	3.2	7.1
Less than 12 years	24.7	22.3	43.7
25 YEARS OLD AND OVER			
Less than 5 years	5.3	4.2	15.1
Less than 8 years	14.4	12.4	31.8
Less than 12 years	44.8	42.5	66.3

Source: Current Population Reports, Series P-20, No 207, 1970

For the population 25 years and older with less than 12 years
of schooling, the Mexican rate is 75.7 percent and the Puerto
Rican is 77.9 percent. These compare to Negro rates of 66.3
percent and white rates of 42.5 percent. As with the white and
Negro groups, educational attainment is related to age, but even
the younger age group shows a significant deficit. For the age
group 25-34, the Mexican rate is 23.4 percent with less than eight
years of education compared with 54.9 percent for those 35 and
older. Similarly, the Puerto Rican rates are 23.2 percent and
53.4 percent.

In terms of educational deficiency in the adult populations
those of Puerto Rican or Mexican origin show the greatest deficit,
followed by the Negro.

Educational attainment and location of residence. For all
races, and for whites and Negroes separately, educational attain-
ment at each of the three levels (less than five, eight, or twelve
years) is better in residence within metropolitan areas than with-
in nonmetropolitan. Metropolitan residents outside central cities
have the highest percent attaining each of these levels followed
by central city residents, non-farm residents, and farm residents
(Table 8). The one exception is that Negroes residing in metro-
politan areas outside the central cities have less education than
those living in the central city.

Educational attainment follows the regional distribution found
in earlier census reports, with the Northeast, North Central, and
West roughly comparable, and the South significantly behind the
rest of the country. The detailed figures are given in Appendix F.

Educational achievement and socioeconomic status. Several
reports based on the 1960 census provide information on the educa-
tional status of children coming from parents at various socio-
economic levels. (Data will be available from the 1970 census to
update such distributions.) The census data reveal the well known
trend that as socioeconomic status increases, all indexes of educa-
tional attainment increase. For example, Current Population
Reports P-20, No. 207, demonstrates that as median years of school
completed rises, income rises. For the total employed United
States male population the median years completed was 10.6 for
those making 3 to 6 thousand dollars a year and 12.3 for those
making 6 to 9 thousand dollars a year.

Folger and Nam (1967), analyzing 1960 census data, indicate
that for males 16 to 17 years old whose parents had less than
eight years of education, 72 percent were enrolled in school; for
parents with eight to eleven years of education, the figure is
84 percent; and for parents with 12 years or more of education,
the figure is 93 percent.

TABLE 8

PERCENT OF PERSONS 25 YEARS OLD AND OVER AT A GIVEN
LEVEL OF SCHOOLING, TYPE OF RESIDENCE AND RACE FOR
THE UNITED STATES, March, 1970

| Race & Level Completed | Total | Metropolitan | | Nonmetropolitan | |
		In central cities	Outside central cities	Nonfarm	Farm
ALL RACES					
Less than 5 years	5.3	4.3	3.1	7.0	7.5
Less than 8 years	14.4	11.9	9.3	18.4	21.5
Less than 12 years	45.9	46.7	35.7	51.0	60.0
WHITE					
Less than 5 years	4.2	4.7	2.6	5.4	5.4
Less than 8 years	12.5	12.9	8.4	15.9	18.5
Less than 12 years	42.6	43.7	34.6	48.8	58.1
NEGRO					
Less than 5 years	15.1	9.8	12.2	26.0	37.9
Less than 8 years	31.8	24.0	27.4	48.3	64.2
Less than 12 years	66.3	61.1	61.6	78.4	88.3

Summary. There is, contrasted to literacy as defined by the Bureau of the Census, a serious functional literacy problem in the U.S. when functional literacy is equated to number years of school completed. The size of the problem depends on the level of educational attainment accepted as the standard of functional literacy. If completion of five years of formal schooling is accepted as the standard, there are some eight million functional illiterates; if eight years of schooling is the standard, there are almost 19 million functional illiterates. And if we accept the completion of 12 years of schooling, there are over 70 million functional illiterates. Whatever criterion we choose, the educational deficit is related to age, race and ethnic origin, urban, suburban, and rural residence, and region of the country.

Functional Literacy as Measured by Tests

The purpose of this section is to analyze the existing survey and test data and the technical literature that summarizes the reading ability of the total population and of various subpopulation groups in the United States. Emphasis will be placed on norm-referenced tests and the reading abilities of school age and adult populations.

For most tests of reading achievement used in the United States, the common way of interpreting scores is with reference to the performance of the specific norming sample that is presumed to be representative of the total population of interest. For reading achievement, publishers generally have defined the population of interest as the total pupil enrollment in public and secondary schools in the United States. Some have attempted to include private and parochial students as well as public school students. Despite this similarity with respect to defining the population of interest, as Lennon (1969) has pointed out, there are significant differences among the major publishers in the way the samples are defined and drawn from the total population. According to Lennon, "There are discernible marked differences with respect to the population whose achievement or ability the norms purport to describe. These differences arise from: the variables considered important as stratifying variables; sampling procedures; the proportions of voluntary cooperation forthcoming; the degree of control over administration and scoring; and other critical characteristics" (p. 247).

"When we consider that to such differences from test to test, there must be added differences associated with varying content..., the issue of comparability, or lack of it, among the results of the various tests may begin to be seen in proper perspective. Empirical data reveal that there may be variations of as much as a year and a half in grade equivalents among the results yielded by various achievement tests..." (p. 248).

Thus, in this report, which uses data from several publishers, we must be aware of the lack of precision inherent in our estimates and recognize that estimates based on Test A may not be identical with estimates on Test B.

For most of the reading achievement tests, test publishers provide one or more of three types of derived scores. These derived scores are grade equivalents, percentile scores, and standard scores.

The technique for determing grade equivalent scores is to categorize the subjects in the norming group by grade and then compute the median score for each category. The medians for the groups (grades) are plotted against grade, smooth curves are fitted, mathematically or judgmentally, to the successive points, and norm values read off relating score to grade, usually in tenths of a grade. Thus, a score of 6.7 is the score equivalent to the median score of pupils in the seventh month of the sixth grade. There are, of course, problems with grade equivalent scores, particularly in the establish- ment of comparability, when several levels of a test are needed to cover the entire spectrum of grades. For example, the Sequential Tests of Educational Progress uses four levels to measure reading perfor- mance between grades four and fourteen. Since the content varies from level to level, the same grade level score achieved by differ- ent students measured by the different levels does not necessarily have the same meaning. Other problems have to do with the proper bases on which to interpolate between medians for two successive grades or to extrapolate beyond the grades for which data are avail- able.

In percentile ranks, a score is assigned a percentile value that denotes the percent of scores of a specified group that are exceeded by the particular score. Thus a percentile rank of 64 indicates that score that exceeds the test score of 64 percent of the reference group.

Standard scores are scores which are transformed so that the transformed scores have a normal distribution with a prescribed mean and a prescribed standard deviation. One of the most common standard scores is the stanine which has a mean of 5.0 and a standard deviation of 2.0.

All three types of scores are interrelated and derive their meaning and revelance from the norming sample on which the popula- tion is based. In this paper, despite the inherent problems, we will focus primarily on grade equivalent scores since these scores are most easily understood (or misunderstood) by the lay public. The most serious problem of grade equivalents, the extrapolation of scores beyond the grades for which the sample has been tested, is not of primary concern because we are primarily interested in group

estimates of reading defiency. Also, since we are focusing on
group data and concerned with only one content area, we are not
troubled by the profile problem or the equivalency of grade
equivalents in differing content areas.

In interpreting grade equivalents, the norm-referenced base
must be recognized. Fifty percent of the pupils in the normative
sample on a norm-referenced test will fall below the median, or
the fiftieth percentile, or will read below grade level if it is
defined as a score equal to the median. Thus it is unreasonable
to expect "all children of a given grade to read at grade level".
A much more reasonable expectation is that samples similar to the
norming sample will be similarly distributed with respect to read-
ing achievement. Samples that are not representative of the total
population can be expected to perform better or worse, depending
on the nature of the bias with respect to the norming population.
For example, samples of students whose parents are from a low income
group would be expected to show a different distribution of scores
than the norming sample.

Tables 9, 10, 11, and 12 illustrate some aspects of the reading
problem based on norm-referenced tests that permit an estimate of
the reading deficit for students who are still in school. For the
total U.S. population who enters the 12th grade, we can expect (by
definition) half to read at grade level 12 and above, about 87 percent
to read at grade level 8.0, and as many as 99 percent to read at
grade level 5.0. Of those individuals who are in the eighth grade,
about 90 percent can be expected to read at grade level 5.0 or above.
Extrapolating this figure to the total adult population with 8 years
of school would underestimate the reading level. The correct figure
would be significantly larger than 10 percent below grade 5.0, since
those who drop out of school are probably below average in reading.
The total population with less than 8 years of school (almost 13
percent of the population 14 years of age and over) undoubtedly read
at a much poorer level in terms of grade equivalent scores than the
samples from which these data were derived.

Despite the variations in the tables based on different tests
which differ in content, the level of deficit is relatively constant.
There is, of course, no generally accepted test which can serve as
the criterion and the calibration of tests to a common frame of refer-
ence has long been recognized as a need. Recently the Office of
Education has let a contract to interrelate seven tests of reading
(The Metropolitan Achievement Test, the Stanford Achievement Test, the
California Achievement Test, the SRA Test, The Iowa Test of Basic
Skills, the Sequential Tests of Educational Progress, and the Compre-
hensive Tests of Basic Skills) with the Metropolitan Achievement Tests
as the common reference test for grades 4, 5, and 6. In the future,
scores on any of these tests can be reported in grade equivalents
based on a common test.

TABLE 9

Distribution of Grade Equivalent Scores on Norm Referenced Reading Tests for 12th Grade Students[1]

Test	Percent at Grade Equivalent & Above							
	12th Grade	11th Grade	10th Grade	9th Grade	8th Grade	7th Grade	6th Grade	5th Grade
STEP II	50	55	68	77	87	94	97	99
CAT	50	62	79	84				
MAT	50	58	69	76				

1   These percent distributions were derived from various data provided in the Test Publishers Manuals. They should be read as rough approximations since each Publisher differs in the manner in which grade equivalents are derived and the number of grades which they cover.

Source:

Norm Tables for the Sequential Tests of Educational Progress (II)
Norm Tables for the California Achievement Tests
Norm Tables for the Metropolitan Achievement Tests

Distribution of Grade Equivalent Scores on Norm Referenced Reading Tests for 10th Grade Students[1]

	Percent at Grade Equivalent & Above					
Test	10th Grade	9th Grade	8th Grade	7th Grade	6th Grade	5th Grade
STEP	50	63	74	86	94	97
CAT	50	66				
MAT	50	59				
CTBS	50	69	80	89	94	97

[1] These percent distributions were derived from various data provided in the Test Publishers Manuals. They should be read as rough approximations since each Publisher differs in the manner in which grade equivalents are derived and the number of grades which they cover.

Source:

Norm Tables for the Sequential Tests of Educational Progress (11)
Norm Tables for the California Achievement Tests
Norm Tables for the Metropolitan Achievement Tests
Norm Tables for the Comprehensive Tests of Basic Skills

TABLE II

Distribution of Grade Equivalent Scores on Norm Referenced Reading
Tests for 8th Grade Students[1]

Percent at Grade Equivalent & Above

Test	8th Grade	7th Grade	6th Grade	5th Grade	4th Grade
STEP II	50	63	82	86	95
CAT	50	78	83	97	98
MAT	50	60	75	88	95
CTBS	50	68	76	86	

[1]   These percent distributions were derived from various data
provided in the Test Publishers Manuals.   They should be read as
rough approximations since each Publisher differs in the manner
in which grade equivalents are derived and the number of grades
which they cover.

Source:

Norm Tables for the Sequential Tests of Educational Progress (11)
Norm Tables for the California Achievement Tests
Norm Tables for the Metropolitan Achievement Tests
Norm Tables for the Comprehensive Tests of Basic Skills

TABLE 12

Distribution of Grade Equivalent Scores on Norm Referenced Reading
Tests for 6th Grade Students[1]

	Percent at Grade Equivalent and Above			
Test	6th Grade	5th Grade	4th Grade	3rd Grade
STEP	50	65	76	
MAT	50	70	83	98
ITBS	50	74	81	
CTBS	50	62	79	90

1

These percent distributions were derived from various data
provided in the Test Publishers Manuals. They should be used as
rough approximations since each Publisher differs in the manner
in which grade equivalents are derived and the number of grades
which they cover.

Source:

Norm Tables for the Sequential Tests of Educational Progress (11)
Norm Tables for the Metropolitan Achievement Tests
Norm Tables for the Iowa Tests of Basic Skills
Norm Tables for the Comprehensive Tests of Basic Skills

If we accept a grade equivalent of 5.0 as the standard for meeting social and literary needs, about one percent of those with 12 years of education, 3 percent of those with 10 years of education, 13 percent of those with 8 years of education, and 30 percent of those with 6 years of education will read below this standard.

If we accept the figure of 8.0 as the standard, then 13 percent of those with 12 years of education, 24 percent of those with 10 years and 50 percent of those with 8 years will fail to meet the standard.

Applying these rates to the distribution of educational attainment of those 14 years and over, it is estimated that there are about twelve-and-a-quarter million individuals reading below a grade equivalent of 5.0 and about forty-five million read below equivalent of 8.0.

These data provide reasonable information for the distribution of reading achievement for groups of children representative of the total population in these grades.

Reading achievement and ethnic origin. The Coleman study (Coleman, 1966) remains the best study of racial and ethnic group differences. Data were collected in the latter part of 1965 on over 600,000 students in grades 1, 3, 6, 9, and 12, based on a sampling procedure designed to be representative of the public schools in the U.S. including the District of Columbia. At grades 3, 6, 9 and 12, the Reading Comprehension tests of the Sequential Tests of Educational Progress were used. Table (13) indicates the performance of Negroes and whites in various portions of the country. Compared to whites in the Northeast, Negroes in the Northeast are about 2.9 grades behind at grade 12, about 2.6 at grade 9, and about 1.8 grades behind at grade 6.

According to the Coleman study, "The degree of educational disadvantage, at the end of 12 years of high school for those who remained in school that long, remains quite large. The Negroes' average tends to be about one standard deviation below those of the whites, which means that about 85 percent of the Negro scores are below the white average" (p. 219). Converted into grade equivalent scores, 50 percent of the whites compared to 85 percent of the Negroes read below grade level. About 14 percent of the whites in the twelfth grade read below the ninth grade level compared to about 94 percent of the Negroes. Similarly, about 14 percent of the whites in the ninth grade read below the sixth grade level compared to about 96 percent of the Negroes.

While these results are based on data collected in 1965, it is apparent that our schools will contin   produce a massive reading deficit unless their efficiency is greatly increased.   th 43

TABLE 13

Reading comprehension: Number of standard deviations below and number of grade levels behind the average white in metropolitan Northeast, for all groups

Race and area	Standard deviation below			Grade levels behind		
	6	9	12	6	9	12
White, nonmetropolitan:						
South	0.2	0.3	0.3	0.5	0.8	1.0
Southwest	.1	.1	.1	.1	.3	.5
North	.1	.1	.1	.2	.3	.5
White, metropolitan:						
Northeast						
Midwest	0	0	.1	.1	.1	.3
South	.1	.2	.1	.3	.4	.4
Southwest	.2	.2	.1	.4	.7	.4
West	.1	.2	.2	.2	.5	.8
Negro, nonmetropolitan:						
South	1.2	1.4	1.6	2.7	3.7	4.9
Southwest	1.0	1.2	1.4	2.4	3.3	4.5
North	1.0	1.0	1.2	2.2	2.6	3.8
Negro, metropolitan:						
Northeast	.8	.9	.8	1.8	2.6	2.9
Midwest	.8	.8	.8	1.8	2.3	2.8
South	.9	1.1	1.2	2.1	3.0	3.9
Southwest	.9	1.2	1.3	2.1	3.0	4.1
West	.9	1.1	1.2	2.1	3.1	3.8
Mexican-American	1.0	1.0	1.0	2.4	2.6	3.3
Puerto Rican	1.4	1.2	1.1	3.1	3.3	3.7
Indian American	.9	.8	1.0	2.0	2.3	3.2
Oriental American	.4	.3	.5	1.0	.9	1.6

percent of the Negroes in the 20-24 age bracket in 1969 completing less than 12 years of school and about 22 percent of whites completing less than 12 years of school, we are still producing large numbers of young people who cannot read at the eighth grade level. Although the figures are not precise, we are producing about 140,000 functionally illiterate Negroes each year and about 650,000 functionally illiterate whites (using an eighth grade criterion). The rates are even more serious for Puerto Ricans and Mexican Americans.

Table 13 includes data on Mexican Americans, Puerto Ricans, Indian Americans, and Oriental Americans. Comparing the reading achievement of these four ethnic groups to the white metropolitan Northeast, Mexican Americans are about one standard deviation below at grades 6, 9, and 12; Puerto Ricans about 1.2 standard deviations below. Indian Americans are about .9 standard deviations below and Oriental Americans about .4 standard deviations below. At grade 12, these figures are equivalent to 3.3, 3.7, 3.2, and 1.6 grade equivalents, respectively. For Mexican Americans, Puerto Ricans, and Indian Americans, less than half the students in the twelfth grade read at the 9th grade level.

Bass (1969) reports reading achievement scores on the California Achievement Test for 3,375 American Indian students, ninth through twelfth grade, in 21 different high schools in Alaska, Arizona, Nebraska, New Mexico, South Dakota, Oklahoma and Utah. At the ninth grade, students were 1.1 grade equivalents behind; at the 10th grade, 1.4; at the eleventh, 1.9, and at the twelfth grade, 2.5 grade equivalents behind.

While the fact of educational retardation related to race and ethnic origin is clearly documented, one cannot so readily attribute race as the causative factor. Many factors related to race also relate to educational achievement. Socioeconomic status, parents educational level, urbanization of background, and other factors all relate significantly to achievement.

T. L. Harris (1969) in his review of reading states that research has failed to support the conclusion that race is the primary role or determinant of reading success. The differences favoring whites and Negroes appear to be a reflection of the total social environment. He cites particularly M. Deutsch (1965), who studied 34 language-related variables among middle and lower class Negro and white children in grades one and five. Deutsch interpreted his data to support the conclusion that lack of appropriate language stimulation in early home and school life makes success in reading more difficult with age and the factors enhancing this difficulty are not related to race but to environmental factors related to race.

Reading achievement and socioeconomic status (SES). There
are no studies which systematically attempt to test the reading
achievement of the population as a function of the childs or parents'
socioeconomic status. A. B. Wilson (1969), Loban (1966), and
K. R. Johnson (1967) all confirm the Coleman (1966) finding of the
relationship between socioeconomic status and reading achievement.
Even though the precise deficit that is related to socioeconomic
status, independent of the other factors, is not clear, the conse-
quences of low status are. Persons of low socioeconomi status
start school less well prepared for the kind of education that is
available, fall further behind each year they remain in school, and
complete fewer grades and fewer years of school than those of higher
SES. While the number of years of school completed is rising for
all SES levels, the differentials are still significant.
K. R. Johnson (1967), A. B. Wilson (1969), and Sexton (1961) agree
that children at the lower end of the socioeconomic scale are at a
decided disadvantage, but the independent contribution of SES is
indeterminable because of the confounding of SES with other factors.
Such concomitants of low SES as slower development of language
facility, parents' education, career motivation, less press for
school success, fewer home reading experiences, and the premise of
a greater discordance between the content of schooling and home
values for lower SES children are often cited as causal factors in
the chain linking low SES with reading achievement.

Reading achievement related to intelligence. Correlations
obtained between measures of intelligence and measures of reading
achievement depend on the particular test used and the groups on which
the measures are obtained; yet there is general agreement that a sig-
nificant positive relationship between intelligence and reading exists.
For the Metropolitan Achievement Test (Harcourt Brace Jovanovich, 1970)
the median correlation between intelligence and reading for 18 differ-
ent samples is .80, with a range between .59 and .84. For ninth grade
and tenth grade samples, the California Achievement Test Manual
(California Test Bureau, 1963) reports a correlation of .83 between
intelligence as measured by the California Test of Maturity and read-
ing achievement. The STEP II manual (Educational Testing Service, 1970)
reports correlations ranging from .75 to .83 between STEP Reading and
the School and College Ability Tests for grades 3 through 12. For
grades 3, 5, 7, and 9, the manual of the Comprehensive Tests of Basic
Skills (California Test Bureau, 1968) reports correlations between Read-
ing and the California Test of Mental Maturity of .79, .83, .83, and
.84, respectively. These correlations are all for carefully selected
samples with average scores and standard deviations on the intelligence
measures. In fact, intelligence test scores and reading achievement
correlate about as highly as do two different intelligence tests. Part
of this correlation is due to the inclusion of reading in many intelli-
gence tests; but even with intelligence tests of the performance type,

reading achievement and intelligence are significantly interrelated. Farr (1969b) provides a valuable recent review of this subject.

Such correlation implies that the reading achievement to be expected of students will be in part of function of their measured intelligence. For example, the California Test Bureau manual (1967) indicates the expected grade placement from grades 4-12 as a function of an Intellectual Status Index (ISI). While the ISI is not computed in the same way as traditional intelligence measures it is highly correlated with such measures and has the advantage of controlling for years of schooling.

"The Anticipated Achievement Norms indicate..... the expected influence of years of schooling as wel is the interpolated effect of chronological age and mental age de ions from the national average. The effect of these two latter variables is controlled through the adjustment features incorporated in the ISI... The ISI differs from an intelligence quotient in that the chronological age typical of students at a particular grade level replaced the individual chronological age as a reference point" (p.44). Table 14 abstracts some pertinent data from the anticipated achievement norms.

Simmons and Shapiro (1968) compared the expected reading achievement of students with IQ scores ranging from 60 to 140 in grades 6, 8, 10, and 12, computed by three different formulas. While formulas yielded somewhat different results in predicting achievement, there was little doubt that the lower the IQ, the greater the number of years of schooling required for a given level of reading achievement. Thus the results are similar to those based on the California Test Bureau formula. The discrepancies among the three formulas are greatest at the extremes of the IQ distribution.

Reading achievement and sex differences. The literature on sex differences is fairly large but characterized by small samples, inadequate controls, and messy statistics. Cardon (1968), in a review of literature on sex differences and reading achievement concludes that there is a difference favoring girls in reading achievement in the elementary grades, but attributes the small difference favoring girls to such factors as more sophisticated language on entering school, teacher and parent expectation, and social influences. Wozencraft (1967) compared reading achievement on the Stanford Achievement Test for 564 boys and girls in the third and sixth grades. Differences favoring girls were significant at the .01 level in the third grade and at the .05 level in the sixth grade.

Gates (1961b), compared the performance of about 6,500 boys and 6,500 girls in 12 school systems in 1? states in grades 2-8. He found statistically significant differences favoring girls at all grade levels with the size of the difference decreasing as grade increased. Sinks and Powell (1965) compared the reading achievement

TABLE 14

ANTICIPATED ACHIEVEMENT IN READING COMPREHENSION FOR
VARIOUS GRADES AND LEVELS OF INTELLECTUAL STATUS INDEX
(ISI)

ISI	Grade			
	12.0	10.0	8.0	6.0
	Anticipated Achievement Grade Equivalents			
130	15.0	13.1	11.4	8.4
100	11.5	9.8	8.0	6.1
90	10.5	8.6	6.8	5.3
80	9.4	7.6	5.7	4.5
70	8.3	6.4	4.6	3.7
60	7.3	5.3	3.4	3.0

Source: Administration Manuals for the California Achievement
Tests (Elementary, Junior High, Advanced Levels),
1957 Edition.

of boys and girls at five levels of intelligence as measured by the
California Test of Mental Maturity. The authors concluded that
their data failed to support sex differences in reading achievement
when levels of intelligence were controlled. In the Project Talent
Study in 1960, Flanagan (1964) reports that girls exceeded boys by
a small amount on reading comprehension scores for each grade nine
through twelve. The differences are primarily due to the lower
scores of the boys in the lowest five percent of the distribution.
The standard deviations are larger for boys than girls in each grade.
Despite the small magnitude of the differences, it is well known that
boys more often than girls are enrolled in remedial classes.

The problem of growth. Using a norm-referenced test as the
criterion of functional literacy carries with it some hazards. As
has been pointed out, the grade equivalent represents the median
performance of students in the norming sample at a given grade at
the time of standardization. If the desired level of literacy is
represented by a given grade equivalent, say 5.0, on a particular
test at a particular point in time, this level is bound to the time
at which the test is normed. For example, on a particular test in
1960, a score of 44 may be equivalent to grade 5.0. If the test
were renormed in 1970, we might now find that a score of 47 is
equivalent to a grade of 5.0 and a score of 44 is equivalent to a
grade of 4.8. If the norming sample in each case was equally re-
presentative of the population of fifth grade students, educational
changes would have resulted in improving the reading achievement in
terms of 1960 norms but not in terms of 1970 norms. This dilemma is
equally true for percentile or standard scores.

Several studies indicate precisely this type of change. Gates
(1961a) compared the reading achievement of children tested in 1957
with the attainment of children tested 20 years earlier in 1937.
Some 31,000 children were tested in 1957 with the test on which the
1937 norms were based. Gates reported that 1957 children in the
range from grades 4 to 6.5 reached a particular level of reading
ability about 5 months earlier than did the 1937 pupils. Essentially,
compared to 1937, 1957 pupils were about a half year advanced.

Schrader (1968) reports on the comparison of earlier and later
norms for three nationally normed tests (Iowa Tests of Basic Skills,
Metropolitan Achievement Tests, and Stanford Achievement Tests).
The time between the two sets of norms ranges from nine to eleven
years. For the reading tests, the difference was about eight per-
centile points; that is, a student who excelled 50 percent of the
group on the old norm would excel only 42 percent of the new norm.
Thus, if the earlier norms were used, pupils would show a higher
grade equivalent.

Jung (1971) readministered the Reading Comprehension Test of
the Project Talent Test Battery in 1970 to a twenty percent random

sample of the schools that participated in the 1960 Talent survey.
The 1970 sample included more than 12,000 eleventh grade students.
Jung found no change in the reading comprehension scores between
1960 and 1970.

It may very well be that improvement in reading achievement
occurs more readily in the kinds of functions measured by elementary
reading comprehension tests than for high school tests, but further
research is needed. It does appear that growth in reading achieve-
ment approaches an asymptote in the higher grades and that differences
between grades are greater in elementary than in high school.

Reading achievement for adults. While data are available from
test publishers on the distribution of grade equivalent scores as a
function of years of school, there are little data available on the
measured reading achievement as a function of time out of school and
years of school complet for adults. The U.S. Department of Defense
(1968) provides some relevant data on reading achievement for young
Department of Defense recruits. Starting in October, 1966, the
Department of Defense revised the entrance standards for military
service and began accepting men who would have been disqualified in
the past for failure to meet the mental standards. According to
present regulations, volunteers and draftees who score between the
10th and 30th percentile on the Armed Forces Qualification Test (AFQT)
who are high school graduates are acceptable for service, while those
who are not high school graduates must pass supplementary aptitude
tests. These men with AFQT scores between the 10th and the 30th percen-
tile on the AFQT are called New Standards Men.

New Standards Men, on the average, read 4.4 years below the
school equivalent, while regular personnel show a discrepancy of 1.0
year. For Caucasians, the discrepancy is 3.9 for New Standards Men
and 0.8 for regular personnel and for non-Caucasians the discrepan-
cies are 5.1 and 3.0. Remembering that DOD recruits are not a repre-
sentative sample of their age group, it is still pertinent that median
deficiencies ranging 5.1 years to 0.8 years exist. The apparent in-
equality of non-Caucasian education is reflected in the fact that in
each category the non-Caucasian deficit is larger, despite equal or
greater number of years in school (Table 15).

Brooks (1963) compared the educational level and educational
achievement for a sample of 680 persons representative of individuals
in the age range 16-64 who were recipients of welfare assistance and
classed as employable in the Woodlawn district of Chicago. Ninety-
eight perc of the sample were Negro and 84 percent were female.
In the sample, the average educational level was 8.8 years but the
average achievement level was 5.9 years, an achievement deficit of
2.9 years in relation to educational level. While Brooks found a
relationship in his sample between years of education completed and
grade equivalent achievement test score, the average test score

1.0

4.5
5.0
5.6
6.3
7.1
8.0

2.8
3.2
3.6
4.0

2.5
2.2
2.0

1.1

1.8

1.25   1.4   1.6
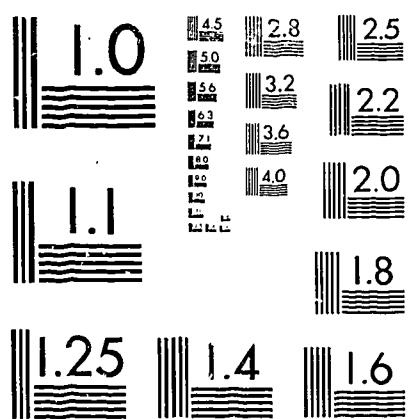
ICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TABLE 15

MEDIAN READING ABILITY BY GRADE LEVEL COMPLETED TO
MEAN NUMBER OF YEARS SCHOOL COMPLETED:
ARMY SERVICEMEN

	Total		Caucasion		Non-Caucasion	
	Reading Ability	School Grades	Reading Ability	School Grades	Reading Ability	School Grades
New Standards	6.2	10.6	6.2	10.1	6.2	11.3
Control Group	10.9	11.9	11.1	11.9	8.8	11.8

Source: Project, 100,000, Characteristics and Performance of
New Standards Men, March, 1969. Office Secretary of
Defense

was significantly lower than the average number of years of school completed.

Havrilesky (1969) reports that for 683 adult participants in education programs funded by the state of New Jersey who qualified on the basis of OEO poverty critera, there was no relationship between number of years of school completed and reading performance. He suggests that for low income unemployed groups the typical relationship between years of education completed and reading achievement does not hold.

W. S. Gray (1956) reviewed a number of early studies and concluded that, "Adults vary in general reading ability from the complete inability to read to the highest levels of efficiency that have been measured; there is a fair degree of relationship in the case of groups between the last school grade attended and reading ability and individuals vary from this trend in several respects... those who leave school before the fifth grade tend, as adults, to read below the expected grade level; those who continue in school beyond the fifth grade tend, in general, to read above the last grade attended" (pp 46-47).

While there are no new data bearing on this problem, we suspect that Gray's data which were collected in the 1920's to 1930's would not hold true today with respect to the given grades. His adults who completed the fifth grade might be comparable to adults completing a higher grade today, but there is probably still no grade for which the average school dropout reads above grade level as currently measured by tests developed for school-going children.

Knight and Alcorn (1970) report a study which is highly suggestive despite the small number of classes and lack of tests of statistical significance. They compared adults with two groups of children on several measures of reading.

In group I were 24 "educationally disadvantaged" adults, group II consisted of 15 lower socioeconomic class children in the third grade, and group III consisted of 25 upper-to-middle class third grade children. Among other tests, each group was given the reading comprehension test of the California Achievement Test, the reading test of the Adult Basic Learning Examination (ABLE), and a special cloze test designed for use with educationally disadvantaged adults and having a readability grade level of 3.0. On the CAT, group I had an average grade equivalent of 3.9, compared to 3.6 for group III. On the ABLE test, however, the adults had a grade equivalent of 5.3, compared to 3.7 for group III, and on the cloze test, a score of 24 compared to 15 for group III. The authors suggest that the difference in performance between the adults and school children on the ABLE and cloze measures suggest not only that the content and format of instruments for adults are important, but that

educationally disadvantaged adults may be able to use and understand
the limited reading skills they possess to a greater extent than in-
dicated by standardized test designed for school children.

The entire problem of the relevance of school-related tests for
the assessment of adult reading performance has received scant atten-
tion. The Office of Education under Contract No. OEC-0-70-4791 (508)
with Educational Testing Service is developing a Reading Performance
Survey as a basis for developing a pool of reading tasks to determine
the ability of groups and individuals to perform reading tasks. Thus,
this contract directly reflects the need for developing an adult,
performance-based measure of reading.

Other Measures of Reading Achievement

In recent years norm-referenced tests have been criticized as
criterion measures or standards of achievements, and attention has
been directed to measures designed specifically to assess education-
al objectives. The most extensive programs in this area appear to
be those of the National Assessment of Educational Progress (1970),
the Instructional Objectives Exchange of the U.C.L.A. Center for the
Study of Evaluation (1970a,b,c)and the Assessment of Educational
Outcomes in Colorado (Pacific Educational Evaluation Systems, 1970).
In each of these projects, the goals and objectives in a curriculum
or subject matter area are defined and then translated into items or
exercises that measure the degree of achievement of the given ob-
jective. Results are reported in terms of the number or proportion
of categories of individuals who succeed in answering items charac-
teristic of a given objective. This procedure can, for example,
indicate the proportion of sixth grade students who are able to read
and select the most appropriate title for a given passage. Such an
approach appears to have considerable merit in defining functional
literacy, since the definition is not dependent on a score with ref-
erence to some group performance but is geared to actual behavior.
With this type of measure it is possible for all members of a given
group to succeed. Carroll (1970) points out that these "criterion-
referenced tests" make it possible to determine whether an individual
has achieved the goals specified for the learning task, rather than
merely placing him on some relative scale of goodness.

The National Assessment Project has developed a set of exercises
in reading to measure the achievement of a sample representative of
persons at four related age levels (9, 13, 17, and Adults 26-35).
Each exercise is intended to measure the attainment of one or more
of the reading objectives. The specific objectives are described in
Reading Objectives, National Assessment of Educational Progress (1970).
Reports of the results of the reading exercises are not yet available
but should be in 1972. These reports should provide some of the best
data available on how well these four age groups perform on the read-
ing objectives.

In the Colorado study, test items were designed to assess achievement of objectives judged to be important by Colorado teachers. A pilot test of the concept was carried out by administering the tests to some 12,000 pupils in grades 3, 6, 9, and 12. The project used multi-matrix sampling procedures to provide random assignment of tests to districts, items to test forms, and forms to students. The basic randomization procedure insured that each item and each child had an equal chance of being chosen. Demographic and background data on each student were obtained so that groups could be compared with regard to affluence of the school, urbanism, sex, ethnic group (American Indian, Negro, Oriental, Spanish surname), and socioeconomic status. While complete results are not yet available and test items in areas other than reading better demonstrate a set of criterion-referenced items, the sampling design and the concept of items based on objectives used in Colorado appear to be promising models for future efforts to determine functional literacy. The ordering of subgroups appears to be the same as for norm-referenced tests.

Louis Harris and Associates (1970) conducted a study for the National Reading Council to determine the "survival" literacy rate in the United States which has received considerable popular attention. "Survival literacy," in this study, was defined as the ability to fill out five simulated application forms for a Social Security number, a personal bank loan, public assistance, Medicaid, and a driver's license. Each respondent was asked to fill out all five forms in the same order. For those respondents unable to write, the interviewer wrote in the answers provided by the respondent. A percent-correct response was computed for each form and the average percent correct of the five forms was the respondent's overall score. Background information was obtained for each respondent on such factors as occupational category, sex, age, marital status, years of school completed, income, ethnic or racial background, and home address. The sample consisted of about 1,500 completed interviews, based on the same procedures used in national opinion polls. The study can be criticized on several bases, including the small size of the sample, particularly when comparisons were made between subgroups (which must have a relatively small number of cases). Moreover, the study implies that the simulated application forms are a "given" and cannot themselves be evaluated.

Harris defines three levels of functional illiteracy. Level 1, consisting of those with 30 percent or more of the items incorrect, is called "Low Survival Threshold". Level II consists of those with more than 20 percent incorrect and is called "Questionable Survival Threshold". Level III consists of those with 10 percent or more incorrect and is called "Marginal Survival Threshold". Three percent of this population sample are Level I, five percent are Level II, and 13 percent are Level III. Converted into population figures, this indicates that: "A total of 4.3 million Americans fall into the "Low Survival Threshold" group, 7.1 million into the "Questionable

Survival Threshold" group, and 18.5 million into the "Marginal Survival Threshold" group (Louis Harris, 1970, p. 7). All three levels of illiteracy are largest in the South, larger for those with low income, higher for Negroes than for whites, higher for older than younger respondents, slightly higher for men than for women, higher for those born outside the United States, and higher for those with less than eight years of education.

Despite the small number of cases and some question as to the adequacy of the forms as measures of functional literacy, the approach is interesting and worth further research. The similarity of the Harris approach to other approaches in the attempt to define an absolute measure is relevant.

Meaning of reading grades. Throughout this paper we have discussed various grade equivalents as indicators of the level of functional literacy needed to meet an individual's literacy and social needs. Implied is the assumption that the material an individual must read in order to meet his literacy and social needs can be similarly graded. We would like to be able to say that if an individual can read at the 8.0 grade level he can read the material necessary for him to function in the current world. There are varying methods available for computing the grade equivalent score for school-age and other materials. Reading formulas have been proposed by Flesch, Dale-Chall, Jorge and others to estimate the grade level of varying types of reading material. Bormuth (1967c, 1968a) has developed a different approach to measuring the level of difficulty by use of the "cloze procedure". In the cloze procedure, every nth word (usually the fifth) in a paragraph of standard length is left blank. Subjects are instructed to write in each blank the word that they think was deleted. The number of errors is highly r 'ated to formula measures of reading difficulty and other more subje   ive estimates and is more easily constructed and administered than t   formula approach. Further research seems needed, however, to c   letely validate the cloze approach.

Most available formula scores use a   eighting of two or more of the following elements: vocabulary load, sentence length, idea density, and human interest.

A third approach to measuring difficulty of prose material is reflected in the "domain tests" developed by Flanagan et al (1964) as part of the Project Talent Study. One domain test was constructed from prose passages from the works of ten authors chosen because they differed widely in the complexity, subtlety, and general difficulty of their writings. A second domain test was constructed from prose passages from ten magazines judged to differ in difficulty (for example, Silver Screen Magazine and Saturday Review). Each of the domain tests contained 100 items related to comprehending the meaning of the passage. For each author or magazine, the score on the domain test

was related to the score the student made on the Talent reading com-
prehension test. By converting domain test scores to reading compre-
hension test scores, an estimate can be made of the difficulty of the
reading samples. Preliminary results indicate that the subjective
ratings of difficulty correlate highly with the statistical data and
suggest that this technique is worth following up, though there seems
to have been no further work on this idea since 1964.

Other Estimates of the Reading Problem

In 1969 the USOE conducted, through distribution of question-
naires to school districts, principals, and teachers in Title I
(Elementary and Secondary Education Act) elementary schools, a sur-
vey of the compensatory education programs being conducted in the
country during 1968-69. The data from this survey have been analyzed
by Glass (United States Office of Education, 1970a). "Teachers sup-
plied data on pupils in grades two, four and six as well as on them-
selves. The population to which the sample data generalize comprises
5,734,000 pupils in grades two, four and six and their 216,000 teach-
ers in some 33,000 Title I elementary schools in over 9,200 school
districts across the nation (p. 10)." A considerable portion of the
data analysis report on this survey is concerned with the extent of
the reading problem in these schools, as reported by teachers and
principals. Several estimates of the reading problem were requested.

Teachers were asked to estimate the total number of pupils in
each of the grades who showed a critical need for a compensatory
program in reading, among other possible needs, and to estimate the
total number of pupils in their classes who were reading one year or
more below grade level. In addition, principals were asked to esti-
mate the percentage of pupils in their schools who were reading one
year or more below grade level.

In the judgment of teachers, approximately 2.5 million pupils,
or 43 percent of the enrollment in grades two, four, and six of these
schools showed evidence of a critical need for a compensatory program
in reading. Reading was judged, from among seven other needs (lan-
guage, mathematics, cultural enrichment, health, psychological coun-
seling, food, and special education) to be the greatest single area
of need.

The percentage of pupils estimated to be reading below national
test norms in this survey is related to urbanization of the school.
The data indicated that the greatest need for reading services is in
the urban schools with about 22 percent of such schools having from
70 to 100 percent of pupils reading one year or more below grade
level. For rural and suburban schools, the corresponding percentages
were 8 percent and 6 percent, respectively. Since, by definition, an
"average" class would have 50 percent of its pupils reading below
grade level, it is the departure from the 50 percent level, and the

criterion of "one year or more below grade level", that is significant.

These figures are estimates and are based upon the judgments of teachers and principals, not upon demonstrated performance by test. Test scores based upon a number of standardized reading achievement tests were available on about half of this population, however. While this sample was not considered to be representative of all Title I pupils, the available test scores indicated that over half of the fourth and sixth grade pupils were reading below grade level. The development of a basic reading vocabulary and the acquisition of work-study skills were more often emphasized by teachers in working with compensatory education pupils than with pupils in regular reading curriculums.

The reading deficit described in this USOE report is not only related to degree of urbanization but to ethnicity (being largest among the Spanish-American and Negro pupils) and to estimated family income. The data, in these respects, are congruent with the findings of the Coleman study and the Bureau of Census reports analyzed in this project.

Unpublished data providing estimates of the reading problem by school principals have also been made available to this project by the National Center for Educational Statistics.[2] The data have been analyzed by Dwyer (1971).

In this 1970 study three separate questionnaires were sent to principals of elementary and high schools across the country. The principals selected represented schools chosen as part of a nation-wide stratified random sample. The reports from the principals generalize to a total elementary school population of about 25 million and a secondary school population of 17.8 million.

Dwyer's analysis of the data indicates that 15 to 20 percent of pupils, in the schools reporting, have special problems in reading to the extent that they are unable to keep up with their classmates without special instruction or assistance. It was estimated that about 4.7 million pupils with such reading problems are in elementary schools and 2.7 million are in secondary schools. Thirty-seven percent of elementary pupils with reading problems and 46 percent of secondary pupils with such problems were reported to receive no special assistance or instruction in reading. While data involving a breakdown of information by pupil characteristics were not available to this project, the incidence of pupils with reading diffi-

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[2] We are grateful to Dr. Leslie J. Silverman, Senior Statistician, National Center for Educational Statistics for the release of data from this survey.

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culties as defined was shown to be greater in large city schools
than in suburban or rural schools.

Conclusions and Recommendations

     The over-all conclusion derived from this review is that the
data base does not exist to permit adequate estimates of the read-
ing problem in the United States in terms of a standard of meeting
"individual and social needs". The statement of the problem implies
the existence of a standard and first priority should be given to
the development of such a standard. As has been indicated, the Office
of Education has recognized this problem and has funded research to
create such an instrument. The next step, of course, is the collec-
tion of performance data indicating the extent to which various
categories of individuals meet the standard. With the application
of modern sampling approaches, the collection of such data on almost
all groups of interest should be feasible.

     If the concept of years of education completed is acceptable
as a criterion of reading to meet individual and social needs,
the 1970 census provides a data base for a more precise analysis
than has yet been available. Published reports on the 1960 Census
indicate that the data are available to provide breakdowns at al-
most any level of detail required. The Folger and Kim (1967) analy-
sis of the 1960 census indicates the kinds of analyses that can be
obtained, but analysis of the 1970 data could be even more detailed
in terms of distributing ethnic and racial groups, age groups, socio-
economic status, and other factors. There is almost no limit to the
information that could be provided. The current population surveys
provide a means for updating census data between census years.

     Despite its easy availability, the utility of data based on
years of education completed as an indicator of reading deficiency
is not clear. While for groups of individuals, performance on any
standard of reading will increase as the number of years of educa-
tion increase, it is likely that as the holding power of schools
increase, this relationship will decrease. For the next decade the
relationship will probably remain high enough so that targets for
intervention could be identified on this basis.

     The incidence of reading problems in grades K through 12
has been demonstrated, but the extent of the problem depends on
definitions, measures, and populations. If the average (median)
score is defined as the standard, obviously half of the population
will fail to achieve the standard. Larger proportions of individuals
whose families are characterized by financial, housing, education,
and other disadvantages will fall below the average. However, until
some criterion other than a norm-referenced one is accepted, some-
body is going to have to read below average. The way various groups
perform in relation to the norm may be changed by various interven-

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tion activities, and their relative positions may be changed, but fifty percent will still be below average and (for example) approximately fifteen percent of those with 12 years of school will read below the ninth grade level. The current information on relative deficit of various groups does present, however, targets for intervention and suggests the ones that present the greatest need.

The particular goals, however, are not so easily defined. A current target expressed by some of insuring "a years growth for every year of school for every pupil" is impossible of attainment. A more modest goal related to performance or criterion-based measures may be achievable. With these types of measures, groups may still be differentiated on the basis of numbers or percents able to reach the standard. They may also be differentiated on the bases of other factors, such as time or effort or cost to meet the standard. With heroic effort, it is even possible for some individuals with very low intelligence to learn to read at the fifth or sixth grade level.

It seems that more effort should be directed to developing performance-based standards for reading in the school population similar to those under development for adults, particularly for the upper school grades. The ability to read and comprehend certain kinds of materials as indicated by the Project Talent domain tests suggests one possible approach. Attempts to develop specific objectives related to reading and to translate these into performance-type measures would provide appropriate standards for school-age reading programs which norm-referenced tests do not supply.

Further efforts need to be directed to the economic consequences of reading, particularly in the adult population. While there is ample evidence that measures of academic achievement, including reading, correlate with indices of economic status, it is not necessarily true that improvement of reading will produce economic benefits. Much more needs to be known about the reading requirements of jobs, particularly those jobs which the lower quarter of the population are likely to occupy. As Ginsberg (1958) has suggested, the requirements that many employers have for school certificates or for reading achievement may have no real relationship to the requirements of jobs. Recently the courts and the Equal Employment Opportunity Commission have required employers to demonstrate a relationship between job performance and educational requirements, achievement, or intelligence test scores in order for these requirements to be valid. Despite the apparent success of various federally and state funded programs to provide instruction in reading to unemployed adults, it has not been demonstrated that improvement in reading is the most critical factor in increased employability. Nor is the information available to determine the

cost/benefit ratio of improving reading as compared to the same amount of money spent in some other activity, for example, the cost of changing the reading requirements of forms which people must fill out to "survive" so the forms are more understandable and less subject to error.

The "Right to Read" is a right that every individual should have, but effective reading may not solve all our economic and social problems.

CHAPTER IV

SURVEY OF THE LITERATURE ON
METHODS AND MATERIALS IN READING

This section of the project is directed toward the following
charges concerning the use frequency and use distribution of instruc-
tional methods, approaches, procedures, materials and equipment for
reading instruction:

a. What methods, materials, approaches, equipment and
   procedures are used to teach reading in the U.S.
   and to what extent?

b. What methods of reading instruction are built on
   essentially different pools of basic knowledge?

c. How much time and resources are expended directly
   on developmental and remedial reading instruction?

d. What relationships between methods of reading
   instruction and reading achievement of the various
   subgroups in the population can be shown?

In addition, a critical evaluation of the research evidence on
methods, approaches, materials, etc., used in teaching reading was made
following the Gephart model and the results of this evaluation will be
discussed.

It seems important to begin this report by examining the various
definitions of "reading" since they should give us clues as to the
specific goals that the various methods, approaches and materials have
been developed to meet. Tinker and McCullough (1962) take cognizance
of the complexities of the reading process and define reading as: the
identification and recognition of printed or written symbols which
serve as stimuli for the recall of meaning through past experience,
and further the construction of new meanings through the reader's
manipulation of relevant concepts already in his possession. The
resulting meanings are organized into thought processes according to
the purposes that are operating within the reader. Such organization
results in modifications of thought, and perhaps behavior, or it may
lead to radically new behavior which takes place in the personal or
social development of the individual (p. 13).

Smith and Dechant (1961) describe eight facets of reading.
Reading is: 1. a sensory process, 2. a perceptual process, 3. an
interest, 4. a developmental task, 5. a growth process, 6. a tool
for learning, 7. a response and 8. a learned process. Many of today's
reading experts would probably add that reading is also a "thinking
process" and a "creative act (p. 11)."

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A more simplistic definition of reading was tentatively agreed on by a Phi Delta Kappa committee in 1969: "Reading refers to an inter- action by which meaning encoded in a visual stimuli by an author becomes meaning in the mind of the reader." This was subsequently revised by some of the group in an operational definition: "Reading behaviors are covert responses to verbal written language. These covert responses are indicated by overt performance which could not have occurred with- out the covert responses to the written language (Gephart, 1970a, p. 13)."

Wiener and Cromer (1967) in discussing the conceptual confusion about reading that results from the diversity of definitions of reading, point out that reading specialists have failed to differentiate the identification skills they hold to be necessary in the beginning stages of learning to read from the comprehension skills necessary in skilled reading. If the definition of reading is limited to identification of decoding skills, and these are viewed as a necessary step prior to the acquisition of comprehension, then the task of the reading teacher would be simpler and the diagnosis of reading problems could be re- stricted to problems in learning to decode. Comprehension is dependent on many other factors, including the child's language and experiential background, perceptual skills, intelligence, emotional condition, etc., and Wiener and Cromer state that including these in a definition of reading or reading disability unnecessarily complicates the question. Different behaviors are thus given the same labels and treated as if they were the same phenomenon. However, most reading specialists today would disagree with this position and hold that reading involves both identification and comprehension, viewing the reading process as a Gestalt in which a serious flaw in any of the learner's aptitudes, skills, background, or other characteristics may prevent his developing adequate   skills.

th   controversy as to whether the definition of reading (espe...., beginning reading) must involve both identification and comprehension (or meaning) that has formed the basis for the develop- ment of different methods of teaching reading.

Methods Defined

Gage (1969), in the Encyclopedia of Educational Research, defines teaching methods as "patterns of teacher behavior that are recurrent, applicable to various subject matter, characteristic of more than one teacher and relevant to learning (p. 1446)." Although this definition of teaching methods refers to a human teacher, he notes that methods as a more general term also includes instructional devices (films, pro- grammed textbooks, etc.). He cites as examples of teaching methods such techniques as the lecture method, discovery method, etc. None of these have direct relevance to the techniques that are used in the teaching of reading in the elementary school. He also notes that the term teaching method is sometimes used to refer not to teacher behavior

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patterns but to curricular materials and that the referents to what is taught and how it is taught may "interact and interfuse."

Although a number of investigators (Wallen and Travers, 1963; Siegel and Siegel, 1967; Stephens, 1967) have concluded that teaching methods do not account for significant differences in educational outcomes, Gage (1969) expresses the view that if specific objectives could be related to specific teaching methods and a determination of the learner's achievement and other characteristics measured and this matrix related to specific subject areas, perhaps more valid information about the effects of teaching methods on learning could be obtained. To date, this objectives-methods matrix approach has not been researched.

The term, method, as used in the reading field has variable interpretations. As Gephart (1970a) points out, method may be used to refer to the overall nature of the instruction, to the classroom organization or to the materials used and even to the "approach" involved. Faced with the dilemma of categorizing the research literature on reading methods in this project, it was decided to use a code based on the following sources: 1) the categories used by Chall in her 1967 study (it should be noted that Chall relied on author self-reports for determining the classification of materials.); 2) the methods described in the most widely quoted textbooks and professional books in the field of reading; and 3) the recommendations of the project's logic committee. Specifically, the methods were classified as follows:

1. Meaning emphasis
2. Code emphasis
   a. synthetic
   b. analytic
3. Linguistics
4. Modified Alphabet
5. Responsive Environment
6. Programmed Learning
7. Individualized Reading
8. Language Experience
9. Eclectic or Author's Own.

Were we to have applied more rigorous criteria to defining methods and restricted articles reviewed to those which described the teacher's recurrent patterns of behavior in any detail, we would have virtually nothing to report. Most of the authors of the research articles surveyed labeled their methods with terms that fit one or more of the categories above, although some indicated only the materials that were used in the experiment. There were few studies where teaching methods were explicitly described except for the projects which program teacher responses (e.g., the Southwest Regional Laboratory's Basic Concepts and Tutoring Programs) and some of the language experience studies where suggested activities for the teacher were carefully delineated.

Researchers investigating basal readers apparently assumed that the
teachers in the study followed the Teacher's Guide and rarely
specified the actual activities that were used in the classroom nor
the degree to which manuals were followed.

The only area of reading instruction where methods are clearly
specified is in remedial reading. The Fernald Method, Gillingham's
AKVD Method, and other similar techniques are described in detail in
most books on reading.

Summarizing the characteristics and limitations of the classi-
fication scheme in this review, we observe that:

1. Almost all of the methods are primarily used for
    teaching beginning reading--i.e., in Kindergarten,
    Grades 1, 2, and remedial programs. Although studies
    of reading programs from K through adult were included
    in the literature sweep, few research reports were
    found that described teaching methods at the higher
    grade levels with the exception of programmed learning
    and individualized instruction. Some studies at
    higher grade levels described and tested techniques
    for teaching specific reading skills (e.g., locating
    main ideas or reading for inference, etc.), and these
    were included in the methods matrix; however, the
    greatest proportion of research reports surveyed
    dealt with teaching decoding skills.
2. In almost all of the methods, categories and materials
    are inextricably linked with methods. For example,
    it is impossible to separate programmed learning as a
    method from the programmed materials used in the
    classroom.
3. The methods categories represent quite different con-
    cepts. Some of the methods represent emphases (or
    perhaps philosophies); some represent classroom
    organization practices (e.g., individ. lized struc-
    tion); some represent ways of simpli   g the
    graphemic system (in i.t.a., the media seems to be
    the method); and still others refer primarily to the
    kinds of materials used (e.g., programmed learning).

Bearing these limitations in mind, we will describe each method,
its knowledge base, present usage, and the present research evidence.

What is the Body of Knowledge on Which Educational Practices are Based?

Ferree (1966) in discussing the question "What constitutes a body of
knowledge? (pp. 9-26)" contrasts "knowing how" with "knowing that".
"Knowing how" he describes as the sort of knowledge that can be acquired

only by performing in contrast to "knowing that" which signifies
knowledge "embodied in linguistic symbols and ... taught and learned
through linguistic activities—reading, listening, discussion, etc."
(p. 10). Defining a body of knowledge as "An ordered set of state-
ments which have been confirmed as true or probably true," Ferree
concedes that education, at this point in time must draw its precepts
from the knowledge pool of other disciplines, especially those of
the social sciences.

He further deals with the question of whether the behavioral
sciences and other bodies of knowledge which appear to have relevance
to education are adequately developed, and simply awaiting application
to education. Quoting excerpts from Ernest Nagel's The Structure of
Science he states that "In no area of social inquiry has a body of
general laws been established, comparable with outstanding theories in
the natural sciences in scope of explanatory power or in capacity to
yield precise and reliable predictions (p. 20)." In short, the
social sciences today possess no wide ranging systems of explanation
judged as adequate by a majority of professionally competent students;
there are serious disagreements on methodological as well as substantive
questions. He points out that the offerings of the behavioral and
social sciences at present are more likely to be at the level of
particular statements, generalizations of modest proportions, and,
perhaps, at the level of "theories of middle range." Ferree cites
further evidence, however, that even with the limitations of the pre-
sent development of the social sciences, education has not made adequate
use of the material from these other disciplines that is appropriate for
its purposes.

Albee (1966) in discussing the applications of psychology to the
body of knowledge unique to the profession of education, describes
five major psychological concepts which are pertinent: 1) Individual
differences—not only do children differ from each other in obvious
physical characteristics, but they also differ from each other in
hidden but measurable ways such as the ability to learn, the ability
to conceptualize, and the motivation to achieve. Citing the early
work of the psychologists Binet and Simon who directed their efforts
toward developing techniques to identify children who would not profit
from instruction in the French educational system or could not proceed
at the same rate as the average school child, he recapitulates the
history of intelligence test development and test theory and methodology
as "among the most important areas of knowledge we have in education and
psychology (p. 35)." He also discusses the implications of our knowledge
of individual differences as applied to teachers as well as pupils and
points out the need for paying additional attention to opportunities in
education for enhancing the creativity and individuality of the teacher
as well as working conditions and salaries. 2) Maturation—Psychol-
ogists have contributed considerably to understanding the process of
development. Although the details of our knowledge of the maturational

process fills volumes, there are several major concepts which determine much that is done in education: 1) readiness and 2) the concept of the critical period. (In the latter case Albee cites examples of children with mental ages of considerably less than 6 who obviously have learned to read.). Current psychological research suggests that the young child is capable of more learning than he is credited with being ready to absorb. Such research will, in time, necessitate a revision of our cherished notions about the critical period. Implications of this are relevant to our legal requirement that children start school at age six, and Albee predicts that formal education may soon be extended downward to earlier age groups. 3) Motivational structure--Albee cites Maslow's work in describing in detail the hierarchical pattern of human motivational structure as a crucial concept for educators. Basic physiological requirements for food, warmth, etc., need satisfaction first; the next level of need is safety followed at higher levels by needs for love and affection and self esteem. The highest level is described as the need for self-actualization. Albee further states "A great deal of nonsense has been written about various techniques for accelerating or enriching the learning experiences of deprived children, without taking into account the basic psychological fact that the human motivational system is hierarchical and that higher order motives cannot operate in the presence of severe frustration at the more basic level (p. 39). In addition to the school's role in attending to preparing pupils for later learning by seeing to it that reading, writing and arithmetic skills are developed, psychologists take the position that it is even more important that the child's fundamental human needs are met so that no severe frustration will exist which may interfere with learning later. 4) Learning theory-- It is in the area of learning (defined by psychologists as "any change which is a consequence of experience, has direction and satisfies the motivating conditions of the individual") that psychological research and principles have the greatest direct application to education.

   a. Harlow's work on "learning to learn" suggests that following repeated opportunities to discover correct solutions to problems, an organism will exhibit improvement in attention, readiness, and sophistication and alertness to the fact that a solution is possible. The implication of this work, according to Albee, is that it is necessary for the child to have a long pre-school history of problem-solving experiences and that the diversification of such experience must be continued throughout the educational program.
   b. A second area of knowledge derived from the field of learning is transfer of training. Thorndike's classic studies that suggested teaching certain subjects in order to "strengthen the mind" was inappropriate and futile has had a profound effect on our understanding about the way in which practice of one skill may facilitate learning of a similar skill.
   c. The effects of reward and punishment and the studies on

conditioning have important implications for
education. According to Albee, psychologists
state with some assurance that positive reinforce-
ment is essential for the acquisition of learning
and punishment is ineffective in eliminating un-
wanted elements of behavior.

4. The applications of operant technology which have
grown from the work of Skinner are an outgrowth of
earlier studies on reward and punishment. In
addition, Skinner' findings that immediate feedback
of information and he control of situations in such
a way that chances of failing are minimized enhance
learning and form the basis for the development of
automated instruction and programmed learning.

5) Socialization models--Albee cites David Riesman's concept of
models for understanding people in different societies as relevant
to the education profession in understanding and fitting itself to the
society which supports it. Briefly, Riesman suggests that people in
evolving societies change from being tradition-directed to being
inner-directed, to being other-directed. The implications of these
models are that educators in our society are confronted with the
frustrating and baffling problems of educating pupils who remain in
the system not because of their interest and ability to learn but be-
cause of societal pressures.

Kimball (1966) discusses the view of formal education as a special
aspect of the socialization of the individual. He eliminates subject
matter and the acquisition of skills as a major point of emphasis, for
he feels that, although these can be taught and their acquisition implies
learning, they are only part of what the individual acquires in his
growth toward adulthood. He further states that what is unique to edu-
cation is the knowledge of the conditions which affect the transmission
of culture. Under this area is subsumed the relationship between teacher
and learner, the cultural tradition and social environment within which
learning occurs, the organic and psychic ca ities of the individual
to be modified through experience, and the dynamics of the learning
process itself. Kimball cites those cross-cultural studies in which
psychological theory has been combined with the methods of ethnology in
a field of culture and personality and wherein child training practices
are viewed as a mechanism for the transmission of culture as signifi-
cantly relevant to education. "The learning process must be viewed as
an aspect of the cultural milieu (p. 65)." Further, culture and language
provide the clues which can explain both what and how the child learns.

Summary. A body of knowledge is defined as "an ordered set of
statements which have been confirmed as true or at least as highly
probable."

Education draws its knowledge base primarily from the social sciences. Since the basic concepts generated by the social sciences at the present time are in no way comparable to the laws of the physical sciences, they do not provide a clear blue-print for educators to follow. Furthermore, even considering the relative vagueness of the general concepts, those that have been translated into educational practice have failed to utilize fully the information base or have been sloppy and inexact in their translation.

Five major psychological concepts that have application for education include: 1) individual differences; 2) maturation and physical growth and development; 3) motivational structure; 4) learning theory; and 5) socialization theory. In addition, reading draws heavily from studies on perception and sensation. Knowledge from the fields of anthropology, sociology, and linguistics also have relevance for education.

In the next section we will examine each of the so-called methods of reading and attempt to draw inferences in regard to the pool of basic knowledge on which their precepts are based.

Description of the Methodology Used in this Study

Chapter II (Elias) describes in detail the procedures used for the collection, selection, and evaluation of the research articles reviewed for this project. Summarizing the procedures, a logic committee rated titles and abstracts from the vast amount of literature on reading methods and made decisions as to which studies should be included in the project. Articles selected then went through a reader-review process. The first step of the review was to determine whether the article was relevant to the objectives of the study and, if so, to assign the article to the appropriate task, i.e., reading achievement, methods, or teacher education. Those research articles which were judged appropriate in content were then read by the reader-reviewer and rated, using the Gephart ordinal scales described in Appendix B. Note that there was a maximum possible cumulative rating of 16 points based on the scales: representativeness, treatment, and measurement. The reader also made a determination of whether the data analysis used by the investigator in the study was appropriate, inappropriate, or not applicable. Readers were given special training as to how to make decisions in evaluating and rating data generation and analysis techniques, e.g. weighing the size of the samples and the selection of appropriate design and methodology used, etc. (Note: readers were doctoral students enrolled at the University of California, Berkeley, who had completed course work in experimental design and statistics.)

The ratings on each of the Gephart Scales were summed arithmetically
and the following criteria used:

TABLE 16

INCLUSION-EXCLUSION CRITERIA
FOR RESEARCH ARTICLES REVIEWED

Sum of Ratings	Classification	
12 and above	High	Acceptable
8 - 11	Middle	
7 and below	Low	Non-Acceptable
No rating	Not applicable	

If one or more of the Gephart scale ratings was judged as non-
applicable to a particular study, the average of the two applicable
scores was used as the ranking for the non-applicable scale and added
in to obtain the total score.

When information provided in the reports was ambiguous or insuffi-
cient for ranking the study on any of the three Gephart scales, inde-
pendent readers made subjective estimates based on a careful reading of
the review of the study, noting especially the results section.

The reliability of reader-reviewer judgments was tested and is
reported in the chapter by Elias.

Table 17 shows the number of research studies or methods judged as
"High" quality or "Middle" quality on the Gephart scales. Proportionally
more of the studies comparing two or more methods were accepted than
those dealing with only a single method.

TABLE 17

NUMBER OF HIGH AND MIDDLE QUALITY METHODS STUDIES

Quality	Studies comparing two or more methods	Studies dealing with a single method	Total
High	69	11	80
Middle	101	63	164
Total	170	74	244

Note: The total number of 244 articles of acceptable quality
is an unduplicated count. Surveys and articles review-
ing the literature were not included in this table which
is restricted to research studies.

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TABLE 18

DISTRIBUTION OF ACCEPTABLE STUDIES DEALING WITH METHODS

Method	# Read and Evaluated	# Ranked High	% Ranked High	# Ranked Middle	% Ranked Middle	% Ranked acceptable (high and middle)
Meaning	122	26	21	37	30	63
Code	50	11	22	20	40	31
Synthetic	14	2	14	4	29	6
Analytic	10	1	10	2	20	3
Linguistics	47	11	23	6	30	17
Modified Alphabet	40	13	32	8	20	21
Responsive Environment	7	0	0	3	43	3
Programmed	51	4	7	11	22	15
Individualized	99	4	4	28	28	32
Language Experience	62	10	16	12	19	22
Eclectic and other methods	110	11	10	41	37	52
	612	93		172		265

Note:
Since many of the studies tested 2 or more methods, the totals do not reflect the actual number of articles read, but rather the number of times specific methods appeared in the studies.

Surveys and articles reviewing the literature are not included in this breakdown.

Table 18 (p.70) shows the breakdown of those studies ranked as "high" or "middle" quality that deal with different methods. Note that there are multiple entries in this table as a study may have compared several methods (e.g., linguistics, i.t.a., and synthetic phonics) and hence be entered under each method.

Table 19 shows the distribution and ratings of research studies dealing with specific materials.

TABLE 19

DISTRIBUTION AND RATINGS CF
RESEARCH STUDIES DEALING WITH SPECIFIC MATERIALS

Materials	Total No. Read	No. Rated High	No. Rated Middle	Not Accepted
Sullivan	8	0	5	3
S.R.A.	52	2	19	31
E.D.L.	14	0	7	7
Ginn	37	12	11	14
Scott Foresman	55	9	17	29
American	8	3	2	3
Words in Color	5	0	3	2
i.t.a.	37	7	5	25
Total	216	33	69	114

Table 20 shows the distribution of studies ranked as "high" and "middle" quality by grade levels. As is apparent, the majority of the studies on methods were done on primary grade children and the beginning stages of learning to read. Most of those reported for grade 3 were follow-up studies of methods used in grade 1.

TABLE 20

NUMBER OF METHODS STUDIES AT EACH GRADE LEVEL

Grade	Number		Grade	Number
1	78		9	5
2	47		10	4
3	36		11	3
4	14		12	5
5	14		Young	
6	10		Adult	10
7	12		Adult	5
8	8			

A discussion of the limitations of the Gephart Model is included in the section of this report of Research Methods.

Specific Reading Methods and Materials

Meaning Emphasis

An emphasis on meaning in teaching beginning reading has become
the hallmark of the basal readers. According to Chall (1967), from
about 1930 to the present time there has been a "consensus" of sorts
about beginning reading methods. During this period, she states, most
textbooks for teachers and published reading materials agreed on a
number of basic principles. Among these principles are:

1. The process of reading should be defined broadly to in-
   clude as major goals, from the start, not only word
   recognition but also comprehension and interpretation,
   appreciation, and application of what is read to the
   study of personal and social problems.
2. The child should start with meaningful reading of whole
   words, sentences, and stories as closely geared to his
   own experiences and interests as possible. Silent
   reading should be stressed from the start.

Chall goes on to describe other accepted principles including the
early introduction of sight words, then the analysis of whole words by
using phonics, encouraging children meanwhile to use context clues and
pictures to get meaning and avoiding phonics drill due to the dull
content of the drills. It is evident from these principles that al-
though the basal readers stress meaning, they have always included some
phonics and other techniques as well. An argument against using a
structured phonics approach is that it produces artificial and stilted
reading materials since its vocabulary is restricted to words selected
from previously taught phonics elements and is, therefore, "inevitably
meaningless and lacking in continuity (p. 15)."

Knowledge base. The rationale for emphasizing meaningful words
and sentences in beginning reading is based on sound psychological
principles. Generations of experimental psychologists and learning
theorists from Ebbinghaus' early experiments in 1885 until the presen-
day have documented well the fact that material that is meaningful is
more easily learned and better retained than material which is not
meaningful. Ausabel (1963a) summarizes the role of meaning in verbal
learning as follows. "Meaningful learning as a process presupposes...
both that the learner employs a meaningful learning set and that the
material he learns is potentially meaningful to him. Thus,...if the
learner's intention is to memorize it verbatim, both the learning pro-
cess and the learning outcomes must necessarily be rote and meaningless.
And conversely,...neither the process nor outcome of learning can pos-
sibly be meaningful if the learning task itself consists of purely
arbitrary associations...(p.22)." Ausabel further presents evidence,
however, that both rote and meaningful learning are equally retained
provided that sufficient practice and greater time is allowed for mastery
of rote-learned material.

F. Smith (1971) states that meaning serves to reduce uncertainty and emphasizes that meaning in reading is not inherent in the symbols nor the words themselves, but rather within the mind of the reader. As Smith and Dechant (1961) phrase it, "reading typically is the bringing of meaning to rather than the gaining of meaning from the page," (p. 22) and cite Horn's statement that the author does not convey ideas to the reader; he merely stimulates him to construct them out of his own experience.

Although most of the studies on the relation of meaning to verbal learning have used older students as subjects, it seems reasonable to infer that these findings would also apply to six-year-old beginning readers. We were unable, however, to find any studies that empirically verified the idea that meaning is essential to the beginning stages of learning to read. It is possible that if six-year-olds are highly motivated to learn to read (and evidence suggests that most of them are) they would be willing to put up with quite a bit of nonsense so long as they considered it necessary to attain their goal.

Smith (1971) has cautioned that letter sounds (those that are not synonymous with letter names) are meaningless. While we have found no phonics programs that do not contain words and sentences in addition to practice with letter sounds, words that are not a part of the child's meaningful vocabulary amount to nonsense syllables. Anderson and Dearborn (1952) state that when a child attempts to sound out a word through trial and error and it finally makes sense to him an example of the "a ha" phenomenon occurs--the token of insight of the Gestaltists. They further state that "little is gained at the start by teaching the child to read words, the correct pronunciation of which is unfamiliar to his ears (p. 146)."

Basal readers have long suffered attack from professional educators and the general public and press for their content. Huey (1908) expresses it rather bluntly

the most striking thing about three-fourths of them (the primers) is the inanity and disjointedness of their reading content, especially in the earlier parts. No trouble has been taken to write what the child would naturally say about the subject in hand, nor to say anything connectedly and continuously as even an adult would naturally talk about the subject. The language used often shows a patronizing attempt to 'get down to the child's level' and results in a mongrel combination of points of view and of expression that is natural neither to an adult nor a child....down in his child heart he scorns such reading-matter, although he will often plod through it to please a beloved teacher (pp. 278-9).

Times have not changed. If we compare excerpts from the primer of the McGuffey Readers (1840)- "Is pa an ox?" with a 1965 linguistic reader-

"Can a hut rot in a pot?" with a 1956 Basal Reader, "See Spot run,"
and a 1952 phonics book "Look, Tag, Look," "See Jim go.", we find
little difference. The crux of the issue, however, is that much of
the criticism concerning the content is based on excerpts from pre-
primers which have very restricted vocabularies regardless of their
emphasis. If these criticisms have merit then the present trend to
increase the vocabulary load in basal readers and write materials in
a more natural language should help counter some of the criticisms.

If we accept the learning psychologists' premise that meaning
is in the mind of the student, not in the material, we might infer
that what is considered meaningful to the author and teacher and
parent may not necessarily be meaningful to the child and vice versa.
All materials used to teach beginning reading contain words, sentences,
and content that the authors believe to be meaningful and interesting
to children. However, we can find no empirical studies that indicate
the degree to which materials differ on a "meaningfulness" continuum
as related to reading achievement and, therefore, can only conclude
that the vociferous debate between "code-emphasis" and "meaning-
emphasis" proponents is meaningless and their present research attempts
useless.

Code Emphasis

For many years, textbooks used in teaching prospective teachers
have unanimously stressed the importance of using a combination or
eclectic method in teaching beginning reading. Despite such apparent
consensus, the battle between proponents of the synthetic (phonics)
and the analytic (whole-word or "look-say") methods has raged in the
U.S. for over 100 years. Periodically and predictably, one side has
held the upper hand every two decades or so only to be supplanted by
the other. Such change would then inevitably be welcomed by educators
with enthusiasm and dedication. According to Nila B. Smith (1970),
Noah Webster's Spelling Book, which appeared first in 1782 and even-
tually sold a reputed 24 million copies, was a forerunner of today's
phonics programs. The analytic method probably originated with
Comenius' "Orbis Pictus" published in 1657 which contained pictures
and whole words, enabling the child to learn to read without using
any "tedious ordinary spelling." Comenius' book was revived in the
U.S. around 1791 (Huey, 1908). Debates have raged ever since as to
how and when to teach phonics.

According to Dodds (1969), there was a widespread reaction against
phonics beginning in the late twenties which resulted in a general
abandonment of the phonics method in favor of the whole word approach.
In the fifties, the lay press took up the cudgel for phonics and
women's magazines split educators into two camps, pro- and anti-phonics.
Non-educators like Rudolph Flesch and Arthur Trace wrote best selling
books claiming that more teaching of phonics was the answer to the
reading problem. In the sixties, the controversy became a political

issue, particularly in the campaign for State Superintendent of Schools in California. Evidence that state legislation requiring phonics instruction in the California schools had little effect on reading achievement has been summarized by Ruddell (1970a).

Description of the phonics and whole word approach. Typically, the phonics and whole word approach as they are presently described differ only in the sequence in which letter sounds and blends are introduced. In the phonics approach the child learns the individual letter sounds first and then combines them into words. Phonics texts vary as to which sounds are introduced first (i.e., some teach the short vowel sounds first and others the long.) Usually, phonics rules are introduced early (i.e., "when two vowels go walking, the first one does the talking", etc.). In the whole word approach, words are introduced first and the child learns to recognize the word, sometimes by associating it with a picture, sometimes by hearing it. Simple stories with the same words repeated frequently give the child practice in mastering words, and emphasis is placed on using cues from context, configuration, and structural analysis (word parts). Letter sounds and blends are taught after the child develops a sight vocabulary.

Proponents of the whole word method have raised many objections to phonics. David Bear, in an article in the February 1964 Elementary School Journal, summarizes the objections to synthetic methods as resulting in the following:

1. Word calling;
2. Overemphasis on the mechanics of reading to the neglect of reading for meaning;
3. Lessened interest in reading;
4. Unnatural articulation;
5. Little transfer of learning to normal reading situations;
6. Lack of carry-over of letter-type phonics to the pronunciation of multisyllable words;
7. Poor spelling because of the unphonetic character of the English language;
8. Retarded development of adequate speed in reading.

A number of educators (Clymer, 1963; Bailey, 1967 and 1969; Emans, 1967; Burmeister, 1968; Burrows and Lowrie, 1963, and others) have studied the usefulness of the commonly taught phonics rules by computing the percentage of words that fit the rules from a list of frequently used words. Although results vary, Clymer's work might be considered typical. Of 45 rules studied, he found only 18 had a utility value of 75% or more.

Frank Smith (1971) presents an even more devastating viewpoint in his discussion of synthetic phonics. Ideally, he says, phonics is a strategy for mediated word identification, a system for determining

the sound and meaning of a word that is not identified immediately.
He questions the value of phonics rules in learning to read because
of the complex and often remote relationship between the sounds of
English words and their spelling. Smith presents evidence from a
study which analysed 6,092 frequently used words and revealed there
were 166 different rules for pronunciation. Over 10 percent of these
words were unaccounted for and would have to be learned as exceptions.
He further raises the question of the desirability of teaching the
child phonics rules at all for even if the child knew the 79 rules
applying to vowel pronunciation, he would still be unable to determine
which rule applied. Smith points out that despite the limited
capacity of human memory, children do learn to read because they
have available other clues such as context and their own experience.

Criticisms of the whole-word method are centered around complaints
that children cannot attack new or unfamiliar words and sound them out.
Sometimes poor spelling is mentioned as resulting from teaching reading
by this method.

Knowledge base. Frank Smith (1971) points out that the whole-
word and phonics methods must each contain a kernel of truth else they
would not have survived in the folklore of reading for so long a period.
He states that the whole-word view is based on the premise that readers
do not stop to identify individual letters or groups of letters. The
research inevitably quoted to support this premise is Cattell's work
(contained in J. McK. Cattell Man of Science, 1860-1944, Lancaster,
Penn: Science Press, 1947. Vol. 1) on recognition of tachistoscopically
presented material. Cattell found that a viewer can recognize four or
five random letters or four or five words form a single tachistoscopic
presentation in the same amount of time. In other words, it takes no
longer to recognize a single word than a single letter. Cattell also
reported that a word may be identifiable even when none of its letters
can be recognized, and, further, that successively presented letters or
words cannot be identified any faster than five or six per second.
Smith (1971) indicates that short term memory limits our speed of visual
recognition. Hence, it would seem that if letters and words are
recognized equally fast, then identification cannot be made letter by
letter and it is assumed that the subject is responding to configuration
clues. These studies have often been criticized because the subjects
used were skilled readers and the process involved in learning to
read is certainly quite different from the symbol recognition process
used by the mature reader.

The phonics method (letter-by-letter identification in this sense)
has also some support from tachistoscopic studies. Smith (1971)
describes an experiment where the word "fashixn" is exposed on a
tachistoscope. Readers typically identify the word as "fashion" but
report that there's something wrong with it, though they may not say
that there's an "x" in it instead of an "o". Another argument is that
readers are sensitive to the predictability of English letter sequences

and that learning letter sounds is a more economical way to build
a vocabulary than learning separately 50,000 or so words.

Smith (1971) proposes a rational rapprochement between the two
views in his feature-analytic model, suggesting that a learner
identifies words by using both the features of words (configurations
and letters) and his knowledge of the sequence of letters in English.

Materials. A comprehensive list of materials "purported to be
distinctly phonics programs", as opposed to basal readers and other
materials which combine phonics with other approaches, was compiled
by the Educational Products Information Exchange and published by them
as "Product Information Supplement #7: Text-based Phonics Programs"
in April, 1969. The list includes 139 titles published by 34 companies
and includes information on format, grade level, content description,
cost, associated materials, and field testing data. Over forty per-
cent of the materials listed have been field tested. Sixteen abstracts
of field test studies are also presented.

Additional materials are listed in ERIC-CRIER's Guide to Materials
in Reading and their Supplements. These publications contain brief
descriptions of the products but do not indicate field testing in-
formation (Harris, L., 1968; Berridge, 1969).

Use frequency. Many authors report that phonics books and exer-
cises are being widely used as supplementary materials in teaching
reading in U.S. elementary schools today. Although we do not have
"hard" data from nationwide surveys, such conclusions seem reasonable
since the New England Reading Instruction Survey of 1967-8 shows that
37% of the elementary principals reported that intensive phonics mate-
rials were used in their basic program; 48% stated that they were used
as supplemental materials; 3% used them in experimental programs; and
only 11% reported that intensive phonics materials were not available
in their school.

In the same survey first and fourth grade teachers also reported
on the extent of their use of phonics materials (Table 21) and the
importance they placed on emphasizing both phonics and configuration
skills (Table 22).

TABLE 21

USE FREQUENCY OF INTENSIVE PHONIC MATERIAL
(In New England States Survey, 1967-68)

Frequency	First Grade Teachers (%)	Fourth Grade Teachers (%)
much	76.7	28.7
some	17.6	42.4
little	2.2	20.6
never or not available	.3	6.4

TABLE 22

EMPHASIS IN DEVELOPING WORD RECOGNITION
(In New England States Survey, 1967-68)

Frequency	First Grade Teachers (%)	Fourth Grade Teachers (%)
Configuration (whole word)		
much	38.7	26.7
some	41.9	47.6
little	14.0	17.1
none	3.5	7.0
Phonics (letter sounds)		
much	93.5	75.3
some	4.5	12.1
little	.4	1.9
none	.4	.2

(In addition, the majority of both 1st and 4th grade teachers in this survey also said they place much stress on linguistics (word patterns), context, structural analysis (affixes, roots and syllables) and reference skills.)

Linguistic Method

During the past decade, there has been increasing focus on and attempts to apply ideas from the rapidly changing field of linguistics to reading instruction and materials. While Leonard Bloomfield, a noted linguist, became interested in reading in the 1930's, it took over thirty years for reading materials based on his ideas to be developed and published. Basically, he recommended that : 1) children should start reading instruction by learning letter names not sounds; 2) beginning readers should be taught words that are phonetically consistent, e.g., three letter words (consonant-vowel-consonant) with short vowels; 3) a principle of minimal variation should be used, i.e., where words differ only by one letter; 4) phonics rules should be avoided; and 5) words should be used always in sentences (Harris, 1970).

C.C. Fries and Carl LeFevre have also written books on linguistics to help teachers understand the nature of language. As a result of their efforts many papers have been presented at professional meetings on the relation between linguistics and reading. A number of materials based on these ideas have been published.

Weaver (1969) describes several linguistic assumptions that he feels most linguists accept to some degree and which "often appear in communications to reading specialists as natural laws" yet lack empirical confirmation:

1) Speech is the only possible primary language coding modality.
2) Reading is nothing but interpreting written speech.
3) There is no difference in producing language and interpreting it.
4) Language is a system organized apart from its referential function.
5) There are no such linguistic units as "words." (p. 107).

He further contends that the more dramatic ideas from linguistics tend to be introduced in the school, often grossly misunderstood and misapplied.

Linguists do not agree among themselves on all of the statements above and no two linguistic reading series agree very closely on details. (Harris, 1970)

Currently, many basal readers have incorporated linguistic ideas such as presenting stories in a more natural language with less artificially constricted vocabularies. Also, the ideas of linguists, like Labov, who have studied Black English dialect and its grammatical structure have helped reading teachers acquire a better understanding of Black dialect and how it affects the acquisition of reading skills.

Materials. It is difficult to identify a "pure linguistic" book since recently authors are developing "linguistically-based basal readers" and intermixing linguistic principles with synthetic phonics: e.g., Cynthia D. Buchanan and Sullivan Associates' Programmed Reading (McGraw-Hill N.Y.); Bloomfield and Barnhart's Let's Read series (Bronxville, N.Y., 1963); Charles Fries et al. A Basic Reading Series Developed Upon Linguistic Principles (Fries Publications, Ann Arbor, Michigan); McCracken and Walcutt's Basic Reading (Lippincott Company, Philadelphia).

Use frequency. The only evidence we found that teachers might be teaching "linguistic" concepts was contained in the New England Survey 1967-8 where teachers were asked, "How much emphasis do you place on teaching linguistics (word patterns)?" Forty-three per cent of the first grade teachers and 25% of the fourth grade teachers responded "much." However, there was no information on what specific materials they may have used.

Research results. Although 11 studies described as testing the linguistics method ranked high on the Gephart criteria, none of the results showed conclusively that students taught by this method showed significantly higher reading achievement gains than control subjects. In those few cases where linguistically taught subjects scored higher on sub-tests, the gains disappeared in followup studies or the findings were questionable since a disproportionate number of students in the experimental groups were kept back a grade and not promoted.

Modified Alphabet

Mathews (1966) has written that efforts to improve English spelling have been made for over 400 years and probably will never cease. Throughout the past century and a half, many educators have felt that one reason children have difficulty in learning to read is the inconsistency between the letters and sounds of the English language.

Although there are presently available a number of simplified English alphabets such as Unifon and the Laubach alphabet, the most widely known is i.t.a. or Pitman's Augmented Roman Alphabet, developed by Sir James Pitman of England.

The direct historical antecendent of i.t.a. was Fonotype devised by Sir Isaac Pitman, grandfather of Sir James, in 1837. Sir Isaac established reading and writing schools throughout England and Scotland and word of his new method spread quickly to the U.S. Then, as now, experiments were conducted that indicated children learn to read much more quickly and with greater pleasure "using the new alphabet." Further, they learned to read so well in the new alphabet that they had little difficulty "shifting to a traditional orthography." Claims were made that through use of the new alphabet, children could be taught to read in 1/15 to 1/20th of the time it normally took (Mathews, 1966).

So enthusiastic were the users of phonotypy that soon competition, in
the form of the Leigh alphabet, developed. It, too, got "wonderful
results," improved articulation, eased foreign accents and dialect prob-
lems, and even was said to improve the child's reasoning ability. Pro-
ponents of both alphabets claimed that children had no problems in
learning traditional spelling. Despite the reported success of the
new Leigh alphabet and its widespread use in the 1860's and '70's in
the U.S., studies and use had declined by the end of the 19th century.
Mathews (1966) speculates that interest by philologists in reforming
English spelling and, hence, helping everyone, obviated any need at
that time for a special initial alphabet. However, as a result of
reports by the British army that during World War II 25-35% of their
men either could not read at all or read too poorly for practical pur-
poses (i.e., were functionally illiterate), bills were proposed to the
House of Commons to improve the reading ability of school children.
Sir James Pitman was instrumental in getting a bill passed to author-
ize an investigation of the effectiveness of a method of teaching
beginning reading based on a consistent spelling pattern, i.e., i.t.a.

The alphabet in i.t.a. contains all of the conventional letters
but Q and X. Additional characters were devised to make up the forty-
six different sounds in English. These new characters resemble the
traditional alphabet visually and each character stands for only one
speech sound. Strictly speaking, i.t.a. is not a phonetic alphabet
since it deviates from phonic principles in the interest of increasing
the ease with which the child, at the appropriate time, can transfer
to using conventional printed material. (Mathews, 1966)

In developing i.t.a., Sir James Pitman utilized the results of
early studies on the psychology of reading. For example, to expedite
transfer, the visual appearance of words in i.t.a. resemble those in
traditional printing. Huey (1908) pointed out that the upper half
of a word or letter is obviously more important for perception than
the lower half, and gave illustrations from mutiliated passages to prove
his point. Huey cites further evidence from Javal's work on eye-
movements which shows that during the course of reading, the eye's
fixation point moves along between the middle and top of the smaller
letters, thus giving an advantage in perception to the upper half of
the line. Further, in i.t.a. the new graphemes are formed by joining
together two familiar letters which are taught as one sound and one
letter. No capital letters appear in i.t.a.

The most comprehensive testing of i.t.a. in the United States was
conducted at Bethlehem, Pennsylvania in 1963 under the direction of
Mazurkiewicz and Tanyzer. Since that time, many other experiments have
been conducted (Mazurkiewicz, 1967a).

Materials. Two reading series published in i.t.a. have been the
most widely used, although additional materials are now available.
One, the Downing Readers prepared by John Downing, was published in

London in the early sixties. The other is the i/t/a/ Early-to-Read series by Mazurkiewicz and Tanyzer which is published in the United States. Downing's series is also printed in traditional type, but thus far the Tanyzer and Mazurkiewicz materials are available only in i.t.a. The i.t.a. authors stress the fact that i.t.a. is a modified alphabet, not a reading method, and that teachers may use whatever techniques or emphases they prefer—analytic, synthetic, or language experience, etc. However, in U.S. practice, i.t.a. instruction has placed greater stress on learning the alphabet and phonics, calls for the children to do more writing, and has a heavier vocabulary load than beginning materials printed in traditional orthography. (Chall, 1967).

Usage. Although there are no recent reliable data from nation-wide surveys on the use of different reading methods, there is information from the 1967-68 survey of reading instruction in the New England schools mentioned earlier in this report. Responses from 3,163 elementary principals to a question on the major use of modified alphabets in their current reading program showed the following breakdown:

	Percent
Basic	2.5
Supplemental	6.3
Experimental	4.0
Not available	85.5

A total of 12.8% of reporting schools indicated that they were making some use of modified alphabet materials in their reading programs. This figure is consistent with unpublished information obtained from one of the U.S. authors of i.t.a. books who stated that i.t.a. presently has about ten percent of the beginning reading materials market.

Research findings. Many articles have been published about i.t.a. in both the public press and in the professional literature. Numerous research studies on i.t.a. have been done both in England and the United States. The most comprehensive review of the research literature is contained in a recent book by F. W. Warburton and Vera Southgate, i.t.a.: An Independent Evaluation, published in 1969. Specifically, Warburton and Southgate approached the evaluation of i.t.a. research from two lines: 1) they collected, through interviews and questionnaires, and evaluated views of knowledgeable people who had been closely connected with the use of i.t.a.; and 2) they evaluated all of the published research evidence on i.t.a. in England and abroad, including an appraisal of the methodology behind the results of the experiments. As a consequence of this evaluation, Warburton and Southgate made recommendations as to future projects which they felt might be necessary for future testing of i.t.a.

This review of the judgments of users of i.t.a. included a questionnaire distribution sent to all infant schools in England and Wales. It was found that about nine percent of the infant schools were using

i.t.a. Knowledgeable people who were interviewed concerning their reaction to i.t.a. included Sir James Pitman, prominent educators, government officials, lecturers, writers, and psychologists. Furthermore, the reactions of the children themselves who were learning through i.t.a. were determined and this phase of the study was extended to both parents and teachers. Evidence was collected through interviews, letters, and group discussions. Approximately 400 individuals gave verbal evidence in this phase of the evaluation.

Seventeen of the most significant pieces of research on i.t.a. were critically evaluated in the Warburton and Southgate study, using a number of specific criteria. Despite the lack of statistical rigor found in many of the studies (e.g., analysis of covariance was seldom used), they concluded that: 1) despite many qualifications, i.t.a. is superior to traditional orthography in teaching young children to read but this advantage may be lost after the transition; 2) the research evidence obtained in the nited States strongly suggests that i.t.a. reading programs are more efficient than traditional orthography programs, even after the transition. However, they note that the experimental design of the American investigations made it logically impossible to be certain that the superiorities found in i.t.a. groups were due to the alphabet itself and not to the reading materials. In the British studies the content of materials used for the experimental i.t.a. subjects was the same used with the control subjects and only the printing was varied. In the U.S. studies, new materials were developed and printed in i.t.a. for experimental groups and tested against control groups using regular basal readers.[1]

Warburton and Southgate report that although results are not invariably in favor of i.t.a. they are rarely in the opposite direction and the magnitude of the differences found in its favor is unusually high. They note that i.t.a. has been favorably received by practicing teachers over a sufficient period of time so that the novelty of the technique is not the sole explanation of its success. They analyzed the following findings: superiority in word recognition; accuracy in speed of reading after three years of instruction when the medium of testing was traditional orthography; superiority in language skills; superiority in oral reading of phonetically consistent words; and the effects of the child's ability to spell at later ages. The results further indicated that i.t.a. enhances children's enjoyment of reading and increased their writing productivity as a function of how much time the teachers devoted to the student.

There was some indication from the Warburton and Southgate review of 17 research studies that, immediately after transfer to traditional

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[1]Mazurkiewicz is presently conducting a study where both experimental (i.t.a.) groups and control (traditional orthography) groups are using the same materials--the Early-to-Read Series.

orthography. Children trained on i.t.a. had a brief period of no
progress but that they soon continued to advance. They note that
misconceptions have arisen about the use of i.t.a., particularly in
the U.S., including the view that it is a way of forcing young
children to learn to read prematurely. Downing's attempts to dispel
this misconception were also discussed.

In terms of the criteria used in this USOE project, proportionally
more (34%) of modified alphabet articles reviewed were ranked high on
the Gephart model than research studies on any of the other methods.

There are several factors that could account for this. First,
all of the articles reviewed under the "modified alphabets" label
were on i.t.a., and since i.t.a. is a radically different way of
teaching reading through changing the alphabet, it has been questioned
and challenged by both educators and the general public since its in-
ception. Sir James Pitman employed John Downing, then an industrial
psychologist, to conduct the early experiments on i.t.a. in England.
Similarly, the U.S. i.t.a. proponents, with the aid of large foundation
grants, launched large-scale experiments aimed at demonstrating its
value and dispelling the criticisms that learning to read and write
in i.t.a. would produce poor spellers and create problems when the
children began to read regular print. In this case, it was necessary
to demonstrate to a skeptical public that i.t.a. would work, using the
most modern and sophisticated scientific research techniques available.
Coupled with their heavy emphasis on research, i.t.a. advocates have
been both enthusiastic and zealous in their attempts to convert school
personnel and the public to their way of thinking. This enthusiasm
makes it almost impossible to design studies comparing i.t.a. with
traditional methods that control on the Hawthorne effect.

The studies reviewed for this project frequently showed that
first graders taught i.t.a. scored higher than first graders taught
traditional orthography on tests of oral word identification and
pronunciation of phonetically consistent words. A number of studies
revealed that i.t.a. students wrote longer sentences (especially when
writing was stressed in the programs), but rarely did i.t.a. students
excel in paragraph comprehension. Inevitably, these positive effects
disappear when children are retested in second and/or third grade.
Obviously, children do learn to read using i.t.a. and probably as
rapidly as they do with other techniques. The unanswered question is
whether it is worth the bother of purchasing specially printed books,
preparing special materials, and requiring teachers to learn the new
alphabet. Only time will tell whether this technique will persist
or follow its predecessors into oblivion.

Responsive Environment

The term, responsive environment method, is presently used to
refer to two quite different but related approaches to reading

instruction: 1) a type of classroom organization where the teacher provides a variety of suitable experiences and materials in a relatively unstructured setting and the child has the freedom to select what he wishes to do - the current prototype of this method is the British Infant School Model; and 2) a teacher-less computer-based reading environment such as the Talking Typewriter developed by O. K. Moore and other machine programs derived from his ideas (e.g., Borg-Warner's Reading 400.)

Knowledge base. The basic pool of knowledge on which the responsive environment methods are based comes from psychological studies on child growth and development, maturation, readiness, motivation and learning. Two concepts underlie the practices: self-pacing as opposed to forced learning and utilizing the child's self-seeking behavior.

For example, Anderson and Dearborn (1952) describe "pacing" as an educational method keyed to the developmental pattern of the child as opposed to "forcing" the child to learn before he is ready. The general guiding consideration of the pacing method is that each child, when ready, is given the individual help and encouragement he needs to read. The teacher relies on the "seeking behavior" of the children. The rationale for this is that children of the same age differ in growth patterns in their reactions to the environment. Children are not passive recipients of stimulation but react selectively to the surroundings and create their own world of experience. This assumes that children will reject experiences for which they are not ready.

Proponents of a responsive environment method further cite Olsen's contention that the role of the teacher is to provide a school environment in which children may find suitable experiences of a wide variety in kind and difficulty. In such an environment the child becomes the judge of whether or not and at what time he should be consuming reading materials. It is assumed that children will learn to read with equal ease if the teacher and parent are willing to relax, wait, and let nature take its course. There must be an opportunity for reading and a social demand for it, and the argument is that if these conditions are met, children should learn to read just as inevitably as they learn to talk, so long as the same patience is exercised and the same opportunity for individual growth is granted. The fact that some bright students do learn to read without instruction before they attend first grade is sometimes used as an example of the efficacy of the method.

In a sense, current writing on the responsive environment classroom method reflects a revival of the Natural Method of teaching reading developed and described by Boney (1942) and used in the Nassau School in 1939, as well as the view of other proponents of the progressive movement of that period.

Omar K. Moore conducted experiments in the early 1960's to teach very young children to read and write using the typewriter. Influenced by the research of B. F. Skinner on operant conditioning and the studies of Maria Montessori, he developed the concept of the talking typewriter as a responsive environment for learning to read. The machine consists of a color-coded electric typewriter, a recorder, a speaker, a visual display exhibiter on which words appear, a pointer, and a slide projector coordinated by a small computer. Essentially, the machine teaches the child by talking and responding in the same manner as a teacher does; but the child is alone in a booth and the machine is constructed so that he cannot make errors. The materials used can be individually programmed to meet the needs of each student through materials from conventional basal readers or story books or whatever can be used once the child has learned the letters and some sounds.

The talking typewriter (Edison Responsive Environment Learning System) has been used mainly in remedial reading situations. Most of the articles referring to its use in professional literature consist of case studies with impressive results or glowing descriptions and testimonials. However, a recent study by Frazier and Zaslav (1970) showed that a small group of 11 experimental subjects using the machine made significant improvement in word recognition, reading accuracy and comprehension as compared with control subjects, although there were problems in controlling the specific instructional procedures for equating treatment in the two groups. However, as Frazier and Zaslav point out, there is a need for further verification of the effectiveness of this machine since it is extremely expensive. It costs $40,000 initially plus upkeep and requires two full-time program developers to provide appropriate materials for maximum usage by 18 pupils per day.

Other less expensive devices such as the Borg-Warner Reading 400 program have been developed based on the rationale of the talking typewriter, and experiments with similar methods are being conducted by the Far West Laboratory for Educational Research and Development. At this time there is no published research attesting to their effectiveness.

Usage. Although the published literature suggests that numbers of schools are experimenting with the classroom management techniques advocated by responsive environment proponents, there is no evidence from the surveys or articles reviewed that this affects more than very small numbers of students. There is presently no research evidence that this approach is effective although, undoubtedly, studies are in process. Recent books and articles in the public press and the professional literature eulogizing the British Infant School Model, and such books as Silberman's Crisis in the Classroom may eventually have an impact on reading instructional practices (1970).

The prohibitively high per-pupil cost of the Talking Typewriter has limited and unquestionably will continue to limit widespread use of this device.

Programmed Instruction

Although programmed instruction traces its roots back to the 19th century or possibly even earlier, it is generally agreed that the pioneer work in the field was done by Sydney L. Pressey at Ohio State University who published an article on his teaching machine in School and Society in 1926. His machine was a self-reporting, multiple-choice reaction apparatus. Credit for the currently popular programmed learning-teaching machine movement is given to B. F. Skinner, a Harvard University psychologist, whose research on operant behavior with animals was applied to human learning in the mid-fifties.

The earliest teaching machine used by Skinner required a student to construct a response to a small unit of information, technically called a frame. A frame could vary in length from a single sentence to several paragraphs. Each frame required some kind of response from a student; that is, he must answer a question or fill in a blank. Having completed his response, the student would move to the next frame where he would be told automatically the correct answer. A full set of some number of frames is called a program.

Most of the early programs were developed on the premise that the student should be correct most of the time in his responses. To assure such correctness, it was necessary to break the information down into small learning steps or bits. These bits were arranged in a careful sequence aimed at arriving at a specific goal. The actual arrangement of the steps was made first on some logical basis by the programmer and then verified or revised by student responses. The criterion used for revision was the number of errors the students made. If students made a large number of errors they were not understanding the material and might need additional explanations or smaller steps. After technical acceptance of the series of steps was reached, a student could work on the program independently and at his own rate.

In sequencing the presentation of the material in a program to a student, two methods are used. The first, known as the linear programming technique, has material arranged in a single ordered sequence; the student must work from the first through the last item. The second method for determining sequence of presentation is called a branching program. In this approach, the student follows his own route through the material. At given points in the sequence, if he gets the correct answer he may skip a frame or, if he misses an item, he may be rerouted through a series of review frames.

This sequential presentation of bits of information in small steps or frames, each requiring a response on the part of the student, is the basis of the programmed method. Whether the program is printed in a single book, handed out on separate mimeographed sheets, or included in an elaborate teaching machine or a computer, the approach is the same. While books lend themselves better to branching than do most teaching

machines, elaborate branching programs have been developed for computer-assisted instruction.

Knowledge base. The ideas that led to the development of programmed learning came directly out of Skinner's research in operant conditioning on animals. Specifically, he was attempting to apply the following psychological principles to human verbal learning:

1. Knowledge can be broken into small steps and a student can reach the whole of it by progressing sequentially through the sequences of steps;
2. When students respond correctly, they indicate understanding of the material;
3. By looking at the correct answer after his response, the student gets immediate feedback. Knowing he is correct is reinforcing;
4. The orderly sequence in which frames are arranged shapes or gradually leads the student through the correct steps to attain a desired learning objective;
5. Setting specific goals induces a desirable motivational effect on the student;
6. Revision based on student responses puts the learner into the situation and involves his active participation;
7. Enabling the student to proceed at his own rate involves the psychological concept of self-pacing.

One limitation of applying programming to different subject areas is that it is often difficult to get agreement from experts in a subject field as to the appropriate sequencing of steps necessary to learn a concept. Mathematics, a subject that requires deductive reasoning and has an ordered sequence, has been apparently fairly ease to program. However, materials in social science and the humanities have presented more difficulties in attempting to write sequentially ordered frames.

Teaching machines and programmed learning materials were used early in reading instruction to teach vocabulary, phonics principles, skills in breaking words into syllables, prefixes, and affixes.

By and large these early programs were primarily valuable in conveying specific factual information or to develop specific reading skills. However, by including what is termed a panel rather than a few paragraphs, more sophisticated reading passages were later introduced. For example, a page of written material and comprehension questions asked about it might constitute a panel. In this sense, many of the presently used multi-level materials are really learning programs. For example, the SRA Reading for Understanding card program which has cards with ten short paragraphs and a multiple-choice completion question or statement graded at different levels essentially constitutes a learning program. So do the SRA lab kits and many of the currently available reading kits involving graded reading exercises.

Materials. Programmed learning materials have an advantage of being particularly useful for individualized instruction since each student can be given a program to work on involving the particular skills that he may need. Programmed instructional principles have now been assimilated in many workbooks in reading. Answers are frequently given so the student can check his own work, and there is a greater tendency for materials to be arranged in a sequential order. The Sullivan reading series, for example, is essentially a learning program as are many workbooks on vocabulary and spelling skills.

The present trend is to de-emphasize teaching machines because of their expense and other problems and toward increased use of the programmed textbooks or exercise books.

Programmed learning materials are not limited to teaching skills at the elementary level but also are widely used in high school and college reading programs. Many high schools and most colleges have reading laboratories that are equipped with reading machines and programmed learning materials. An example of a complete skills system is the McGraw-Hill Basic Systems Series which includes programmed workbooks on a variety of reading skills, study skills, vocabulary, spelling, mathematics, and writing. This series is designed for the use of junior college and college students and has been field-tested.

Komoski (1971) has indicated that there are approximately 4,000 programmed instructional materials for use in the schools. Approximately 500 of these must be used in specific types of teaching machines. We have no information as to what proportion of these materials are specifically concerned with reading instruction, however.

Komoski has stated to a Congressional sub-committee that the most discouraging area investigated in looking at learner-verified materials is that of programmed instruction (1971). Although research in programmed instruction did much to develop and refine the process of learner verification and revision, and one would expect to find that all or at least the great majority of such materials had been thoroughly tested, such is not the case. The Educational Products Information Exchange Institute examined the programmed items in use in major curriculum areas in school and found that research evidence was available for only 7% of these materials while some field testing was claimed for another 8%.

Komoski reports that although all of the major educational publishers are moving in the direction of "systems of materials" involving a multitude of media and methods, interviews with these researchers indicate that they are not paying much attention to testing materials. Most have not and do not intend to field test.

Computer-assisted instruction in reading is based on programmed learning concepts as are the materials developed in some of the newer

systems for reading: e.g., the Southwest Regional Laboratory (SWRL)
Communications Skills Programs and the Wisconsin Design for Reading
Skill Development to mention just two examples.

A First Year Communications Skills Program designed for kinder-
garten children and covering basic communications skills (including
naming the letters of the alphabet, and reading simple selections)
has been developed by the Southwest Regional Laboratory for Educational
Research and Development. Throughout the SWRL program the reading
skills to be acquired are listed explicitly and their successful
mastery is the goal of instruction. This material has been learner-
verified by gathering data over a four year period of product devel-
opment during which the units were continuously tried out with learners
and accordingly revised. At this point, mastery has been verified
through use with more than 30,000 children in twelve states. Reports
from the Southwest Regional Laboratory's materials did not survive the
Gephart standards since complete field testing reports were not avail-
able and the Gephart model does not fit the kind of learner verification
analysis that is used in the SWRL studies. Most of the published
reports on this material involve initial try-out reports or studies
on basic factors, use small samples, and are concerned with the devel-
opment of products. As such, the studies are not relevant to the task
of this project.

Nevertheless, the SWRL program appears to be an important contri-
bution which should be recognized here. SWRL reading systems are
designed to supplement, not supplant, the regular school reading program.
Additional materials for higher grade levels are presently being devel-
oped for upper grade levels in connection with the Harper Row Basal
Reader Series. Unfortunately, if SWRL's development of materials for
use in reading programs continues at the present rate, and is funded in
the same manner it has been, we can look forward to materials being
ready for classrooms to use at the sixth grade level by 1995.

In The Wisconsin Design for Reading Skills Development (Otto and
Askov, 1970), another systems approach for teaching reading has been
developed by the Wisconsin Research and Development Center for Cognitive
Learning. This program is designed specifically to provide individually
guided instruction on the skill development aspects of reading instruc-
tion in the elementary school from grades one through six. It is not
a total instructional program in reading. What the design does is to
provide a framework through which a skill development program can be
worked out in a local school setting. The methodology of the Wisconsin
Design is described as eclectic; the program involves flexible grouping
and pacing and assumes that teachers who know their pupils are in the
best position to guide instruction. In other words, the design offers
possibilities for the skilled teacher, not a complete program nor
specific prescriptions for any child or school.

The Wisconsin Design assumes that sufficient materials for reading already exist. The aim of the developers is to make more efficient use of the available published materials rather than adding more materials to the abundance already produced.

The design comprises a number of interrelated components:

(1) An outline of reading skills and related behavioral objectives;
(2) guides to informal individual skill observation;
(3) tests for skill assessment designed for group or individual administration;
(4) several alternative means for individual and group record keeping;
(5) a model compendium of published materials for teaching the word attack, comprehension, and study skills;
(6) collected teacher-directed activities and procedures for teaching the word attack, comprehension, and study skills;
(7) guidelines for directing observations of pupil performance and planning pupil activities in the areas of self-directed, interpretive, and creative reading; and
(8) guidelines for implementing the system.

The skills included in the Outline are grouped in six major areas: word attack skills, comprehension skills, study skills, self-directed reading skills, interpretive reading skills, and creative reading skills. The skills are clustered at five grade levels with specific objectives listed for each.

The Wisconsin Design for Reading Skills Development has been tested on several schools between 1968 and 1970. Additional field testing studies are reported to be in progress.

Use frequency. Although there was no information from recent national surveys which describe the distribution and use of programmed materials it is safe to say that they are widely available in schools throughout the nation. However, one might raise the question as to whether and to what extent these materials are actually used.

The only evidence available comes again from the 1967-8 survey of reading instruction in the New England schools. Table 23 below gives the results of what teachers at the first, fourth, seventh, and tenth grades report about the use of programmed learning materials and multi-level kits in reading. One can also determine from this table the difference between the availability and usage of these materials.

TABLE 23

USE OF PROGRAMMED MATERIALS AND MULTI-LEVEL KITS
IN DEVELOPMENTAL READING PROGRAMS

(Results of New England Public School Survey 1967-8)

In teaching reading, how much use is made of multi-level kits and programmed instruction materials?	Teachers' Responses (in percentages)			
	First Grade	Fourth Grade	Seventh Grade	Tenth Grade
Much	8.6	11.0	14.5	18.5
Some	18.6	24.0	37.8	25.9
Little	13.8	14.0	21.5	19.9
Never, though available	5.5	5.8	5.2	7.7
Not available	50.6	43.0	19.3	23.9

As Table 23 shows, seventh and tenth grade teachers are more likely to have programmed learning materials and multi-level kits available in their developmental classes (about three-quarters of them do) than first and fourth grade teachers. However, five to seven percent of all groups report they never use the materials though they are available and 13-20% of the groups report using them very little. The greatest use seems to be at seventh grade level where over half of the teachers report using these materials some or much of the time.

Results of the research on programmed instruction. Only 7% of the articles reviewed on programmed learning ranked as "high" on the Gephart rating system. None of the research articles on the Sullivan materials was ranked "high" on the Gephart model.

Individualized Instruction

Albert J. Harris (1970) characterizes individualized reading as a classroom method where individual reading of a variety of reading materials is the core of the method and systematic instruction with basal readers is eliminated. In individualized instruction each child selects a book that he wishes to read. During reading periods he reads in the book silently, getting help if he needs it. Once or twice a week he has an individual conference with the teacher in which he

discusses what he's been reading, may do some oral reading, and perhaps receive help from the teacher with specific skills. Comprehension is checked occasionally by the teacher and is usually based on the general plot of the material rather than on details or inferences. Rereading is eliminated or discouraged in favor of the child's doing a large amount of reading on varied topics. Workbooks usually are not used. Specific training in word recognition is given individually, although occasionally a small group of students who need help on the same skills may be brought together for instruction.

Harris suggests that individualized reading is not a single method, but a general approach allowing many variations. As such, success with individualized instruction is a function of several characteristics of the teacher: recognition that reading is a continuous cumulative developmental skill; knowledge about reading skills; ability to provide time for the individual reading and attention to the needs of individual children; plus the ability to provide extensive collections of reading materials.

The term individualized reading is also applied to a much more structured situation in which, although children work individually, they are given specific progammed materials to meet their needs. After mastering a skill they are given additional practice or placed in higher level material. In such a situation, skill development is stressed and the children have little choice as to what they work on. However, even in this structured situation, periods are usually allowed for free reading in which the child may choose materials. A modification of this method is the "contract" method in which the child works out with the teacher a contract for himself, specifying what materials he will read and how he will demonstrate his knowledge (through books, oral reports, written reports, art work, etc.) of what he has read. His goal in reading is then negotiated with the teacher and he is expected to fulfill the terms of the contract.

Proponents of individualized instruction are very careful to note that it does not preclude group activities in class. Group work is at the teacher's discretion and she may have specific objectives such as helping a group with some specific problem or encouraging students to form groups spontaneously to discuss what they have read. Evaluation of individualized instruction usually centers around the number of books read by the child and his feelings about the books. Relatively few of the evaluation reports on individualized instruction provide standardized test results. Children are encouraged to evaluate their own performance (Harris, 1970).

At higher grade levels, including high school and college, individualized reading is the term used to describe most reading laboratories and clinics. In this setting, the method refers to a procedure which includes diagnostic testing, determination of skills weaknesses, and prescription of a remedial program which may include a

variety of materials such as programmed learning books, workbooks, machine practice, etc. In this setting, students are permitted to work at their own level and at their own rate and often toward their own goals.

Knowledge base. The same arguments are used in justifying individualized reading as are used by the proponents of the language experience method. They both quote studies from psychology and educational experiments in the 1930's and use terms like "self seeking", "self selection" and "pacing." Their major aim is to encourage the child's interest in reading and to motivate him to read on his own.

Materials. Since individualized instruction is a way of organizing classroom experiences rather than a specific method, any available reading materials may be used. In some programs, basal readers are included. A classroom library with a wide selection of appropriate materials so that children may have a choice of what they read is a prerequisite of this approach.

Use frequency. Although there are a number of reports in the literature describing individualized instructional programs and some school systems are experimenting with them, we do not have exact information on the number of teachers or schools that are using a strictly individualized reading program, particularly at the lower grade levels.

Research results. Four research reports were rated high on the Gephart model. However, the results indicate no significant differences between students using individualized instruction and control groups. Writers observe, however, that children in individualized programs read more, read more widely, and develop more interest and enthusiasm for reading than children in typical basal reader programs.

Language Experience Method

The language experience method is not new, although in the last decade it has undergone a revival inspired by the publication of Sylvia Ashton Warner's novel *Teacher*.

In 1908, Huey described the details of the reading practices of the Francis W. Parker School in Chicago which differ little from those presently recommended by Van Allen. Specifically, Huey states that in the Parker School, children learned to read as they learned to talk, "from a desire to find out or tell something". After the children had performed an experiment or worked in a garden or observed something in nature, they discussed what they had done and the teacher wrote their statements on the board. They read and corrected their own statements and often these were printed by older students or the teacher and given to them as a printed story. The child read these stories, knowing beforehand what was in them, and took them home to read to his parents. Often, photographs or children's drawings were used to illustrate the story.

Knowledge base. The rationale for this method is that it stimulates an interest in learning to read, and although language experience advocates hold mastery important, they stress the motivational advantages of the method. They feel that the child has a need to communicate and express himself which is the source of his desire to read and write. If the child is motivated, he will acquire the skills needed so that direct teaching of skills is avoided. Vocabulary is increased by bringing new words into the discussion and writing these words.

Anderson and Dearborn (1952) describe the experience-reading approach in this vein. They note that the experience-reading method is a modification of the story method which originally made use of nursery rhymes and familiar folk tales instead of original stories dictated by the pupils. They also state that experience stories are not designed to replace basal reader materials, pointing out that schools which have relied entirely on the stories growing out of the activities of children have not produced satisfactory results in reading. They attribute this finding to the fact that the materials dictated by children tend to involve too many different words with insufficient repetition per word. Thus, Anderson and Dearborn conclude that experience stories obviously cannot match the controlled vocabularies of basal readers as a means of teaching word recognition.

Critics of the language experience method state that the purpose of the method is to introduce reading as a form of communicating ideas, not necessarily to teach "real reading". Thus it functions as a motivating technique to develop interest in reading and a "thought-getting" attitude. Another objection raised is that the use of the experience method encourages memory reading. Critics also point out, however, this is not necessarily a serious matter since all children pass through a stage when they rely as much on their memory of the story as on the words on the page. From that standpoint, memory reading may be more of an aid than a hindrance. A problem develops only when the child comes to depend entirely on his memory and ignores the words completely.

The experience method historically has been emphasized in teaching kindergarten and beginning readers, although the methods described by Huey were also used with third graders and there has been a recent trend toward applying these techniques to junior and senior high school reluctant readers in inner-city schools and elsewhere.

Use frequency. No data were available to this project on the frequency of use of language experience methods in the U.S., although 62 reports of language experience programs were reviewed.

Materials. Van Allen experience charts serve as guides to the teacher. Students essentially create their own reading material.

Research. Although 16% of the studies reviewed on the language experience method were ranked "high" on the Gephart rating scales, the findings reported were inconclusive. Some investigators combined language experience techniques with other reading methods (e.g., directed reading lessons, programmed materials, audio-visual aids, etc.); different tests were used to assess gains so that findings were not comparable (e.g., informal measures were used to assess gains reported as significant in some skills while in the same studies standardized tests yielded no significant differences). A number of the studies included were second and third year followup investigations of first year studies. Results on the followup studies indicated that most of the gains achieved by language experience-taught first graders were not maintained. Some studies found that more favorable attitudes toward reading were characteristic of language experience-taught students; others did not find significant attitude differences. Those investigators reporting improved attitudes subsequently reported that attitudes on followup studies did not differ from those of the control subjects.

Eclectic or Combination Methods

Usually, the term eclectic or combination method is used synonymously with the basal reader approach. However, depending on what point the researcher wished to stress, he might term the basal reader as a meaning emphasis, whole word emphasis, or even linguistic emphasis method. As mentioned earlier in this chapter, when a basal reader is used, it is usually regarded as the method and no effort has been made to specify exactly how the teacher uses the basal reader nor how many of the numerous activities suggested in the teacher's manual she might use.

In reviewing ten textbooks used to teach teachers of reading, we found no author favoring any method other than a combination or eclectic method. While most textbook authors described other approaches, including those used in our categories, all recommended an eclectic approach. It would thus appear that the controversy over methods of teaching beginning reading has been indeed limited to pages of "popular" educational journals, the women's magazines, and other mass media. Almost all of the teachers in the country on the basis of national surveys rely heavily on the basal readers as their main material for teaching reading, although there are indications from the New England survey there is an increasing use of supplementary materials such as intensive phonics workbooks, and other aids. In view of this, we conclude that teachers are becoming even more eclectic in teaching reading.

Basal readers as representative of the eclectic method. Harris (1970) describes basal readers as books intended to supply the core materials for the development of reading skills. He notes that the pattern of a graded reading series which starts in grade one with a controlled vocabulary, gradually increases in difficulty, and presents a varied story content, has not changed greatly since the McGuffy readers first appeared in the 1830's. Today's authors of basal readers claim they use a combination or eclectic approach to the teaching of reading, just as Professor McGuffy claimed his readers were eclectic in orientation (Huey, 1908).

A typical basal reading series begins with a readiness book, usually in workbook form, followed by several pre-primers (usually three in number and with paper covers). A primer and a first reader (both in hard covers) complete the materials for the first grade. There are usually two second grade and two third grade readers and one large text in each of grades four, five, and six. Workbooks and other supplementary materials accompany the textbooks. Each reader has a companion teacher's guide or manual which contains the necessary instruction to assist the teacher in using the materials. Most manuals include both a general plan and a detailed lesson plan for each section. The manuals include many more suggestions than a teacher has time to use so that he or she is given the opportunity to select the activities to be used. Basal readers for the early grades are profusely illustrated.

According to Harris, teaching first grade reading with basal readers generally consists of five steps: 1) preparation for reading (establishing background for a story, discussing new concepts, introducing new vocabulary); 2) guided silent reading of increasingly larger units (sentences, paragraphs, pages) to answer a specific question; 3) oral reading for different purposes; 4) word analysis and comprehension building; and 5) enrichment activities.

In Austin and Morrison's study (1963), classroom observers noted that teachers concentrate on the first three of these activities, give moderate attention to the fourth, and little or no effort is spent on the enrichment activities.

At the upper grade levels (4, 5, and 6) basal readers provide a wide variety of practice exercises in different reading skills with many suggestions for enrichment activities. Most basal authors follow this same procedure for instructing teachers how to use their materials.

Reading specialists have pointed out that the fact that there is little difference among basal readers in the types of activities included and in the overall content, although different selections from literature and other subjects are used in different readers.

If one basal reader series claims to have a stronger phonics or linguistic emphasis in the new edition, the others soon follow.

Albert J. Harris (1970) indicates that recent revisions of basal readers have incorporated several major changes: 1) a stronger and earlier emphasis on the teaching of phonics; 2) richer vocabulary with more varied and natural language; and 3) cultural and ethnic pluralism to make it easier for children from different backgrounds to relate to characters and events. In the past decade, some basal readers (e.g., the Chandler series and the Bank Street Readers) developed especially for minority children have been published.

Thus it is clear that basal readers, although they change slowly, have a tendency to assimilate eventually new ideas that emerge from the current thinking in the field of reading as well as to reflect the social and political thinking of the time.

Use frequency. We found nothing in our literature search to refute Mary Austin's report published in 1963 which showed that 95% of primary teachers used basal readers and over 90% of teachers used them in grades 4-6. In the New England survey previously cited, 94% of first grade teachers used basal readers "much" and about 1% did not use them at all. Ninety-one percent of the fourth grade teachers reported that they used basal readers "much". In the same survey, however, it was quite apparent that teachers did not rely exclusively on basal readers. The majority also used intensive phonics materials, supplementary reading materials (from libraries), and their own teacher-made materials.

Despite the criticism of basal readers raised by reading experts and the general public, it is quite apparent that teachers are not rebelling against them.

Costs for producing a basal reader series are high. Chall (1965) estimated that it cost about 24 million dollars to develop a basal reader series and today's publishing costs are even higher.

Research evidence. Although there are no studies with clear-cut results which demonstrate that other methods or materials are superior to the basal readers, there is a tendency for the comparative studies to show that students who use basal readers (in contrast with more phonics-centered materials) tend to have higher reading comprehension scores. One might infer that this may be due to the eclectic approach, including a strong emphasis on meaning and comprehension skills from the beginning stages of learning to read. In the USOE First Grade Studies and other research reviewed, when other methods such as synthetic phonics and i.t.a. have shown significantly higher results, these have usually been on word recognition tests or the pronunciation of phonetically consistent words. The fact that these

gains inevitably disappear by the end of grade two or three suggests that skills that are stressed by teachers using basal readers may off-set the initial advantage shown by phon. s or other simplified reading approaches or that perhaps the skills taught by these methods do not transfer to reading comprehension skills.

Albert J. Harris (1970), in reviewing the methods taught to teach children to read, has stated

"...no new approach has been able to lessen significantly the proportion of children who make disappointing progress in beginning reading. It may be that some of the children who fail with one approach might not have failed with another approach. Perhaps beginners with poor visual perception would do better with intensive phonics; those with poor auditory perception, with 'look-and-say'; those with generally poor perception, with emphasis on reinforcement through tracing and writing. This, however, has not been demonstrated in research as yet. Thus a balanced eclectic approach which uses visual, auditory, touch, and kinesthetic cues in combination and develops word identification and comprehension simultaneously, seems safer and less likely to produce difficulties than any method which relies primarily on one sensory avenue or stresses one important side of reading while neglecting another (p. 79)."

Systems of Reading

There is only one complete system for teaching reading in the U.S. today and that is the basal reader series. All other materials, learning programs, computer-assisted instruction programs, etc., are designed to supplement the reading program by teaching sub-skills. Newer Computer Based Instructional Management Systems (CBIM) generally are designed to include basal readers and other conventional reading materials as well as computer exercises.

Computer assisted instruction (CAI). When digital computers were developed, it was inevitable that educators would apply them to help solve the persistent problem of how to individualize instruction effectively. The first computerized instructional program was reported in 1959 and, since then, many attempts have been made to use computers with materials developed in programmed instruction.

As Walter McHugh described CAI, it has many advantages over a programmed textbook since it can evaluate student responses immediately, give oral instructions, carry on dialogues with the student, or make instantaneous branching decisions on the basis of student responses (McHugh, undated).

The Stanford CAI Reading Program under the direction of Richard C. Atkinson is an example of a "tutorial" CAI program where a child can work through the reading program, and, depending on his response patterns, take different routes through the curriculum (Atkinson, 1966). The goals of the Stanford Project are to establish the feasibility of CAI for young children, to study the acquisition and retention processes involved in learning to read, and to provide a laboratory for curriculum investigations. Materials based on linguistic principles (e.g., words with regular and consistent spelling patterns) are introduced first. Children are instructed through earphones and a visual display screen and make their responses with a light-pen. The activities include: 1) learning decoding skills; 2) comprehension; 3) games and other motivational devices; and 4) review. The student spends 20 minutes daily with the computer and then returns to his regular reading class. Weekly reports on his progress on CAI are sent to his teacher with suggestions for other activities. Progress is reported using standardized grade placement scores for each pupil.

According to Baker (1971), Computer Based Instructional Management Systems (CBIM) may be seen as broader in scope than CAI. The intent in CBIM is to provide each child with an optimum set of educational experiences. CBIM specifies the following: educational objectives, desired student behavior, levels of competence to be attained, and concepts to be learned in a given program of instruction. The four major functions performed by computers are test scoring, diagnosing, prescribing, and reporting. At the beginning of each unit of instruction, the student is pre-tested to determine his relative status in terms of instructional objectives. On the basis of the pre-test, the pupil is assigned to specific learning tasks. These can be generated in the printed test result booklet or the computer can be programmed to submit certain decision rules and relate these scores to specific learning tasks. The prescribed tasks can be any of a number of educational experiences--workbook exercises, group activities, reading books, tutoring, etc. At various points within a unit the student may take diagnostic or progress tests which are also computer processed and can be used by the teacher to assess progress. When the student has completed a given unit of instruction, he is tested again, usually with a criterion-referenced test scored on one or more objectives. Typically, the criterion for mastery is 85% or greater on a given objective.

Examples of specific CBIM include the Systems Development Corporation's IMS developed by Silberman for the Southwest Regional Educational Laboratory. In this system, each first grade reading class is divided into several reading groups. The groups receive first grade level instruction based on a state-adopted reading series. A file of self-administered tests based on the reading series, a file of paper and pencil exercises used for follow-up work, and a listening post where students may listen to audio tapes are placed in a classroom. After the child completes the appropriate exercises, his answer sheets are

taken to the computer facility where they are scanned and the item response choices punched into the card which serves as input to a computer that scores the test and generates the appropriate reports. The data from the tests are presented to the teachers in different forms: the basic data specify the particular test taken and the specific objectives covered in the test. If a student scores below 85%, the report prescribes remedial activities. There is a teletype terminal in the school for the teacher to use as an inquiry device.

The computer based instructional management system at the Pittsburgh Learning Research and Development Center grew out of an individually prescribed instructional project for which materials (including tests, diagnostic procedures, prescriptions, and record keeping methods) had already been developed. In this system, when a student completes his test, clerks record the results on forms that are optically scanned and processed by computer. After processing, a unit summary reporting scores on pre-tests and curriculum imbedded tests is printed for each student, along with a test prescription suggested by the computer. Room summary reports listing each student, the unit of instruction, the skill, and the number of days he spent on the unit, are also prepared for each teacher.

According to Baker (1971) all computer based instructional management systems follow the same basic model. They differ in level of implementation but the underlying pattern of test scoring, diagnosis, prescription, and reporting is common to all existing systems. Educational objectives are specified in detail. These then serve as the basis for the design of instructional procedures, materials, measuring instruments, and other aspects of the curriculum. Most computer based instructional management systems employ conventional instructional materials such as textbooks and workbooks. Only the Pittsburgh group uses instructional material developed expressly for the project. The extensive use of conventional materials reflects the extremely high cost of design, development, and production of the materials associated with specific instructional objectives.

All computer based instructional systems use criterion-referenced tests which are administered as pre-tests to determine a pupil's present level of achievement and as post-tests to determine if the specific objectives have been achieved. The end product is a series of computer generated reports generally structured by objectives and groups of pupils. Individual progress can be followed over a period of time.

Limitations of CBIM. Individualized instruction as it is defined in the computer based instructional systems is based on a common content to be learned by all pupils. Individualization occurs only in regard to the rate at which a pupil moves through this common curriculum and in the assignment of a limited range of remedial tasks to students who do not achieve mastery. Reports concerning the progress schemes may have been given more credence than they deserve. Current

diagnostic procedures report findings in a seemingly sterile fashion, with interpretation left to the teacher. Since most computer based instructional systems prescribe conventional materials, there is little evidence as to how individualized such materials are. If book B rather than book A is assigned on a given topic to students, little can be gained unless they are functionally different.

Present diagnostic and prescriptive procedures as used in CBIM appear to be rudimentary in that they rely primarily on judgments of the relationship of a limited number of test items to instructional materials and procedures. They are not based on research evidence. The criterion-referenced tests used to form such judgments are typically existing tests of a multiple choice format or locally developed items designed to measure a specific objective. It is difficult to obtain adequate reliability and validity data on the limited number of items within any single unit of instruction. Other limitations include the cost of the program and services required as well as the amount of time it takes to collect and store information on each pupil and prepare the reports. According to Baker (1971), the success of future instructional management systems depends on their definition of individualization, on improved curriculum, on data diagnosis and prescriptive techniques, and on an adequate conceptualization of the teacher as the manager of the educational enterprise. To achieve even small gains in these areas will involve a great investment in time, talent, and money.

Summary. The basal readers are the most widely used "system" for teaching reading in the U.S. today. All other systems, including programmed learning and computer instruction, are designed to supplement basal readers. Computer Based Instructional Management Systems are designed to help teachers manage classroom learning by performing a record keeping and data analysis function. All CBIM follow the same basic model (test scoring, diagnosis, prescription writing, and reporting) and most utilize conventional commerically published books and materials, either by incorporating learning programs into the computer or by instructing students to read or use designated books or workbooks. Some programs developed as CAI tutoring programs are now being made available to classrooms without computer access, e.g., SWRL's Reading Tutorial Program, First-Year Communications Skills Program, and Instructional Concepts Program. A Learning Mastery System is presently being developed by SWRL for first and second grades to be used in connection with the Harper-Row basal readers. The materials have been extensively field-tested and present expectations are that the First-Year Communication Skills Program will be used by approximately 100,000 students during 1971-72. The program has been designed so that teachers can be trained in one day to use SWRL materials; teacher's instructions and responses are carefully programmed.

The Wisconsin Design for Reading (described in the Programmed Instruction Section) is another system that adheres to the same CBIM principles, but can be used without computers.

The limitations of CBIM include: 1) the cost of equipment and maintenance; 2) the use of criterion referenced tests which lack evidence of reliability and validity; 3) the fact that most diagnostic and prescriptive activities included in them are based on judgment rather than empirical evidence; and 4) most systems are individual-ized only to the extent that students proceed through the same program at different rates. Another limitation, as reported by SWRL, is that the computer generates more information about students than teachers can use--thus, in effect complicating rather than simplifying her task.

The advantages of CBIM include the fact that it eases the clerical load of the teachers in record keeping and scoring and may provide more accurate information to help manage the instruction of individual students. To improve CBIM will take talent and large financial commitments.

The major contributions of the developers of Computer Assisted Instruction in reading have been a research contribution in preparing materials for specific objectives, and in the sequencing and evaluation of learning. In almost all of the programs described (including those which use the Talking Typewriter), an important spinoff has been soft-ware programs which include ideas and techniques teachers can use to improve their effectiveness in teaching these skills to students. Some computer-based reading programs are presently available from commercial publishers. However, with the present educational financial crisis, it does not seem probable that there will be extensive adoption of computerized methods of teaching reading skills. Currently, the trend is for developers of CBIM materials to look for alternate ways of getting their materials used in classrooms as learning programs rather than as computer packages. Basically, today's computer instruc-tional systems have the potential to contribute new empirical knowledge and techniques for teaching the basic skills of reading.

New Methods for Teaching Beginning Reading

Recently, E. B. Coleman described a research strategy for educa-tional engineering of the teaching of reading (1968). His approach was to scale common words, letters and sounds for learnability. Traditionally, almost all beginning reading materials and methods used word frequency counts such as the Thorndike word list as their basis for vocabulary selection on the assumption that if students learn the most frequently appearing words in English they will be able to read more easily

Coleman's premise is different. He has designed a matrix of functions which can be tested experimentally to determine which letters are easiest to learn, which sounds, which words, and which blends. The design of such broad band studies involves ranking language units according to the subskills involved in learning to read. The ultimate goal of such experiments is to design programmed instruction, using

the children themselves as the basis for the calibration of linguistic units, rather than to focus on frequently used words which often have irregular spellings or pronunciation patterns. With this approach a sequence of learning experiences in reading can be structured based on the student's ability to learn the letter sounds and words rather than on the basis of teacher or experimenter judgment. Basic research is currently in progress on this approach, but there is at this time no information as to the application of this technique nor its effectiveness.

Coleman's strategy of designing a decoding program based on ease of learning grapheme-phoneme relationships appears rational and promising and may eventually result in changes in the sequence of presentation of early reading concepts.

Are the Different Reading Methods Essentially Based on Different Pools of Basic Knowledge?

Synthetic versus Analytic Emphasis

The position of the strong proponents of these methods might be compared to two men attempting to describe an elephant. One (the analytic) examines the elephant's shadow and describes the animal completely by his shadow. The other (the synthetic) carefully examines the elephant itself with a magnifying glass, part by part, starting with the elephant's toenails and generating rules as he moves section by section up the elephant. However, each vehemently argues that his position is the true one. Each selects experiments from perceptual psychology to support his position and ignores or underplays the evidence for the opposing viewpoint. By focusing on these narrow views of the reading process and emphasizing the nature of the stimulus (letters and words), both positions ignore or underplay each other's position as well as the importance of motivation, growth and development, and the characteristics of the learner. Both emphases assume that children must be taught to read in a highly structured way.

Individualized Instruction, Language Experience, and Responsive Environment

These three methods have in common an assumption that children can learn to read in a less structured situation. Given the opportunity and a free choice of appropriate materials, they hold that the child's natural curiosity will lead him into reading. The basis of their emphasis comes from psychological concepts of motivation, differential growth and development patterns and a respect for individual differences.

Programmed Learning

Programmed learning is based on operant conditioning principles
and is concerned with structuring the material in a manner so that
the student can unavoidedly make the correct responses. To an extent
these programs do recognize individual differences, differential
growth and learning patterns, and emphasize the intrinsic rewards that
motivate students through the act of being successful. The programmed
learning approach comes closer to following a blueprint from one
specific area of knowledge in psychology than any other.

Linguistic Method

The linguistic method might be compared to building a structure
on constantly shifting sand, since the underlying theoretical know-
ledge is constantly changing. To the extent that linguistic reading
methods stress spelling consistency and minimal variation, the
assumption is that by making the code-breaking stage easier and more
systematic, children will learn faster and with less effort. To the
extent that they support the view that writing and reading should be
based on natural oral language patterns the attempt is to simplify
the process of learning to read.

Combined or Eclectic Method

The view of the supporters of the eclectic method appears to be
that if we include a little of all the other methods, emphasize
meaning and add extra activities, we will produce good readers. As
has been stated previously, this is the most widely accepted position
espoused by both teachers and reading experts. The method taps a
broader spectrum of psychological knowledge and concepts than do most
of the others.

Modified Alphabet Method

The rationale here is that if the code itself is simplified
(letter sound relationships are made consistent) it will be possible
for a child to learn to read easily and quickly. This, of course,
involves changing the stimulus, the letters to which the child must
learn to respond. This approach can be supported from selected
studies in the field of vision and perception.

Meaning Emphasis

This emphasis is based, of course, on basic principles in the
psychology of learning relating to the fact that material that is
meaningful is easier to learn and better retained. Implied in this
is also the assumption that students will be more readily motivated
to learn material that is meaningful. However, as we have pointed
out previously, since meaning involves the interaction of the reader

with the material in a book, this approach is limited when it is not
based on studies involving the interaction between students with
different characteristics and various stimulus materials. As also
was noted previously, most all of the methods cited used letters and
words rather than nonsense syllables and authors do attempt to make
the beginning materials as meaningful as they know how.

Summary

The different emphases in reading instruction do draw from differ-
ent pools of basic knowledge. They select out those principles that
support their particular position and ignore or underplay the others.
Some focus on altering the stimulus materials (letter-sound relation-
ships, simplifying spelling patterns, restricting the complexity of the
syntax). Others stress the need to provide a situation in which the
learner will be maximally motivated and supported in his desire to learn
to read. The methods suggest quite different emphases on the role of
the teacher, from the highly structured situation in which the child
must be taught, to a permissive situation (such as that provided in the
responsive environment setting) where the child determines and chooses
what he wishes to use within his environment to learn to read.

Underlying the methods or emphases are several basic assumptions.
First, the view that if the initial stages of learning to read can be
simplified by changing the code, controlling the alphabet, giving
rules, or restricting the vocabulary, children will learn to read more
easily and quickly. The implication here is that it is desirable for
young children to get into the process of reading as quickly and as
easily as possible. This is a value judgment for which there is no
empirical evidence.

There is some suggestion that these attempts may oversimplify the
process of reading to the extent that when the child gets into the real
world of reading, in polysyllabic words, inconsistent spelling
patterns and complex syntax, he may not be adequately prepared. Only
i.t.a. studies have concerned themselves at all with the problem of
transfer, yet psychologists have long pointed out that one cannot
assume that transfer occurs automatically. It is quite possible that
some of the simplified beginning reading approaches may indeed result
in negative transfer making it more difficult for some children to
make the transition to regular reading.

A second assumption underlying all of these emphases is that if
only we start the child out right at the beginning of his learning to
read, the advantage he gains over other students will persist permanent-
ly. There is almost a total lack of awareness or interest in intervening
educational experiences judging from the manner in which follow-up
studies are conducted. That is, children taught by one method or
another during the first few months of the first grade are retested
in subsequent years, but not studied in terms of the other learning

experiences to which they might be exposed. Underlying this is the naive hope that what happens the first few months in school will mold most, if not all, of the child's later learning. Differential growth patterns and later mental maturation, however, have yet to be examined by the researchers in reading.

There is a clear relationship between the number of studies done, the time at which they are done, the statistical sophistication of the studies, and current fads in reading. Those who wish to change existing methods apparently are motivated to hire researchers who will do better research in order to persuade the public that their ideas are indeed more valid than those presently used in the schools.

Underlying all of the methods is an implicit hope that a panacea will be found. This, too, is an historic characteristic of reading methods in the United States. There is strong belief that if only we are scientific and careful and thorough enough we will find the one method that will work with all children. In reality, all methods that we have investigated failed to teach some children to read. Children with severe problems, whether they be intellectual, emotional physiological, or social, cannot reasonably be expected to learn to read through a system based solely on the method by which they are taught. Failure to recognize and account for individual differences is a major failing of all the specialized methods--i.e., code emphasis, linguistics, i.t.a., and material-centered approaches. The combination or eclectic method, since it subsumes varied approaches, comes closest of these to providing for individual differences.

Overview of Materials Used in Teaching Reading

In reviewing the published materials for the teaching of reading, one is immediately impressed with the overwhelming number and types of books, workbooks, equipment, audio-visual aids, etc. P. Kenneth Komoski, President of the Education Products Information Exchange Institute (EPIE), a consumer's union for school systems and educators, recently stated that a conservative estimate of the educational materials being marketed to schools in 1971 is over 200,000 items, and that these products have increased twenty-fold in the last two decades (1971). Materials designed specifically for the teaching of reading are also numerous. The first guide to materials to teach reading published by ERIC-CRIER contained a listing and description of 10,000 materials and a supplementary list of over 100 pages has recently been issued (Harris, L.A., 1968; Berridge and Harris, 1969). Any catalogue or listing is obsolete by the time it is published since new materials are continuously being developed and marketed. The proliferation of educational materials is symptomatic of our technological age which has created a demand for options or alternatives in purchases of all products as well as a need for immediate acquisition of products and information (Komoski, 1971). The American consumer has been conditioned

to want and expect a new and different style car every year, and
the American teacher has been conditioned to expect new and different
materials and to depend on educational technology to help solve
classroom problems.

Just as the American consumer is more concerned about car color,
upholstery, and style in the purchase of an automobile over safety
features, the American educator has also been seduced by what is new
and attractive and does not demand evidence that materials and books
are effective in helping the students learn.

It is clear that teachers have many options as to materials and
equipment to use in teaching reading. However, as Komoski points
out, less than 10% of the educational materials on the market today
have been field-tested and even a smaller percentage (about 1%) have
been subjected to learner-verification tests. He sees an urgent
need for more effective evaluation of materials due to two current
trends: 1) the trend toward more independent, individualized learn-
ing on the part of students; and 2) the demand for greater account-
ability on the part of teachers.

Since school administrators and teachers are not demanding
evidence that new products (whether they be television tapes, multi-
media kits, or textbooks) have demonstrated effectiveness, Komoski's
surveys show that most publishers are not voluntarily conducting
expensive field testing or researching the effectiveness of their
product.

Komoski fears that what is happening in educational publishing
is that schools and teachers are given an increasing quantity of
trivial options rather than the high quality alternatives which
students and teachers need. Implicit in his concerns about the
quality of educational products is an assumption that teachers and
students are not able to judge the effectiveness of materials them-
selves. He points out that studies have shown teachers are unable to
judge which of two learning programs will lead to more effective
student performance by examining them. However, the implication that
classroom teachers would continue to use poor materials that do not
help students learn and that only research experts can conduct
scientific evaluation tests on educational materials seems pessimistic.

Advertisers of educational products, like those of other products,
aim to keep the consumer dissatisfied with their present products
and to pressure and cajole them into trying new and different materials.
Their goal is to produce an insatiable desire for change, i.e., the
new is always promoted as better, and to create an ever-expanding market.
Although many reading professionals have long maintained that children
can be taught to read by using the labels on catsup bottles or beer
cans or walking around the streets reading signs, today's teachers have
been brainwashed into feeling that they must have the latest gadgets,

programs, and publications or they cannot teach reading. A re`ent illustration of this attitude occurred at the National Reading Conference in St. Petersburg in December 1970. After U.S. Office of Education administrators had presented papers describing the goals and plans of the Targeted Right to Read Effort, teachers in the audience rose to complain that they were not interested in long-term research. What they demanded was something they could use in their classrooms "Monday morning."

Another factor in the proliferation of published materials in reading is the diversity of students. Recognizing that the same materials may not appeal equally to the child from a Chinese ghetto, a black child in rural Mississippi, a suburban child in Illinois, a Kansas farm child or a Mexican-American child, teachers search for appropriate materials. Publishers, too, have recognized the demand for specially created materials for ethnic minorities. Government support for purchasing materials for disadvantaged students have far surpassed funds allocated for conducting evaluation studies on their effectiveness.

The regional educational research and development laboratories are presently conducting extensive field testing and learner-verification tests on their newly emerging products. Yet the expense of such projects and the educators' indifference to evaluation studies makes the prospect of requiring field-test or learner verification data on all materials used in schools seem like a hopeless dream.

What can be done? Should we expend millions on developing and testing new materials to replace present programs in the vain hope that if enough money and effort goes into the project, we will eventually find the panacea that will work on all children? Most children do learn to read with present techniques and present materials. Might it not be wiser to expend financial and research efforts to identify the needs of children who do not learn to read by typical procedures and concentrate efforts on them, if our goal is to assure every child the opportunity to read at his optimal level.

Might not teachers and administrators be aided in establishing criteria for selecting materials appropriate for their local needs and in field-testing materials with their students rather than relying on nationwide tests on populations that may bear little resemblance to local student populations? The Wisconsin Design for Reading is a first attempt in this direction since it provides for flexibility in deciding on objectives and materials in terms of local school needs. Rather than attempting to homogenize learning experiences and forcing all students through the same skill sequences, recognition of differences in ability and other characteristics is essential for a reading program to be successful.

Use Frequency

In our review of the literature on materials used in reading we
found nothing to refute the finding of Austin and Morrison reported
in their book entitled, The First R: The Harvard Report on Reading
in the Elementary Schools (1963). The purpose of their study was
"...to ascertain the conduct and content of the reading programs in
elementary schools throughout the country (p. 247)." As such, it is
directly relevant to the present concern with the use frequency and
distribution of instructional methods and materials. Three approaches
for gathering information were used--a survey questionnaire, inter-
views with administrative officers and teachers, and on-site observations
in classrooms. A representative sample of 1,023 school systems from
the original population of all public school systems located in
communities with a population of ten thousand or more in all fifty
states participated in the survey.

Austin and Morrison report:

> ...the basal reader is unquestionably the predominant tool
> of instruction in most of the school systems sampled
> throughout this study. This is true whether a single basal
> rea er series was utilized or whether...children were ex-
> p   d to a number of basal series. In only one school
> system visited during the original field study were basal
> readers not used as the major tools of reading instruction.
> In fact, for many teachers it would be unthinkable and
> impossible to teach without them (p. 54).

This conclusion based upon the data of their survey was also
supported by Barton and Wilder (1964) when they reported that reading
instruction in almost all schools starts from a graded basal reader
series. Ninety-eight percent of first grade teachers in their survey
of 1,500 teachers reported use of such materials and procedures on
all or most days.

The report on Reading Instruction in New England's Public Schools
prepared in February, 1969, also reports:

> The basal reader is the most used type of material in
> reading instruction in Grade 1 and 4. Ninety-five
> per cent of the principals indicate that basal readers
> are used as a basis for the reading programs in their
> respective schools (p. 16).

A private survey, completed in 1970-71 and made available to us
through the cooperation of the American Heritage Publishing Company
and Houghton Mifflin Company, provides concrete information on the
materials of instruction used in the United States. This unpublished

survey, conducted in association with John B. Carroll, covered a
carefully selected nationwide sample of more than 200 schools or
school systems (public and parochial), about half of whom responded
with detailed lists of textbooks, individual study and practice
materials, library books, and other reading matter used in grades
3 through 9 in their schools. From the lists of materials reported
for the teaching of reading we have reproduced the most frequently
reported titles, by grade level through sixth grade.

Grade 3

Robinson's   Roads to Follow and More Roads to Follow
Russell's   Finding New Neighbors and Friends Far and Near

Grade 4

Robinson's   Ventures and Open Highways (Book 4)
Russell's   Roads to Everywhere
Harris's   Magic Word

Grade 5

Robinson's   Vistas and Open Highways (Book 5)
Russell's   Trails to Treasure
Harris's   Bold Journeys

Grade 6

Robinson's   Cavalcades and Open Highways (Book 6)
Russell's   Wings to Adventure
VanRoeke's   Seven Seas

These selections, except for VanRoeke's are from basal reading series.

The New England Survey also indicates that teachers do not re-
strict their teaching to the Basal Readers, but use many supplementary
materials as well. Table 24 shows the most frequently used materials
and equipment reported by teachers in the survey. The survey also
suggests that some teachers are not utilizing audio-visual aids,
learning kits, etc., although they are available in the classroom.

TABLE 24

MOST FREQUENTLY USED MATERIALS
IN READING CLASSES (NEW ENGLAND SURVEY)

Most Frequently Used Books	Grade 1	Grade 4
	Basals	Basals
	Commercial Workbooks	Supplementary Basals
	Intensive Phonics.	Library Books
	Teacher Made Materials	Teacher Made Materials
Most Frequently Used Equipment	**Grade 1**	**Grade 4**
	Record Player	Filmstrip Projector
	Filmstrip Projector	Record Player
	Television	Tape Recorder
	Overhead Projector	Overhead Projector
Most Frequently Used Materials	**Grade 7 Remedial**	**Grade 10 Remedial**
	Textbooks or Workbooks on Reading	Texts or Workbooks on Reading
	Library Books	Teacher Made Materials
	Kits or Boxed Materials	Library Books
	Teacher Made Materials	Kits or Boxed Materials
	Reading Machines and Pacers	Reading Machines

Use Frequency of Materials in Teaching Reading at the High School Level

Surveys of high school reading programs suggest that machines, multi-level kits, and various workbooks are typically used.

McGuire (1969) conducted a national survey of 912 high school teachers and concluded that 80% of the high school teachers teach reading in the context of literature. Only about half used material designed to increase reading rate, while 66% of the teachers indicated that SRA multi-level materials were used in their classes.

Farr, Harris, Laffey, and Smith (1969) surveyed high school reading programs in the state of Indiana. They report that about half (47%) had developmental reading programs and the same proportion offered some kind of summer reading program. Forty percent remedial reading for the severely disabled reader, but only 19% of these schools reported having reading lessons for all students.

Simmons (1963) surveyed high schools in the upper midwest and reports on results from 152 schools. He found that more than one third of the schools had no reading programs of any kind. "When reading programs were indicated, the majority were reported narrow in scope, rigidly administered, and quite limited as to the number of students served (p. 34)." Those schools that did offer reading concentrated only on remedial training.

Boyle (1971) reports results of a survey on 68 Florida high schools. She reports that remedial reading was most frequently done in special classes in a reading laboratory with an average of 16 students to one teacher. Most classes used a combined small group instructional approach plus individualized instruction. The most popular materials included: SRA Reading Laboratories, SRA Reading for Understanding, Reader's Digest Skill Builders, controlled readers, tape recorders, the Language Master, and tachistoscopes. Less than half of the schools reporting indicated they taught reading in the content area.

Graham (1969) surveyed secondary schools in California. Three hundred three replies were received and, of the schools responding, 78% stated they had reading programs. However, Graham did not ask what types of reading programs were offered. He reports the most frequent method of organizing reading programs was the establishment of special reading classes (82%). Over 75% of the schools used multi-level reading kits and approximately 220 other kinds of commercial reading programs were listed. The larger the school the greater the variety of materials in use. Most schools used mechanical devices: controlled readers, 84%; tape recorder, 80%; tachistoscope, 72%; pacers, 62%; record players, 59%; and reading films, 45%. In addition, SRA Reading Laboratories and Reading For Understanding, workbooks such as

Use Frequency of Materials in Teaching
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schools. She reports that remedial rec

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reviewed that ranked "high" or "middle" quality on the Gephart scale. Of those, 28 were on black students. The most frequent methods used in these studies were described as meaning, language experience, individualized instruction, and eclectic. There were only two studies on American Indians and four that included any Asian-American students. In one of the studies on Indian students there were only two Indians in the group. One study on a sample of Oriental children in grade 3 was done in Hawaii with middle SES students.

Few of the research reports reviewed presented full information on learner characteristics such as grade level, ethnicity, sex, SES, and ability level. All of the studies which included ethnicity as a variable included black students and most studied populations in inner city schools. Only one study described black students from middle class backgrounds. The other researchers apparently assumed that their black student samples were from low SES backgrounds, though a number specified that their populations were "disadvantaged."

There were many more studies specifying black subjects than white subjects or any other ethnic group, but it seems likely that many of the studies which did not mention ethnicity were, in fact, using white subjects. Apparently, if a child's ethnicity is not described, he is assumed to be white. Most of the studies in which ethnicity was mentioned as a variable were done with "disadvantaged students" and "low ability students." Usually, when these labels were used they were not described or defined.

Recent studies on the relation of ethnicity to self-concept have described the complexities of using ethnicity as an independent variable. The racial composition of the school which the children attend, not merely whether the school is integrated or not, has been found to be an important variable in determining whether a child from a given ethnic group has a low self-concept or not. Such factors as the presence of other minority group members, the size of the school, the community attitudes and composition (including parental attitudes toward integration) have been found to affect the results of such studies.

Sex

Most studies reviewed either dealt with both males and females or gave no information on sex. Several studies dealt only with males but none of the studies involved only female populations. In general, nothing was found to refute the evidence that girls' reading achievement in the elementary school is higher than boys'. On studies where sex was used as the variable, the results were inconsistent, sometimes the boys apparently gained more from being taught with a given method, while in other studies girls gained more. When sex variables were confounded with socioeconomic status and ethnicity, the results were even less clear-cut.

Ability

Many more studies concerned low ability students than high
ability students. Most studies stated that "wide range of ability
levels were represented" or "the sample cut across ability levels,"
but presented no further information. In other words, the distri-
bution of significant learner characteristics was not specified.
The majority of research studies reported that pre-tests had been
admininstered to determine the ability level of the subjects, but
many of these same studies did not report the score attained from
these tests. Vague definitions such as "the experimental and control
groups are comparable in ability," were used.

Some researchers described their subjects as being of "average
ability" when they meant that their sample was unselected. (Perhaps
the brevity of the reports in the published literature due to
editorial policy limited many authors from adequately describing
their samples.) There were no studies, for example, on high SES
students with low ability. Only three studies showed significant
interaction effects: one, that low ability students (boys) apparently
achieved higher reading gains when taught by the basal reading method
while high ability boys learned better with the language experience
method; and, another suggested that low ability subjects fared better
using a synthetic phonics method while high ability subjects scored
higher on the post-test when taught by the whole word or letter
cluster approach. One study found that immature first graders
achieved significantly higher gains when an individualized reading
readiness approach was used (Spache et al., 1965).

Since most of the research investigations failed to describe the
sample adequately on any of the variables that were the concern of
this project, and these data typically were not included in the ex-
perimental designs, we can only conclude the information on learner
characteristics and methods is sparse at the present time.

Studies not only failed to specify learner characteristics on the
obvious variables, but provided even less information on other learner
characteristics such as emotional problems, perceptual difficulties,
visual or hearing handicaps, etc.

If further research is designed to answer questions concerning
the relationship between school procedure and achievement in reading
with special groups, researchers should be required to describe their
populations completely, including sex, ethnicity, ability, grade
level, relevant physical and emotional factors, as well as to describe
the characteristics of the school and the teachers. Procedures used
and materials used with the students should be specified.

Analyses of the characteristics of effective compensatory education
programs suggest directions that future researchers may find profitable
to pursue.

Surveys of Results of Compensatory Education Programs

The results of the efforts in the 1950's and 60's to attack
educational failure by providing compensatory education designed
to compensate for deficiencies in a person's learning experience
have been widely criticized as failures. At least, most observers
would agree that the programs have not been demonstrated to have
had widespread and dramatic success despite the billions of dollars
that have been spent on them. McDill, McDill and Sprehe (1969)
describe the research and evaluation studies that have been done on
three of these major compensatory education attempts: Head Start,
Title I and Upward Bound. In their assessment of Title I programs
on which over 4 billion dollars was spent between 1963 and 1970 and
475,000 students were involved (the large compensatory education
program in existence), they point out man limitations to the
evaluation studies. No control groups were available so that changes
over time were measured by a comparison of pre- and post-test scores.
The reading scores of Title I students did improve at an average
rate approximating the normal rate for the average child (one month's
improvement for each month of instruction) making this higher than
the expected rate for low-income, central city schools. However,
since the studies suffered from biased samples, noncomparable data
with respect to grade level, different and unequal measures and test
intervals, and lack of control groups with which to make comparisons,
the results are considered too unreliable to enable conclusions to
be reached.

McDill et al (1969) analyzed eleven local intervention compen-
satory education programs and described the extent of success, the
population served, and the methods employed in each case.

In analyzing cost for the various programs they found a range
from 0 (meaning no additional costs beyond the usual school expenses)
to $1500 annually per pupil in one pre-school project. Size of the
target population for the various programs ranged from over 60,000
students per year to fewer than 25. Intensity level of the programs
varied from programs where time segments of the daily schedule were
set aside for each child to receive systematic cognitive instruction
while in other programs cognitive material was not presented directly
but assumed to be pervasive.

Comparisons made to assess the progress of the experimental
groups differ in rigor and sophistication; reports vary from schools
with a Negro population of 10% or less to 90% or more within the
school system. Types of treatment vary from total organized programs
to informal tutoring with the aid of homework helpers as tutors and
home visits by the teaching staff.

In another block of studies reviewed by McDill et al (1969),
15 successful compensatory programs were studied in an attempt to

identify the features that accounted for success. Three criteria were
used in selecting the programs: 1) quality of the research design
and evidence of objective results persisting over time; 2) objectives
differing from those of other programs selected; and 3) accessibility
of programs for site visits. It was concluded from this review that:
objectives should be clearly defined and systematic procedures in
time schedules for the implementation of plans should be set up;
instruction should be individualized through various means such as
one-to-one relationships between teachers and the students, tutors,
and computer assisted instruction; and funds should be allocated at
all maturational levels from pre-school through secondary and not
concentrated merely at the pre-school level.

McDill et al report that the following characteristics most
clearly distinguished successful from unsuccessful compensatory pro-
grams:

a.   careful planning and clear statement of academic objectives;
b.   small groups and a high degree of individualization of in-
     struction;
c.   instruction and materials that were relevant and closely
     linked to program objectives;
d.   high intensity of treatment; and,
e.   teacher training in the methods of the program.

The authors point out: "No public school system in history has
ever been abolished because it could not teach children to read and
write, yet some compensatory programs, aimed at the very children who
will probably be losers in the regular school programs, could be just
in that situation. They are being asked to succeed in less time than
allowed the regular school system with minimal scientific evidence
relevant to the problems of disadvantaged children and a lack of
awareness of the magnitude of this task that confronts them (p. 71)."

                    Limitations of the Gephart Rating System

Although a number of research articles were judged as "high"
quality and "middle" quality and therefore acceptable for the pur-
poses of this study, few of the studies so rated contributed anything
in the way of answers to the questions to which the project is addressed.
The findings indicated "no significant differences" with monotonous
regularity. Specifically the rating system failed to differentiate
between studies on the following bases:

1)   Most of the studies failed to define methods operation-
     ally, using only labels--such as meaning emphasis. This
     was further compounded by the fact that the same labels
     in many instances were applied to vastly different pro-
     grams as in the case of responsive environment studies
     and individualized instruction.

2) Many of the studies that ranked high on the Gephart ratings failed to describe adequately the sample in terms of learner characteristics such as sex, ability, SES, and in some instances even grade levels. Almost none of the studies described teacher characteristics.

3) On the three Gephart scales, undue weight was given to studies that used appropriate standardized tests. Researchers using unstandardized measures may not have had the space in their limited article to describe adequately the reliability and validity evidence of the measures they used, hence their studies would automatically be rated lower on this dimension.

4) In studies on methods in schools there are limitations as to the nature of the population that can be studied. Usually one studies intact classrooms rather than random subjects who can be assigned to differential treatment conditions. Hence many of the studies fail to attain high ratings on the "adequacy of the pop-ulation sample" scale.

5) Appropriateness of using experimental research methodol-ogy and statistics for classroom investigations has recently been questioned by prominent educational ststisticians and researchers.

In education we do not have random populations, for students are not randomly assigned to schools or school districts. We are presented with known populations--classes, schools, school districts. Rarely can we design experiments in which we can truly randomize subjects or meet the assumptions of traditional experimental statistical methods. Evaluation involves collecting information in order to make a decision about the value and utility of a procedure which differs from the ex-perimental researcher's goal of creating new knowledge. Traditional use of parametric statistics requires that certain assumptions be met (i.e., interval measurement, normal distributions, homogeneity of variance, some variance to begin with, etc.) Large initial numbers are almost always a "must", affecting even the use of non-parametric statistics such as chi-square and frequently leading us to classify students into illogic l groups.

One could also question the value of mean score differences even in the rare instances where they were reported to be significant. Teachers do not have average classes nor average students. They do have some fast learners, some slow learners, some with behavioral and emotional problems, some with vision and hearing problems, and others. They may even have a class whose reading achievement ranges over a six year span depending on the grade level they teach. Even the act of seeking significant mean score differences between methods does not make sense in this context.

A major difficulty with the studies that ranked high on the Gephart model was that few of them defined their variables operationally. Learner characteristics were rarely specified in any detail nor were teacher characteristics. Methods were labeled with descriptive terms, and often the same labels were applied to quite different methods (e.g., individualized instruction, responsive environment.) Materials were often cited as "traditional basal reader approach" with no other information given. Extremely rarely were descriptions of the sequence of activities or procedures given and never were specific teaching strategies defined.

If we are to continue using experimental research methodology to study reading behavior in the classroom, we are still faced with the legal and ethical impossibility of conducting the critical experiment in which children are randomly selected to begin school at ages 6, 7, and 8, and determining the conditions under which the 8-year-olds who are deprived of school instruction can reach grade-level reading performance in one year.

Designing experiments that control on other variables that we assume affects reading achievement is difficult. All of the studies assume that a child's reading growth is a function of what is taught to him in the reading class hour. Other school and extra-curricular experiences are assumed to be equivalent for all of the students.

It may be quite appropriate and simple to control the learning behavior of rats by witholding food until they emit responses, but it is a bit more complex to control teacher behavior (even by witholding salary checks) until she is forced to use a method that some researcher wants her to test out in the classroom. Therefore, it is almost impossible to assign methods randomly without the cooperation of the teachers and if, as in most studies, teachers are permitted to select the methods they wish to use, one has the problem of equating motivation.

The Gephart scaling system probably has most value in eliminating those studies which fail to specify population, the treatment, and the measures used. However it is questionable that any scaling method can at present be designed to identify high quality research on the basis of a simple checklist. The subjective judgment of qualified researchers in the field appears, at present, to be the best criterion available for judging high quality research studies.

Thus, our experience with the Gephart model served to reduce the number of studies that were reviewed, but did not yield high quality studies that could contribute the information needed to answer the charges of   oject. Furthermore, the Gephart rating system did not help in selecting high quality surveys, nor in evaluating the adequacy of materials developed using systems analysis approaches, nor in evaluating theoretical papers or surveys of the literature.

Analysis of the Research Literature

The methods used in the selection and detailed critical reading of a massive body of literature in the field of reading are presented in Chapter 2. They are briefly reviewed here to indicate the background for this analysis. First, a large number of bibliographic references were screened by a comittee of experts. Then, graduate student readers, guided by a review format developed specifically for the purposes of this project reviewed critically and abstracted the recommended articles. These abstracted reviews, supplemented by detailed reading of many basic sources, were used to synthesize and report on the state-of-the-art in research on methods of reading instruction. This section of the chapter will include: 1) an examination of "landmark" reports, from the great number reviewed to illustrate the two main points of the analysis by reference to authorities within the field of reading research itself; and 2) a general discussion of the two major findings to help the USOE in its further discussion and implementation of the Targeted Research and Development Program.

The studies here cited are those that have been most influential in the recent past in shaping and supporting classroom activities in reading. The intent is to show by use of these studies that certain problems do exist with regard to interpretation of the past research on methods of reading instruction.

Jeanne Chall's Learning to Read: The Great Debate

Jeanne Chall's book (1967) is illustrative of the great and growing synthesis literature that reviews and summarizes the increasing massive material on reading instruction. Her work is widely recognized and quoted and her 1967 book is perhaps the best of its type in both general demeanor and willingness to risk reaching conclusions and recommendations in spite of the inchoate nature of available research evidence. Its appearance seemed to produce or coincide with a general reduction in the "heat" of the debate about beginning reading instruction. Nevertheless, it has had its own share of critics who debate the merits of attempting to "count" studies for and against (Harris, 1970, p. 75) a "false" dichotomy (Spache, 1969).

The effect the book has had on popular thinking about beginning reading instruction is appreciable. To anyone unacquainted with the realities of research, Chall's report carries the authority of comprehensiveness and scientific objectivity in summarization of the relevant research. Because this book coincidentally supported the use of systematic phonics when popular opinion had already reached this "logical" conclusion, its influence and acceptance were enhanced. The important question of the possible inappropriateness of the original debate has been overlooked.

If Jeanne Chall's carefully stated and qualified conclusions and recommendations, in this this difficult area of investigation were based on definitive research, they would afford a baseline appropriate to parts of the tasks of this project. Unfortunately, they do not, and by a reading of portions of Chall's own work, it is possible to illustrate the very real problems facing all synthesizers and summarizers of the research on methods of reading instruction.

Chall states:

The research in beginning reading has generally been inadequate in both depth and scope (p. 88).

And if you select judiciously and avoid interpretations, you can make research "prove" almost anything you want it to (p. 87).

Taken as a whole, the research on beginning reading is shockingly inconclusive (p.88).

I knew before starting that a major problem was how to read the research.... I would have to look at each study carefully and to ask such questions as why it was made; how the author defined "reading"; what methods and materials were being compared; what the size, age, grade level, and other characteristics of the population were; how the author defined reading "success"; what care was taken to assure comparability to the groups studied; and so on.... practically none of the studies specified all these conditions. Most did not indicate how the experimental and control groups were selected, how much time was allotted to various aspects of reading, how the teachers were selected, whether the quality of the teaching was comparable in both groups, or even whether the teachers followed the methods under study. Even more important, most studies did not specify clearly what a "method" involved, but instead merely assigned labels (e.g. "phonics"), expecting the reader to understand what was meant (pp. 100-101).

(underlining supplied by the present author)

It is apparent that Chall had proposed a deep and scientifically rigorous look at the existing literature for her purposes and found the literature wanting in many fundamental respects. Other paragraphs and comments in her book attest to her own high critical and objective standards for extracting the "truth" from available research. The dilemma she faced was the one presented to all synthesizers and summarizers: if too high standards are applied, there is nothing left to summarize.

Chall acknowledged this dilemma while commenting on the Durrell study completed at Boston University (1958). She states:

> Although Helen Robinson (1959) is justified in raising
> questions about the design of the Boston University
> study...most of the questions she raised may be applied
> to the bulk of the educational research in existence.
> Were we to use the strict methodological criteria
> Robinson proposes, there would be no research to sum-
> marize (p. 155).

It is interesting to examine the Robinson analysis to see what things she was asking for before accepting the data and conclusions of the Durrell investigation of the possible benefits of formal instruc-tion in letters and sounds. Robinson reports:

> No statement is made about the characteristics of each of
> these two groups that might make them comparable (p. 421).

> (The Linehan)...report leaves many unanswered questions
> concerning the control of factors other than the methods
> of teaching (p. 421).

> ...the effect of the procedure for selection of teachers
> is an uncontrolled variable (p. 422).

> ...the differences...might be attributed with equal
> confidence to the amount and quality of supervision
> provided, insofar as the information in the report is
> concerned (p. 422).

> All the foregoing tests except Number 4 were constructed
> expecially for this study. While they may be adequate
> for the purpose, little is known about the tests themselves
> and how other pupils would perform on them....The results
> revealed significantly superior scores in oral reading,
> classifying words, and paragraph-meaning tests constructed
> especially for this investigation, while no significant
> differences were found on the one standardized test or the
> special test of silent reading (p. 423).

A number of other specific questions or comments are raised by Robinson in her review of this study. However, her purpose was "...to show that (the study) does not supply dependable evidence to determine the value of this plan of teaching (p. 426)." Many would agree that the cited comments raise a reasonable doubt about the inter-pretation of the Durrell study (Robinson, 1959).

Chall, on the other hand, states her resolution of the dilemma in
the following sentences that immediately follow her rejection of the
Robinson approach:

> The Boston University study seems to me as good as most
> studies of its kind, and Durrell's conclusions appear to
> be more grounded in the actual findings than is character-
> istic of most studies in beginning reading. At any rate,
> Durrell's study is only one of many other similar studies,
> conducted before and after his, that tend to find the same
> thing (p. 155).

Chall feels the Durrell study should be accepted because it tends
to find the same as "many other studies" and they presumably are
supported because the Durrell study found what they did. If the Boston
University study is also as "good as most" of the others and one
accepts any of the Robinson questions as pertinent, it appears that one
must summarize studies with major defects in them if one is to report
anything. Many would not accept this as an adequate conception of the
role of research in forming generalizations. Chall herself, makes
this point:

> But the major evidence that a stronger code emphasis at
> the beginning produces better results than a weaker one
> (one that emphasizes meaning initially) stems not from
> "head counting" or "ballot taking" but from my theoretical
> analysis of the probable course of development of reading
> skill...(p. 134).

It is not the purpose of the present review to dispute Chall's
theoretical position but to illustrate that there is no such thing
as an objective summary (plus and minus points for or against a
position) of the research literature. Inherent in any summarization
is the problem of what standards of quality are to be used and how one
interprets studies that are less than complete either in their conduct
or in their reporting. Even when only the "best established facts"
are accepted, any summary is an interpretation against a stated or
unstated background fabric of beliefs and theories.

The unfortunate consequences of the Chall presentation format,
however, regardless of her disclaimer tucked away on page 134, is to
give the impression that one merely examines the research literature,
using suitable standards, and then the conclusions appear. This
happy state of affairs might be approximated if the research literature
contained mostly rigorously conducted experimental studies that had
been adequately reported. It is apparent, however, by the material
quoted from Chall's own work that such was not the case in the mid-1960's.
The situation has not changed appreciably since that time.

Bond and Dykstra: Research on First Grade Reading Instruction

The First Grade Reading Studies have been cited as often as Chall
during the recent past by those anxious to be able to support some
reasonable suggestions (many times contradictory to Chall's concepts)
about beginning reading. The intent has been to buttress these
suggestions with the aura of a firm research or empirical base collected
under rigorous conditions. Unlike Chall's review of other's research,
the work collected and presented by Bond and Dykstra (1967a,b,c),
Dykstra (1968c), Stauffer (1967) and others (cited in those above), is
the actual report of 27 individual studies on different variations in
reading instruction. The original plan was for coordination of these
studies so all researchers would use some identical pre-tests and
post-tests and cover approximately 140 days of instruction and thereby
make possible:

> ...the exploration of the relative effects on early reading
> growth of various approaches to initial reading instruction
> under similar experimental conditions (Bond & Dykstra, 1967b,
> p. 2).

Because of the manner in which the project was funded, however,
the 27 studies were extremely diverse and beyond the fact that each
director made his common data available to the Coordinating Center
every study was self-contained. As individual studies they represent
very well the wide variety of research we reviewed. They may stand
to represent both the problems and opportunities in research on methods
during the past decade.

Although most of the studies investigated instructional methodology
in one manner or another, they did not reflect a continuum of possible
methods or even at all available and recommended programs. Other
problems for the   coordinating Center became apparent when the over-all
analyses were t   a made.

> An analysi   was also conducted whereby each treatment within
> each proje   was compared with each of the other treatments
> in all the other projects.....tremendous project differences
> in achievement even after teacher and pupil characteristics
> had been controlled statistically, coupled with incomplete
> replication of treatments within projects, made this method
> of analysis questionable (p. 42).

Statistical control of initial differences would be a questionable
procedure in many circumstances, but even after this was done it was
not possible to equate the groups from the various studies. This
should not be surprising because the original study groups were not
randomly selected from a defined population of first grade groups but,
instead, were the ones selected by the individual project directors
in their own areas. As a result of this and other departures from

requirements of experimental design, the proper approach to the First
Grade Studies (and by implication to all other studies of methods re-
viewed) is that presented by Stauffer in the International Reading
Association's reprint from The Reading Teacher (1967):

> What conclusions can and cannot be made about the twenty-
> seven studies reported herein? Because of the many variables
> which were not uniformly controlled in the separate studies,
> the studies should not be compared to see which ones were
> most productive. Wide variation was found among the teachers
> involved...
>
> No one method should be compared with another because the
> methods were not sharply and clearly different. For example,
> all methods included instruction in phonics of one kind or
> another, the alphabet, writing experiences, comprehension,
> and so on. Methods that were given the same label were not
> always the same...
>
> Reading instruction time could not be defined acceptably....
> Much effort was devoted to an attempt to define reading
> instructional time at the Coordinating Center meetings,
> but to no avail...
>
> The tests used to measure readiness, intelligence, and
> achievement were not adequate. A careful reading of the
> reviews for some of these tests in Buros' Mental Measure-
> ments Yearbook will support this view...
>
> In short, any attempt to compare method with method or
> study with study could produce gross misunderstandings and
> false conclusions...
>
> It is unfortunate that because of governmental policies the
> plan for the first grade studies was not carried out as it
> was originally designed. The original proposal was prepared
> by members of the National Conference on Research in English.
> ...They outlined a paradigm of influences on first grade
> reading instruction. It was proposed that centers be estab-
> lished to test different methods, uniform control be carefully
> policed, and results be analyzed and uniformly prepared by
> a coordinating center (Stauffer, 1967, p. v-vii).

Sipay (1968) also has detailed cautions in the interpretation of
the First Grade Studies which support Stauffer's analysis. Nevertheless,
the most commonly discussed conclusions of the First Grade Studies are
those based upon an attempt to evaluate what they mean in total.

Wittick (1968), for instance, quotes four observations by Bond from that study:

1) There is no one method that is so outstanding that it should be used to the exclusion of the others.

2) The effectiveness of any one approach appears to be increased when it is broadened by addition of other instructional components. For example, a basic program's effectiveness is increased when writing experiences are added, or a phonetic approach appears to profit from the addition of audio and visual instructional aids, etc.

3) Specific approaches to first grade reading instruction appeared to increase children's achievement in certain instructional outcomes but are weak in other outcomes. Another method may develop different patterns of growth. This observation gives hope to the possibility that we may find combinations of approaches that will encourage over-all balanced reading growth.

4) As would be expected, there was greater variation between teachers within the methods than there was between the methods. This again points up the importance of the teacher's role in learning (pp. 125-30).

The important question for our purposes must be: How was Bond able to reach these conclusions based upon the reports of the twenty-seven studies? If, as Stauffer has pointed out, any attempt to compare method with method is not justified, then how can one conclude that no method is outstanding? If reading instructional time is not controlled, how can one decide that adding components is not just adding additional practice? If the measurements used are not adequate, how is it possible to distinguish differential outcomes from inadequate testing? If non-randomly selected groups differ at the end of instruction, how is it possible to attribute that to differences in teachers rather than to differences in groups?

Sipay (1968) has stated:

There is always the danger of accepting without question the findings of any published study. However, the temptation to do so may be increased when a number of studies were conducted cooperatively and sponsored by the USOE (p. 10).

Bliesmer and Yarborough: A Comparison of Ten Different Beginning Reading Programs in First Grade

The Bliesmer and Yarborough report (1965) which has received national attention may be examined to illustrate two important aspects of research on reading. The first is easily stated. The only readily available report of their work is published in the Phi Delta Kappan magazine, which is an educational leadership publication rather than a scientific journal. That is, the purpose of the magazine is not archival retention of scientific reports but, properly, presentation of a variety of information for the professional educator. Since the purpose of the Kappan is general it does not require and probably would not print the usual needed description of methods, statistical analyses, and procedures essential for interpretation of experimental evidence.

In the case of the Bliesmer and Yarborough article more than the usual amount of statistical and procedural material was printed but without approaching the detail that an archival publication would have obtained. This line of thought will be more fully developed in the state-of-the-art analysis presented later. For the moment, the report as written will be discussed in the context of the problems of definition of methods for reading instructional research.

What is a Method of Reading Instruction?

As a general definition one might accept identification of method with materials. That is, a method of reading instruction is a systematic collection of instructional materials, equipment, and/or recommended activities for teachers to use in developing reading achievement in learners. Unfortunately, although this definition is clear, it is too simple.

That definition is too simple because method refers not only to the materials and teachers' manuals but the exact usage of these as a part of a comprehensive instructional activity. A method of reading instruction in this larger definition is the sum total of all of the materials and actions of the teacher in a specific instructional situation.

Thus, under this latter conception, as many methods of reading instruction may exist as are created by the interaction of particular children with a particular teacher. The teacher, in essence, must invent a reading method for every child in her class every year.

Such a particularized definition, however, is of more value in philosophical discourse and attitudinal training than as a guide for the search for new knowledge. It is a necessary assumption of scientific activity that particulars can be successfully grouped into more general categories. Under this assumption many researchers have

asked: are there ways to group all these millions of particular "methods" under certain labels?

Historically, researchers on methods of reading instruction have taken the position that certain groupings are possible. The literature speaks with assurance about "the basal reader method," "the language experience method," "the phonic method," "the look-say method" and so on. Bliesmer and Yarborough (1965) go one step further and perceive similarities among these groupings and speak as follows:

> The ten approaches studied differed in numerous ways, such as in suggested teaching materials, instructional techniques, order in which types of word or sound elements were introduced, and administrative procedures (e.g. grouping practices). Nevertheless, analysis of the approaches revealed two basic underlying psychological-pedagogical theories represented among them: 1) Five programs were based upon the belief that the child should be taught whole words and then, through various analytic techniques, recognition of letters and the sounds they represent (hereafter referred to as the analytic method); 2) Five approaches were based upon the belief that the child should be taught to synthesize word elements learned into whole words (hereafter referred to as the synthetic method) (p. 500).

If the Bliesmer and Yarborough analysis is correct, any research that compared two or more methods from only one category of approaches would have been comparing similar things essentially with only inconsequential differences to be expected. For instance, we would expect a comparison of the following four methods identified as analytic by Bliesmer and Yarborough to yield no significant differences among them.

(AM)=ABC Betts Basic Readers (1963), American Book Company;

(SC)=The New Basic Readers: Sixties Edition (1962), Scott Foresman;

(IS)=An individualized approach supplemented with Reading Laboratory Ia and Reading Laboratory I: Word Games, published by Science Research Associates;

(GI)=The Ginn Basic Readers, Revised (1959).

Table I. ADJUSTED MEAN CRITERION SCORES, AND DIFFERENCES AMONG MEANS, OF VARIOUS TREATMENT GROUPS

Program Groups**		Adjusted Mean Scores***	DIFFERENCES AMONG PROGRAM GROUP MEANS								
			LI	SI	EC	MC	IN	IS	GI	AM	SC
(HO) S	WR	1.89	−0.21	−0.07	0.19	0.08	0.22*	0.27*	0.43*	0.33*	0.44*
	PM	1.81	−0.17	−0.12	−0.11	−0.06	−0.03	0.21	0.19	0.39*	0.28*
	VO	2.47	0.30	0.54*	−0.10	0.54*	0.58*	0.67*	0.51*	0.72*	0.67*
	SP	2.48	0.17	0.23	0.35*	0.64*	0.74*	0.82*	1.10*	1.01*	0.87*
	WS	2.58	−0.06	−0.09	0.43	0.56*	0.72*	0.71*	0.95*	0.83*	1.11*
(LI) S	WR	2.10		0.14	0.40*	0.29*	0.43*	0.48*	0.64*	0.54*	0.65*
	PM	1.98		0.05	0.06	0.11	0.31*	0.38*	0.36*	0.56*	0.45*
	VO	2.17		0.24	−0.40*	0.24	0.28	0.37*	0.21	0.42*	0.37*
	SP	2.31		0.06	0.18	0.47*	0.57*	0.65*	0.93*	0.84*	0.70*
	WS	2.64		−0.03	0.49*	0.62*	0.78*	0.77*	1.01*	0.89*	1.17*
(SI) S	WR	1.96			0.26*	0.15	0.29*	0.34*	0.50*	0.40*	0.51*
	PM	1.93			0.01	0.06	0.26*	0.33*	0.31*	0.51*	0.40*
	VO	1.93			−0.64*	0.00	0.04	0.13	−0.03	0.18	0.13
	SP	2.25			0.12	0.41*	0.51*	0.59*	0.87*	0.78*	0.64*
	WS	2.67			0.52*	0.65*	0.81*	0.80*	1.04*	0.92*	1.20*
(EC) S	WR	1.70				0.11	0.03	0.08	0.24*	0.14	0.25*
	PM	1.92				0.05	0.08	0.32*	0.30*	0.50*	0.39*
	VO	2.57				0.64*	0.68*	0.77*	0.61*	0.82*	0.77*
	SP	2.13				0.29	0.39*	0.47*	0.75*	0.66*	0.52*
	WS	2.15				0.13	0.29	0.28	0.52*	0.40	0.68*
(MC) S	WR	1.81					0.14	0.19	0.35*	0.25*	0.36*
	PM	1.87					0.20	0.27*	0.25*	0.45*	0.34*
	VO	1.93					0.04	0.13	−0.03	0.18	0.13
	SP	1.84					0.10	0.18	0.46*	0.37*	0.23
	WS	2.02					0.16	0.15	0.39	0.27	0.55*
(IN) A	WR	1.67						0.05	0.21	0.11	0.22*
	PM	1.84						0.24*	0.22*	0.42*	0.31*
	VO	1.89						0.09	−0.07	0.14	0.05
	SP	1.14						0.08	0.36*	0.27	0.13
	WS	1.86						−0.01	0.23	0.11	0.39
(IS) A	WR	1.67							0.16	0.06	0.17
	PM	1.60							−0.02	0.18	0.07
	VO	1.80							−0.16	0.05	0.00
	SP	1.66							0.28	0.19	0.05
	WS	1.87							0.24	0.12	0.40
(GI) A	WR	1.46								−0.10	0.01
	PM	1.62								0.20	0.09
	VO	1.96								0.21	0.16
	SP	1.38								−0.09	−0.23
	WS	1.63								−0.12	0.16
(AM) A	WR	1.56									0.11
	PM	1.42									−0.11
	VO	1.75									−0.05
	SP	1.47									−0.14
	WS	1.75									0.28
(SC) A	WR	1.45									
	PM	1.53									
	VO	1.80									
	SP	1.51									
	WS	1.47									

(handwritten annotations) only two synthetics that do not differ.

no significant differences here between MC and IN — a synthetic and an analytic

IN analytic differs from all other analytics in at least one aspect

no significant differences here among analytic approaches

**HO: Houghton Mifflin
LI: Lippincott
SI: Singer
EC: Economy
MC: McGraw-Hill
IN: Individualized Completely
IS: Individualized Supplemented
GI: Ginn
AM: American
SC: Scott, Foresman

S = synthetic

A = analytic

*Significant at .01 level. Positive differences favor program at left.

***Stanford Achievement Test Scores (Grade Equiv.)
WR: Word Reading
PM: Paragraph Meaning
VO: Vocabulary
SP: Spelling
WS: Word Study Skills

As expected, in their study there were no significant differences found among these four curricula within the analytic approach. (See Table I from page 503 of the study.[1]) However, a fifth approach, described as:

> (IN)=A completely individualized or personalized approach in which many different books were used but no specific set of commercially prepared books or materials was followed

which also had been classified by them as analytic did differ significantly from each of the other four in at least one comparison that the authors reported.

What does this mean? Is this a slightly different variation of the analytic method that does have some distinctive characteristics? Or is it perhaps more related to the group of synthetic methods where it did not differ significantly from an approach entitled, (MC)=Programmed Reading (1963), Webster Division, McGraw-Hill?

Of course, the (MC)=Programmed Reading approach differed significantly from all its own colleagues in the synthetic group, so perhaps Programmed Reading is actually a member of the analytic group related through the completely individualized approach. As a matter of fact, significant differences among members of the synthetic method are numerous. Table I from the Bliesmer and Yarborough report is found on the preceeding page. Examination of the significant differences reported indicates that at 17 out of the 50 comparative points, the synthetic methods differ from each other. Within the analytic group the 6 out of 50 significant differences reported are all from the completely individualized approach mentioned earlier.

The conclusion of some observers would be that the broad categories or approaches proposed by the researchers have not been demonstrated to actually exist as separable entities. If entities are to be considered under a more general title or grouping, then they must not differ significantly from other members of the category, particularly on the very differences that are the main concern of the investigation--reading achievement differences. If the approaches do not exist, the discussion of differences supposedly found between them does not make sense.

The Bliesmer and Yarborough report has been widely cited as important evidence of the value of the synthetic methods of reading instruction. To assert that contribution, however, a more adequate demonstration of the existence of such a distinction is needed. Broad

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[1]Table I has been reproduced as printed with certain explanatory notations to clarify the presentation following.

discussions that speak of an "analytic" method, or a "synthetic"
method, or an "eclectic" method and so forth tend to be too vague
to be useful as definitions, unless supported by empirical evidence
that a meaningful distinction can be made.

Discussion

Several trends or dimensions of the problems of extracting what
is known about different methods of reading instruction from the
present research literature are contained in the illustrative mate-
rials just presented. Many other specific studies could have been
presented and instance after instance of difficulties with individual
studies could have been outlined. As Feldman (1971) has pointed out
in discussing the difficulties of reviewing and criticizing the work
of others, "No study in the behavioral sciences is totally perfect,
definitive, and complete (p. 96)." The problem, of course, in every
instance is to decide what it is that can be said now that will make
the effort of others and one's own efforts worthwhile in advancing
the state-of-the-art. In the present review it has seemed over-
whelmingly clear that the opportunity for a redirection and rededication
of research on methods of reading instruction is the most important
finding that could be described.

The Targeted Research and Development Program on Reading (Penney
and Hjelm, 1970) reports the history of the USOE's support of reading
research from 1957-1968 and indicates that projects "to study and
compare approaches to the teaching of reading" comprised approximately
44% of the projects supported during that period. A staff study,
supplemented by outside consultative advice, recommended the appli-
cation of a systematic research planning technique (Convergence
Technique) similar to that utilized by the National Cancer Institute
in any future program of basic research and theory-building for
reading.

The intent of the recommendation was to make more orderly the
accumulation of knowledge about reading instruction and to provide a
mechanism for feeding such knowledge into solution-oriented programs.
Gephart (1970a) has detailed how such systematic research planning
might be used by the USOE. As a portion of the implementation of the
new research planning technique, Gephart and his advisors recommended
an immediate analysis of the contents of the existing research
literature and preparation of state-of-the-art syntheses. This
recommendation was accepted and three major projects were funded.

It is not known what expectations Gephart and the others may
have had for the contents of the reports being generated under the
projects of the Targeted Research and Development Program. It is
clear, however, that research is always shaped by the stated or
unstated assumptions of those conducting it. Therefore, some of
the background assumptions that guided this particular review of the

literature and which may help to clarify the recommendations being made are briefly presented below.

Most would accept as a definition of methods of reading instruction a half of a dozen or a dozen different labels or approaches that have been widely discussed. A phonics approach, a basal reader approach, an initial teaching alphabet approach, and so on would be offered as examples of methods. (Evan at this level i.t.a. proponents would take exception to identification of the initial teaching alphabet as a method when they consider it only a simplification of the orthography of the language that children are attempting to learn to read.) But on the whole we would expect that we could talk with others about such methods of reading instruction and be understood.

Why then must objections be raised to this kind of definition and level of discourse when the task is to report what the relevant research literature tells us about certain methods?

The common failing of definitions at this level of generalization is their lack of enough specificity. Without the specification of attributes of these global methods on a number of particular dimensions, it is not possible to conduct an interpretable search for knowledge. The outcome of the search for knowledge is to be a description of the differential effects of various different methods on different learners. Without an adequate description of the differences among "methods" being tested, the search for knowledge is already doomed to uninterpretability or misinterpretation.

The solution is to take seriously the implications of some agreed upon analysis of reading behavior. There are major goals of reading instruction to be accomplished over long periods of time; these major goals can be studied in segments that are timebound and definite; the studies should be considered as investigations of procedures to accomplish the major goals.

All statements of procedures to accomplish the r or goals must specify, as a minimum, three variations in method inherent in any procedure. These are:

1) the sequencing of the exact elements presented;
2) the type and amount of practice trials for each aspect of the presentation; and
3) the total time devoted to the procedure under study.

When more than one procedure is under study, all procedures must be specified in comparable detail. Once a large number of relevant studies have been accomplished with such specified detail it may be possible to once again return to more global "methods" research. Hopefully, such research will not be necessary because so much will be well established that general statements will be supported by

specifics. It is also possible (and probable) that alternative pro-
cedures will work for various portions of the total instructional
act. In that case the description of the total "method" will include
various acceptable alternative procedures at several points in the
entire development from beginning reader to independent reader.

Many would agree, without much discussion, that the United States
has a reading problem because not everyone leaving our schools has
the skills and the desire to read to the full limits of his capability.
(See Chapter 3 of this report for an attempt to docume : the national
reading "problem.")

The crucial question, of course, is: do we have adequate
instructional methods in the area of reading?

This question, however, cannot be answered by reference only to
adequate empirical investigations considered in the light of reason-
able social objectives and expenditures. It is both a scientific
question and a political-social value question. If we are willing to
make massive expenditures of time and money solely for the purpose
of insuring that every citizen can read to the limits of his capabil-
ities, there is little question that we can succeed. (Read Seagoe's
1964 account of the reading and writing education of a mongoloid
child by wealthy parents if you doubt the assertion.) Usually,
however, the question of adequate instructional methods is posed in
the context of continued mass education at minimum expenditures per
pupil.

Given the political-social context of how can we get by as
cheaply as possible in educating our citizens, what is the empirical
evidence about methods of reading instruction?

The intention of this review was to answer these questions by
reference to adequate investigations already existing. It was
recognized that if more complete answers to provide information for
decision making was re~~~~red ~~ditional studies would be designed and
carried out. Unfort   ly, ~~~ conclusion is that the present
literature on methods of reading instruction cannot be used, except
in special circumstances, to justify decisions involving millions of
children and, possibly, if adequately funded education becomes a
national priority, billions of dollars.

It was possible to review the existing research literature to
provide a reasonable outline of a new program of research and develop-
ment in the area of reading that will change the present situation and
make it possible for future decisions to be more completely knowledge
based. One of the most worthwhile results of this review may be to
increase awareness among us that assertions of knowledge about any
aspect of human behavior are, at best, opinions based on personal
experience, tradition and cultural mythology, hopes, and far less

often, empirically valid facts. Advocates of particular policies who
imply they have more rigorous knowledge base than this should be
asked to produce it so all may benefit from it.

Most of us when we demand, "what is known about this subject?"
expect a ready answer, plainly stated in language and terms that
we can understand, and preferably condensed to a reasonable sized
package. As nice as an easy and clear answer would be it is often
difficult to provide when the basic knowledge is unclear and frag-
mented.

Research on methods of reading instruction has suffered from the
attempt to conduct research and report results without sufficient
attention to such details of reporting as are suggested by the Gephart
model. Consequently, the existing literature is not particularly
useful or interpretable. One of the most serious defects from a
scientific research point of view has been the continued attempts to
study variations in instructional treatments without specifying or
controlling what actually occurs. Definitions of methods that are
useful and acceptable for general discourse have been utilized in
investigations, sometimes involving substantial time and effort. Yet
everyone knows that the classroom teacher actually decides what she
will do in a particular situation. Because teachers deal with a wide
range of individual differences and particularized situations, it is
inevitable that their decisions become the operational definition of
what a "method" actually is. It is equally inevitable that these
numerous, day-to-day decisions tend to average out to a "style" or
teacher variable that is far more pervasive than any label attached
by the investigator. Thus, the numerous decisions of the teacher
create a "method" in response to what actually occurs with particular
children, day-to-day.

Regardless of the convenience of labels, empirical investigations
that use a label and then do not monitor what actually occurs in the
classroom cannot be interpreted. Teachers in training are not generally
taught a specific method or even several specific methods. (See
Chapter 5 of this report for a description of training requirements
for teachers.) Instead they are exposed to goals and objectives for
reading instruction, some component processes for producing learning,
and background materials on child growth and development related to
reading (Kies, 1970). Thus, the teacher given a set of materials and
a brief introduction to a "new" method is still, essentially, a free
agent--a trained person who must within individual limitations of time
and energy "create" a method anew each day with a particular group of
children. If this "creation" is not monitored, the investigator has
no firm idea of what the instructional procedures actually used were
once the door was closed and the teaching began.

Reports of such investigations would be difficult or impossible
to interpret and summarize from this single defect alone, but a second

difficulty of making knowledge statements from the existing literature also was apparent. Specifically, the archival record of most investigations is so sketchy and popularly reported that it is impossible to establish what facts were actually uncovered, the conditions under which they were obtained, or the reliability or validity of the information. This means, in effect, that regardless of the quality of the research actually conducted, the only surviving and accessible report that can be found with reasonable diligence is one that does not contain sufficient information so the reader can judge for himself the quality of the information. Obviously, there is a difficult decision here about what, of all of the possible items to include in a report, are the essential elements. But scientists in general have long agreed that an adequate archival report should describe the design of the research, the measurement devices used, the treatments or conditions being studied in sufficient detail so others might repeat or extend the investigation, and the logic of the inferential chain being used to reach the author's conclusions.

No hard and fast rules can be laid down. The goal of scientific reporting should be communication so that others may challenge or add to the facts discovered by the investigator. The only accessible report of much of the research on methods of reading instruction is found in magazine type publications that, properly, do not see themselves as providing archival review or retention. The author for these publications is requested and often forced to present only a sketchy outline of what was done with much more emphasis on conclusions and implications. The readers of these journals are not expected to challenge or add to the body of research.

Actually, no solid evidence or web of partial evidence exists at the present time that could restrict the teaching of a reasonably informed alert teacher of reading at any level. There are certain seemingly logical approaches and bits and pieces of information that might aid in deciding between certain aspects of procedures proposed, but literature exists either for or against almost any "method" that has been actually used or proposed in the last decade. If one has to take a position (and teachers obviously do everyday of school), it is safe to say that:

> All methods of reading instruction instruct some children (probably the same ones) well and do not succeed with some small portion of others that have been studied.

> The national reading problem is not that massive numbers of students cannot read in the sense of not knowing the grapheme-phoneme correspondences but in the fact that many persons do not wish to read for pleasure or information and do not comprehend either written or oral messages well.

In effect, th. national reading problem might just as easily
be called the national thinking or comprehension problem and
the schools are only minutely responsible for the fact that
massive numbers of our citizens are, essentially, not inclined
to develop or maintain reading and comprehension skills
necessary for their own self-selected goals and life space.

It may appear to many that the review of over 800 articles on
reading methods and materials selected as pertinent to the specific
concer and questions of this project ought 'o yield more information.
As a r ter of fact, it has been a constant c cern that such an
extensive, time-consuming, and detailed effo: should yield only a
little information. What standards should be applied was asked often.

However, to take seriously the charge to take a critical look at
the literature relevant to the important questions of this study was
to be unable to reduce the standards. Criticism is, unfortunately,
judgment according to a standard. If the standards were too high, it
was because they are the accepted standards of conduct and reporting
of research that science has found necessary over the years in
utilizing the reports of its practitioners. These standards actually
are flexible and vary from field to field. Now, however, is the time
to refocus the research effort in reading research.

It is time to raise the standards of reporting and conducting
reading research because it is impossible to know what trust to
put in an incomplete research report, a study done with no controls,
a statement of conclusions unsupported with reported and clearly
inte retable data.

There is nothing wrong with incomplete, small, and partial studies
where only the experimenter can adequately (and clinically) interpret
the results. These studies help to shape opinion and better define
future studies. Those studies selected for archival publication and,
therefore, as possible additions to the knowledge base must be of
larger vision, however They must meet the standards that allow
confidence in the discovered facts, independent of the interpretation
the author gives to those facts, or any slant a reviewer gives to those
facts. What is required is a reporting that will make it possible for
anyone to judge the adequacy of the information.

Basically, the research effort on methods of reading instruction
can and should be restructured in order to provide reliable knowledge
in accessible, scientific journals and book length presentations. It
is clear that the present body of literature is too incomplete, too
fragmented, and too often conducted and reported on too general a level
to be very useful. The effort to understand what was actually done in
most of the studies reviewed was disproportionate to the yield obtained.

CHAPTER V

NATURE AND EXTENT OF CURRENT PRACTICES
IN EDUCATING THOSE WHO TEACH READING

It has been suggested that the level of reading competence of
the nation's population is in part a result of the formal educa-
tion provided to teachers of that population. While it is recog-
nized that the structure, government, facilities, services and ma-
terials of the schools are important components of the educational
program, the attitudes, knowledges and skills of the teacher are
commonly perceived as the most significant factors in the effec-
tiveness of the instruction. This search of the literature was
proposed to determine whether the explicit characteristics of cur-
rent practices in preparing those who teach reading could be iden-
tified, and whether these characteristics could be related to the
reading ability of the student population.

James B. Conant, in his   The Education of American Teachers,
observed that the subject of teacher education is not only highly
controversial but also exceedingly complicated (1963). The re-
quirements and programs for teacher education are the product of
an extremely complex system of institutions and people. Although
the details of the system vary from locality to locality, the
practices of teacher education which deal with reading instruction
seem to result from the interaction of the following elements:

   1) state legislation, education codes and administrative
       policies related to reading instruction;
   2) state certification boards' translation of legislative
       directives into teacher preparation requirements;
   3) teacher education institutions' program requirements
       for graduation and certification;
   4) requirements of local boards of education for meeting
       state and local requirements;
   5) local school government operating to meet the state,
       district and local school requirements for reading
       instruction.

The elements of this system are affected, in addition, by a
variety of informal inputs from professional educators' organiza-
tions, technological developments, social organizations of the
citizenry, etc.

The five formally constituted elements of the system suggest
a consistent sequential translation of the concern for adequate
preparation of teachers of reading instruction by state formal
standards of certification and by the requirements of educational
institutions, local educational agencies and local schools. How-
ever, variation in translation and implementation of these

educational concerns has brought attendant variation in the prac-
tices both within and among institutions who prepare and certify
those who teach reading.

This survey of the published literature is concerned with
the following questions:

1) What are the (state) certification requirements for
   the preparation of teachers of reading in the 50 states
   and the District of Columbia?
2) What are the educational requirements for the instruc-
   tion of reading by those four year institutions which
   prepare at least 100 elementary teachers every year?
3) What are the certification categories and requirements
   for the preparation of reading specialists?
4) What methods of teacher preparation are employed by
   educational institutions to meet the certification re-
   quirements of teachers and specialists in reading in-
   struction?
5) What pre- and inservice education for teachers or
   specialists in reading is provided or required by local
   educational agencies?
6) What evidence exists that there are relationships be-
   tween teachers' preparations, how teachers teach, and
   how their students achieve in reading?

The certification and education of teac ei. are topics
which have stimulated extensive writing throughout the history
of American education. Literature has provided a large array of
discussion of practices in specific regions or institutions. At
the same time, there have been relatively few attempts to summa-
rize practices in all states and teacher education institutions.
The most comprehensive studies are those by Conant and the
Harvard-Carnegie studies (Conant, 1963; Austin and Morrison,
1961; Austin and Morrison, 1963). These studies suggest how those
who were teaching in the 1960's had been educated in the 1950's.
This survey has been concerned with the education provided in the
1960's for those who will teach reading in the 1970's and beyond.

The primary purpose of this summarization of the published
literature is to determine whether documented evidence exists to
answer the questions about the nature, extent, and effects of
teacher education. For the consideration of rationale and in-
tent of different approaches to teacher education and certifica-
tion, the reader is encouraged to consult other sources, such as
the 67th Yearbook of the National Society for the Study of Edu-
cation, Innovation and Change in Reading Instruction (Robinson,
1968).

State Education Code Directives for the Teaching of Reading

A state education code contains the statutes the state leg-islature has passed which provide for the establishment, govern-ment, maintenance, and operation of the public schools. Although these laws are collected in one or several volumes, they are the products of many years of piecemeal legislation. No state educa-tion code should be viewed as an integrated, comprehensive set of rules. However, the state education code is the basic document which contains the statutory provisions for the administration of the schools. These statutory provisions are viewed as having di-rect or indirect effects on the complex systems of institutions and people that comprise the formal system of public education.

A review of the state education codes was made to determine the nature and extent of statutory provision for the teaching of reading. The review was specifically concerned with answering such questions as:

1) Do legislative statutes require that reading be taught in the public schools? If so, what is the date of the most recent legislation?
2) Do the statutes specify content and materials for use in the teaching of reading?
3) Are specific methods mandated for the teaching of reading, or any subjects?
4) Are time requirements specified for reading instruc-tion?
5) Do the statutes specify the requirements for those who teach reading?

A summary of this review of the education codes pertaining to these topics of program, materials, methods, time and person-nel is presented below.

State statutes regarding course of study and programs of reading instruction. The review of the state education codes re-vealed that all states have given broad powers to state-created boards or departments of education. The section of the state code dealing with the course of study commonly reads, "The state board of education shall determine the course of study for all common schools."

There are 12 states that specify no course requirements and leave the determination of the course of study entirely to the

state board of education.   These 12 states are:

Alaska	Michigan
Colorado	Minnesota
Delaware	New Hampshire
District of Columbia	New Jersey
Florida	New Mexico
Maryland	Wyoming

Sixteen states have statutes requiring specific subjects, but
they do not include reading. Included in the statutes of these
states are such subjects as citizenship, safety, morals, tree-
planting, accident prevention, thrift, kindness to dumb animals,
patriotic exercises, the evils of narcotics and alcohol, etc. The
16 states having such specific course requirements but making no
legislative mention of reading are:

Arizona	North Carolina
Arkansas	Oregon
Idaho	Rhode Island
Illinois	South Dakota
Louisiana	Texas
Missouri	Utah
Maine	Vermont
Nevada	West Virginia

Twenty-three states have legislation requiring that reading be
be taught in the schools. The states with such education code re-
quirements are listed, with the date of the most recent enactment
concerning reading.

Alabama	1927	Nebraska	1953
California	1968	New York	1947
Connecticut	1959	North Dakota	1943
Georgia	1943	Ohio	1955
Hawaii	1965	Oklahoma	1949
Indiana	1931	Pennsylvania	1949
Iowa	1924	South Carolina	1952
Kansas	1945	Tennessee	1925
Kentucky	1952	Virginia	1928
Massachusetts	1962	Washington	1969
Mississippi	1942	Wisconsin	1963
Montana	1937		

In the last ten years, five states have passed legislation
that specified reading as a required content for instruction. In
the preceding ten years, five other states enacted such legisla-
tion, with the remaining 13 states having enactments dating back
as far as 1924.

The overlapping representation of the geographical, urban-rural and population characteristics of these three categories of state code requirements for programs does not suggest any definitive conclusions regarding regional or urban-rural differences.

Instructional material requirements. No state code specified the textbooks or other materials required for reading instruction. A common method for selecting textbooks was through the creation of a state textbook committee or commission which might designate one, two, or a list of texts that might be used by the schools.

Sixteen states require either uniform statewide adoption of textbooks or exercise some other ultimate control over their selection. These states are:

Alabama	Kansas
Alaska	Louisiana
Arkansas	Maine
California	Nevada
District of Columbia	New Hampshire
Florida	South Carolina
Idaho	Utah
Iowa	Virginia

The following 18 states depend on strictly local adoption, with no state supervision:

Arizona	North Dakota
Illinois	Ohio
Maryland	Pennsylvania
Massachusetts	Rhode Island
Michigan	South Dakota
Minnesota	Vermont
Montana	Washington
Nebraska	Wisconsin
New York	Wyoming

Thirteen states direct the state board of education to provide local districts with a list of acceptable books from which each district makes its selection. These states are:

Connecticut	North Carolina
Delaware	Oklahoma
Georgia	Oregon
Indiana	Tennessee
Kentucky	Texas
Mississippi	West Virginia
New Mexico	

Three states make special provision for reading textbooks. Indiana requires that a primer must be included in the reading texts. Both Mississippi and North Carolina require that two books be used to teach elementary school reading. All three states use a multiple listing of acceptable books from which the local adoption is made.

The education codes for Colorado, Hawaii, Missouri and New Jersey contained no statute making reference to required use of instructional materials.

Time and methods for instruction. None of the state education codes contained statutes requiring particular methods for teaching reading. Only three states, Kansas, Michigan and North Carolina, had statements in their codes directing the state board of education to determine and recommend the proper methods of instruction for the schools in the state. In the majority of states the legislation contained in the education codes does not prescribe or require the means and methods by which the instruction of reading (or any other subject) will occur.

Each state education code includes laws which specify the compulsory attendance requirements. Although every state has legislation which specifies the general time requirements for compulsory attendance, only Hawaii made time requirements for specific subjects in the course of study. The Hawaiian education code requires that in the first eight grades of school at least 50% of each school day must be devoted to studying oral expression, written composition, and spelling of the English language.

It is clear that the state education codes have avoided, and continue to avoid legislative requirements that would specify the time and methods of instruction for reading or any other subject. However, the education codes tend to be quite consistent in assigning the determination of such requirements to the state board of education and/or the governing board of the local school district. The variation of interpretation of these delegated requirements and the transitory base for such determination suggest the complex process through which instruction of the course of study is attained.

Personnel requirements. All 51 states have statutes which require licensing or certification of teachers. The most common form of this provision is represented by the statement, "The state board of education shall have control over the granting of certificates to teachers." However, almost all states include clauses that allow teachers to teach with a probationary or one-year certificate in the event no qualified teachers who met state certification requirements were available.

In 22 states the education code has provided for various forms
of "special" certificates. The term "special" is generally
left undefined, and the state board of education is given the power
to issue certificates for certain subjects, grades, fields, or
schools as it may deem necessary. These states are:

Colorado	Nevada
Connecticut	New Hampshire
Florida	New Jersey
Georgia	New York
Hawaii	Ohio
Illinois	Oregon
Kansas	Pennsylvania
Maine	South Dakota
Massachusetts	Texas
Montana	West Virginia
Nebraska	Wyoming

California is the only state with a statute specifying the
certification of reading teachers. The California legislature has
created the position of specialist teacher in reading. Candidates
are nominated by the governing board of each school district and
are accepted or certified on the basis of an examination given by
the Department of Education.

What California has done by statute, other states have accom-
plished through their state boards of education. Certification as
a reading teacher (with various titles and responsibilities) is
available in the following 31 states:

Arizona	Missouri
Arkansas	Montana
Colorado	Nevada
Connecticut	New Hampshire
Delaware	New Jersey
District of Columbia	New Mexico
Florida	North Dakota
Georgia	Ohio
Indiana	Oklahoma
Iowa	Pennsylvania
Kansas	South Carolina
Maryland	Utah
Massachusetts	West Virginia
Michigan	Wisconsin
Minnesota	Wyoming
Mississippi	

Summary. The state education codes provide the broad frame-
work for the establishment, government, maintenance, and operation
of the public schools. Explicit definition and requirements for
curriculum and instruction are commonly assigned to the state board
of education. The details for the program of reading instruction
may be found in state board documents variously entitled "poli-
cies," "rules," "regulations," or "administrative codes." In
addition, special commissions created by the state board of educa-
tion are assigned the responsibilities of operational definitions
for certification, course of study, textbooks, materials, etc.

The variation of the contents included in the state education
codes does not appear to have direct implication for the content,
materials, methods or teacher certification that is presently im-
plemented from day to day. For example, only 48% of the states
having statutes for special certificates actually certify reading
teachers. Review of the education codes also revealed that, of
the state codes that require reading, only 48% of these states
certify reading teachers.

The state statutes generally do not make specific require-
ments for the program, materials, time and personnel that shall
be involved in the teaching of reading. A summary of the state
statutes pertaining to the teacher of reading is presented in
Table 25.

State Certification Requirements for Those Who Teach Reading

Education relies heavily on the printed word to present to
the learner the contents of the curriculum, whether it be in
mathematics, social science, physical science, arts, or the hu-
manities. Thus all teachers in the elementary and secondary
schools are to some extent engaged in the teaching of read-
ing. In this context, state certification requirements for all
teachers are considered relevant to the preparation of those en-
gaged in reading instruction.

The responsibility of the elementary teacher to provide in-
struction in the language-arts skills, as well as the skills and
knowledges of the other areas of the curiculum, has been gener-
ally recognized in certification requirements. Instruction in
reading has long been perceived as a central emphasis of early
school years.

The variation in assignments and specializations of those
who teach reading at the different levels of education suggested
the need to summarize certification requirements for all states

TABLE 25

STATE EDUCATION CODE STATUTES PERTAINING TO THE TEACHING OF READING

	Required Reading Instruction	State Adopted Books and Reading Materials	State Certification of All Teaching Personnel
Alabama	x	x	x
Alaska		x	x
Arizona		x	x
Arkansas		x	x
California	x	x	x
Colorado			x
Connecticut	x	x	x
Delaware		x	x
District of Columbia			
Florida		x	x
Georgia	x	x	x
Hawaii	x		x
Idaho		x	x
Illinois	x		x
Indiana	x	x	x
Iowa	x	x	x
Kansas	x	x	x
Kentucky			x
Louisiana		x	x
Maine			x
Maryland	x		x
Massachusetts			x
Michigan			x
Minnesota	x	x	x
Mississippi			x

TABLE 25 (cont'd.)

STATE EDUCATION CODE STATUTES PERTAINING TO THE TEACHING OF READING

	Required Reading Instruction	State Adopted Books and Reading Materials	State Certification of All Teaching Personnel
Missouri			
Montana	x		x
Nebraska	x		x
Nevada	x	x	x
New Hampshire		x	x
New Jersey			x
New Mexico	x	x	x
New York	x		x
North Carolina	x	x	x
North Dakota	x	x	x
Ohio	x		x
Oklahoma	x	x	x
Oregon		x	x
Pennsylvania	x		x
Rhode Island			x
South Carolina	x	x	x
South Dakota			x
Tennessee	x	x	x
Texas		x	x
Utah		x	x
Vermont			x
Virginia	x	x	x
Washington	x		x
West Virginia		x	x
Wisconsin	x		x
Wyoming			x

according to:

1) general teaching requirements;
2) elementary and secondary credentials;
3) credentials for specialists in reading instruction.

This survey of the literature was concerned with the credential requirements for both regular and specialized teaching credentials and the incidence of these credentials in the various states.

As the need for specialization has molded our society, defined specializations in teaching assignments and special services have evolved within the educational community. These developments have produced new categories for certification and teacher education such as the reading specialist, remedial reading teacher, educational diagnostician, reading resource specialist, reading consultant and many more. The position described as "reading specialist" probably represents the most extensive requirements for certification of those who teach reading.

Since the primary purpose of this investigation was to determine the extent and nature of the preparation most related to reading instruction, other contents of the certification requirements, such as history, philosophy, law, etc., were not summarized from source documents.

General requirements for a regular teaching credential. Professional school personnel who teach in the public schools are required by law or regulation in all states to hold certificates issued by the designated legal authority. The rules of certification for teaching in the non-public schools are generally either not stated or are not the same as for teaching in the public schools.

Every state has developed its own guidelines for certification. There is no uniform system of certification. All states except Arizona, California, Colorado, Kentucky, Minnesota, New Hampshire, New Mexico, North Dakota, and Ohio made a broad grant of authority by law to the state board of education to establish the certification requirements. A total of nine states report that the legal authority for certification is shared with agencies other than the state board of education.

All states and the District of Columbia require a minimum of eight semester hours in professional education courses while some require as much as 53 semester hours in such training.

All states require a minimum of a bachelor's degree for the initial certification of secondary school teachers. Similarly,

a bachelor's degree is required for elementary school certifica
tion in all states but Nebraska, South Dakota, Vermont, and
Wisconsin.

Twelve states require the completion of a fifth year of
college preparation for both the elementary and secondary creden-
tial. However, some allow the fifth year to be completed within
a specified period of time.

Indiana mandates completion of a master's degree for the
initial certification while eleven other states require the mas-
ter's degree in a period of five to ten years after the issue of
the initial credential.

Two states, Michigan and Pennsylvania, require advanced
training beyond the bachelor's degree, but less than the fifth
year.

A predominant practice (45 states) is to "endorse" certain
academic fields of teaching on the secondary teaching certificates,
while the remaining states issue a blanket secondary certificate
without designation of the subjects or areas of teaching. Such
endorsement is not found in the issuance of elementary credentials
in these states. Only eight states do not require a recommenda-
tion from a college or officer of an employing agency.

As an adjunct to the certification requirements, 36 states
reported extensive use of procedures for approving the programs of
training institutions as the means by which teachers may be certi-
fied.

The expansion of means of certification has also prompted 16
states to approve alternate routes to certification through appeal
or review by specially constituted committees. Twenty-one states
report some use of proficiency examinations in either the regular
or alternate routes to certification. Twenty-seven states reported
special certification plans for Teacher Corps Interns and 16 states
have special certification plans for Peace Corps Teachers.

State certification requirements pertaining to reading for
elementary and secondary credentials. Two documents are generally
available to persons concerned with the problem of teacher certifica-
tion across all states. One, apparently intended for counselors, is
Woellner and Wood (1970). The other is a publication of the National
Education Association apparently intended to provide specific informa-
tion as well as generalizations to state directors of certification and
other interested agencies or professional groups (Stinnett and Pershing
1970). There is substantial disagreement between the two documents.
Stinnett and Pershing indicate courses in "reading" or "reading

methods" as required for certifica ion in seven states; Woellner
and Wood note this requirement in t se seven plus six more states.
Stinnett and Pershing list courses n "language arts" as re-
quired in eleven states, while Woellner and Wood note this re-
quirement in nine of those eleven states as well as eight addition-
al states.

In addition to these obvious discrepancies, there are other
problems in the reported data which make generalizations about cer-
tification uncertain. Many of the states have "approved programs"
which are accepted as fulfilling all or part of certification re-
quirements. According to Stinnett and Pershing (p. 33), 36 states
reported "extensive use of the approved program approach to certi-
fication." If both sources are used, 40 states will accept, in
part at least, participation in approved programs as qualifying
evidence for certification. However, the two sources do not agree;
Woellner and Wood cite a greater incidence of the acceptance of ap-
proved programs than do Stinnett and Pershing.

The incidence of states accepting approved programs from
colleges and universities to meet certification requirements cannot
be construed as evidence either for the presence or absence of
reading requirements in these programs. In the review of institu-
tional requirements for approved programs, a wide variety of re-
quirements for courses in reading, reading methods, or language
arts was found.

Although the evidence from the literature is not consistent, it
does not seem reasonable to hypothesize that it is possible to be
certified as an elementary or secondary school teacher in some parts
of the United States without having taken courses in reading, read-
ing methods, or language arts. On the other hand, it is plausible
to hypothesize that the preparation in teaching reading is re-
garded as so essential in the education of teachers that it is as-
sumed within all programs and is not listed as a requirement.

The review of the existing literature indicated that it is
not possible to describe adequately the nature and extent of the
preparation of elementary and secondary teachers to teach reading,
per se, from existing reports of state certification requirements.

State certification requirements for reading specialists. The
examination of certification standards for reading specialists was

made by using the two documents:

1) Status of Reading Certification in the United States,
Ward Sinclair, Mary Louise Miller, and Donald K.
Alexander, American Federation of Teachers AFL-CIO,
February 1970.

2) Roles, Responsibilities and Qualifications for Reading
Specialists, Professional Standards and Ethics Committee,
International Reading Association, 1968.

Descriptions of minimum professional standards for use as
guidelines by teachers, administrators, state departments of edu-
cation, and colleges and universities offering programs for the
preparation and certification of reading specialists, are in-
cluded in the International Reading Association (I.R.A.) docu-
ment. In the project review of state certification requirements,
it was apparent that states designate reading specialists by a
variety of titles, with either an endorsement on the regular
teaching credential or by special certification. Moreover, a va-
riety of functions and qualifications are suggested by both the
descriptions of duties and the titles: reading specialist,
reading endorsement, reading teacher, remedial reading teacher,
reading consultant, etc.

The qualifications listed by I.R.A. for the "special
teacher of reading" were used as the criteria for charting the
certification requirements of the various states. This specific
category was chosen for examination because it describes the per-
sons who provide direct services to children in reading, while
personnel in other positions are responsible for the development,
management, or inservice education of reading programs.

It was suggested in the I.R.A. pamphlet that an important
qualification of a special teacher of reading is the completion
of "a minimum of three years of successful classroom teaching in
which the teaching of reading is an important responsibility of
the position." This criterion was used in combination with the
educational requirements to identify the states having certifica-
tion for special teachers of reading. Table 26 presents the in-
formation compiled from the American Federation of Teachers
document charted in terms of the criteria specified by the I.R.A.
committee for certification as a special teacher of reading.
Some of the inclusions and exclusions for the chart were judg-
mental in nature, and represent the best approximations that
could be made from the available descriptive material.

Although 32 states designate some specialists in reading by
a variety of titles, endorsements, or credentials, it appears

TABLE 26

QUALIFICATIONS REQUIRED OF READING SPECIALISTS USING IRA STANDARDS AS GUIDELINES

	Appropriate Certification	Required Yrs. of Exper.	Planned M.A. Sequence or Equivalent	Required Graduate Courses			Required Courses			Literature	Recommendations
				Founda-tions	Diag./ Corr.	Practi-cum - Clinic/Lab	Meas. Eval.	Child./ Adol. Psych.	Psych.		
Alabama											
Alaska											
Arizona	x	3	x								
Arkansas	x			x	x	x					
California	x										x
Colorado	x	3	x								
Connecticut		3	x		x	x	x	x	x	x	x
Delaware		3		x	x	x					
D. C.		5	x								
Florida			x	x	x		x			x	
Georgia			x		x			x			
Hawaii											
Idaho											
*Illinois											
Indiana			x	x	x	x	x	x			
Iowa		2	x								
Kansas	x	2		x	x	x					
Kentucky											
Louisiana											
Maine											
Maryland		3	x	x	x	x	x	x	x		
*Mass.											
*Michigan		3			x						
Minn.		2		x	x	x					
Miss.		2	x	x							
Missouri		2		x	x	x					
*Montana											
Nebraska											
Nevada					x						
N. Hamp.		3	x		x	x		x	x		

Code: * = states which have a "special endorsement" or certificate
        but no recognized specialist

Source: AFT Document - "Status of Reading Certification in the
          United States"

TABLE 26 (cont'd.)

QUALIFICATIONS REQUIRED OF READING SPECIALISTS
USING IRA STANDARDS AS GUIDELINES

	Appropriate Certification	Required Yrs. of Exper.	Planned M.A. Sequence or Equivalent	Required Graduate Courses			Required Courses			Literature	Recommendations
				Foundations	Diag./Corr.	Practicum – Clinic/Lab	Meas. Eval.	Child./Adol. Psych.	Psych.		
*N. Jersey			x								
N. Mexico		3	x								
New York											
N. Carolina											
N. Dakota		3		x	x	x					
*Ohio				x	x						
Okla.		3	x	x	x	x					
Oregon											
Penn.				x	x	x					
R. I.											
S. Carolina		2		x	x	x					
S. Dakota											
Tenn.											
Texas											
Utah		3	x	x							x
Vermont											
Virginia											
Wash.											
W. Va.		3	x	x	x		x	x	x		x
Wisconsin		3				x					
Wyoming		3									

Code: * = states which have a "special endorsement" or certificate
        but no recognized specialist

Source: AFT Document – "Status of Reading Certification in the
         United States"

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that 27 states certify variously titled reading specialists who provide direct services in teaching reading to children. None of the 27 states with certified "reading specialists" appear to meet all of the minimum standards suggested by the International Reading Association. The most common certification requirement is in terms of courses of particular title or content. The most frequently required courses are in reading diagnosis and correction, practicums, and reading laboratories.

Teaching experience is required by 20 states for special certification with 15 of these states requiring three or more years of such experience.

Although 19 states are reported as listing no certification for specialists in reading, it is not appropriate to conclude that regular or advanced work in reading is not provided by the institutions preparing teachers in those states. On the contrary, in all of the 19 states without special reading certification, the colleges and universities in those states offered courses in reading which are presumed to be for personnel seeking certification. The information for all states is described in such variable and inconsistent manners that accurate conclusions are impossible.

The review of certification requirements for reading specialists reveals no apparent regional trends or differences. It appears that these state certification requirements are spotted across the nation in an inconsistent pattern. It is apparent that no common criteria are being used by all states for the required preparation for state certification of specialists who provide direct services to children in reading.

Current Practices of Institutions Preparing Those Who Teach Reading

A search of the literature yielded no recent comprehensive summarization of the offerings and requirements of institutions providing teacher education programs. As a result, the 1970-71 published catalogs of institutions offering teacher education programs were used as sources for the most current information.

Description of the sample. A letter was sent to all state education agencies requesting that they identify the institutions within their state which prepared 100 or more elementary teachers per year. Thirty-three states and the District of Columbia submitted the names of 279 institutions. The state nominations of institutions varied from those listing all institutions that provided teacher education to nominating the one institution that prepared the most teachers. Thus the institutions included were not limited to, or inclusive of, all institutions training 100 or more elementary teachers per year. The states nominated 279 institutions and 266 published catalogs were obtained for review and analysis.

To obtain a list of institutions in the remaining 17 states, the document, Accredited Institutions of Higher Education 1969-70, was used to identify: 1) those institutions enrolling 5,000 or more students and having an elementary teacher education program; and 2) institutions enrolling 1,000 or more students who were accredited only for teacher education (American Council of Education, 1969). These criteria were met by 122 institutions in the 17 states and 108 published catalogs were obtained for review. Published catalogs were obtained for 374 (93%) of the 401 institutions nominated or identified as providing teacher education programs.

Preparation of elementary teachers. All but 16 of the 374 institutions (93%) offer and require four year undergraduate programs with a major in education, or an academic major plus course work in education, leading to a bachelor's degree and some form of state certification. The sixteen exceptions include Northern State College and Black Hills College (North Dakota), which have two year elementary education programs that meet state certification requirements. The remaining 14 institutions require an academic undergraduate major with a fifth year to include course work in education. Those institutions are the University of Chicago (Illinois), Harvard University (Massachusetts), Seton Hall University (New Jersey), Columbia University Teacher's College (New York), Indiana University of Pennsylvania, Austin College (Texas), and the California institutions represented by the University of California campuses, the California State Colleges, University of Southern California, and the University of the Pacific.

The primary interest in the examination of the catalogs was to determine the institutional requirements and offerings for teacher preparation in reading. Fifty institutions do not specify required courses in their published catalogs so the review and the summarization used the remaining 324 institutions. The requirements are detailed in Table 27.

The summarization of the reading course requirements among the 324 institutions offering undergraduate teacher education programs revealed:

1) 207 institutions (64%) require a separate reading methods course, involving from two to three semester hours of study;

2) 108 institutions (33%) require either an integrated reading-language arts course or a general methods course including reading. Such courses required from two to twelve semester hours of study;

TABLE 27

READING REQUIREMENTS FOR TEACHER PREPARATION BY TEACHER EDUCATION INSTITUTIONS IN THE 50 STATES AND THE DISTRICT OF COLUMBIA

STATE	No. of Schools	A	B	C	D	E	F	G	H	I	J	K	L	M
Ala.	11	9	4	2	5	6	9	-	1	3	2	-	1	2
Alaska	1	1	1	-	1	-	1	-	-	-	-	-	-	-
Ariz.	3	2	1	1	-	1	2	-	-	2	3	-	-	2
Ark.	13	13	6	2	7	8	9	-	-	1	4	-	4	-
Cal.	15	12	6	4	15	1	10	-	-	11	5	9	4	2
Colo.	12	11	8	-	2	6	8	1	-	6	1	2	-	1
Conn.	5	3	3	-	-	2	4	-	-	2	4	-	1	2
Del.	1	1	1	-	1	-	1	-	-	1	1	-	-	1
D.C.	4	3	-	2	-	1	3	-	-	1	2	1	-	1
Fla.	4	4	4	-	2	3	4	-	-	3	4	-	2	-
Ga.	2	2	2	-	1	-	1	-	-	2	2	1	-	1
Hawaii	1	1	-	-	-	-	1	-	-	1	-	1	-	-
Idaho	6	5	1	1	2	3	5	-	1	3	1	-	3	1
Ill.	13	6	5	-	1	4	6	-	2	11	8	-	-	2
Ind.	5	3	2	-	1	1	2	-	1	5	3	-	2	2
Iowa	4	4	3	-	2	4	4	1	-	3	3	1	1	1
Kan.	7	7	3	3	4	2	5	-	-	7	5	-	1	2
Ky.	6	4	4	-	3	-	2	-	-	5	3	-	1	1
La.	17	15	9	-	8	8	10	-	-	5	5	-	5	2
Maine	0	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 27 (cont'd.)

STATE	No. of Schools	A	B	C	D	E	F	G	H	I	J	K	L	M
Md.	6	5	3	1	1	2	5	-	2	5	1	1	-	2
Mass.	13	10	8	1	2	7	9	1	1	7	4	1	1	1
Mich.	23	19	9	-	5	5	10	-	1	8	10	2	-	2
Minn.	5	6	6	-	1	6	6	1	-	5	5	-	2	-
Miss.	3	2	2	-	2	-	1	-	-	3	3	-	-	1
Mo.	11	11	7	2	4	6	8	-	-	6	7	1	1	3
Mont.	4	4	4	1	2	2	2	-	-	3	3	-	-	2
Nebr.	5	4	3	-	1	3	4	-	-	2	2	-	-	-
Nev.	2	2	2	-	2	1	2	-	-	2	2	-	-	2
N.H.	4	4	3	1	1	1	2	-	-	4	3	1	-	1
N.J.	4	3	3	-	-	-	1	-	-	4	3	-	-	-
N.M.	7	7	5	3	6	2	6	1	-	4	6	1	1	1
N.Y.	12	4	2	-	3	1	6	-	-	9	7	-	2	1
N.C.	6	6	3	-	2	1	2	1	-	5	2	1	1	1
N.D.	5	5	4	1	1	3	3	-	-	2	4	-	1	1
Ohio	11	8	5	1	6	8	10	-	-	8	7	1	1	-
Okla.	5	4	3	-	-	4	4	-	-	5	5	-	-	2
Ore.	6	6	3	3	3	4	4	1	3	6	1	2	-	-
Penn.	17	15	12	1	3	10	15	-	4	12	9	-	-	6
R.I.	2	2	-	1	1	1	1	-	-	-	1	-	1	1
S.C.	6	5	5	-	1	4	5	-	-	4	3	-	-	-
S.D.	3	3	2	-	2	3	3	-	-	2	-	-	-	1
Tenn.	5	4	3	-	3	1	4	-	-	4	2	-	1	2
Texas	36	34	23	6	16	13	19	2	-	9	3	-	1	4
Utah	3	3	2	1	-	-	2	2	-	1	2	1	1	-

TABLE 27 (cont'd.)

STATE	No. of Schools	A	B	C	D	E	F	G	H	I	J	K	L	M
Vt.	1	1	1	-	-	1	1	-	-	1	-	-	-	1
Va.	5	4	4	-	-	2	5	-	-	5	1	1	-	4
Wash.	11	11	5	1	2	2	4	1	1	7	2	-	-	-
W.Va.	10	10	5	1	1	4	11	-	2	7	2	-	-	2
Wis.	11	7	7	-	3	3	6	-	-	7	6	3	4	4
Wyo.	1	-	-	-	-	1	1	-	-	1	1	-	1	-
TOTALS	374	315	207	39	129	151	249	12	18	220	163	31	40	68

KEY:

A – Number of schools requiring some type of reading instruction for elementary education students

B – Number of schools requiring a separate reading methods class for elementary education students

C – Number of schools requiring practical experience concurrent with reading instruction for elementary education students

D – Number of schools requiring that student teaching be done in senior year for elementary education students

E – Number of schools requiring a course in children's literature for elementary education students

F – Number of schools offering a course in children's literature

G – Number of schools offering an undergraduate major or minor in Reading or Language arts

H – Number of schools requiring a reading methods class for all secondary education students

I – Number of schools offering secondary reading methods course

J – Number of schools having a graduate program in reading

K – Number of schools having a full-time intern program

L – Number of schools having a campus laboratory school

M – Number of schools having a reading clinic, laboratory or center

Source: Published catalogs (1970) of four-year institutions identified by the methods described in this chapter as graduating 100 or more elementary teachers annually.

Note that only those institutions which specified clearly the presence of these requirements have been included in the tabulation.

3) 39 institutions (12%) require some form of practical ex-
perience or concurrent student teaching with the required
reading, language arts, or general methods class;

4) 9 institutions (3%) listed no requirement for a reading
methods course.

The most extensive requirements for the preparation in read-
ing instruction were listed by the following institutions:

1) Northern Montana College requires three courses in reading
which include Fundamentals of Reading (three semester
hours), Corrective Reading (three semester hours), and
Language Arts and Intermediate Reading (three semester
hours). All of the required courses are described as
involving laboratory and practical experiences;

2) Portland State University (Oregon) requires all ele-
mentary majors to take either Language Arts and Reading
(three semester hours) or General Methods (12 semester
hours) prior to practice teaching, and repeat Language
Arts and Reading after completion of practice teaching;

3) The following institutions require two separate reading
methods courses: Northwest Nazarene College (Idaho),
Southern Illinois University, St. Cloud State College
(Minnesota), Mississippi State University, University
of Southern Mississippi, Monmouth State College (New
Jersey), East Stroudsburg State College (Pennsylvania),
and Slippery Rock College (Pennsylvania).

The examination of the catalogs produced the following find-
ings regarding course requirements and offerings dealing with
children's literature among the 324 institutions:

1) 151 institutions (47%) require a course in children's
literature.

2) 249 institutions (67%) offer a course in children's
literature.

All of the institutions preparing elementary teachers re-
quire practice teaching. Only 135 of the catalogs specified the
college year and the amount of practice teaching time that was re-
quired. Of the 135 institutions specifying the practice teaching
requirements, 96% require that it be completed in the senior year.
The practice teaching described required from six to sixteen
semester hours and was almost invariably to be accomplished in
eight weeks of full time or 16 weeks of part time work. Four
institutions require two practice teaching experiences with one

in the junior year and one in the senior year: Central Connecticut
College; Louisiana Technological University; Concordia College
(Minnesota); and, the University of New Mexico.   Boston University
requires that practice teaching be accomplished at two grade levels.
Since less than half of the institutional catalogs specified the
detailed requirements for practice teaching, no further generali-
zations could be made.

In addition to the listed reading course requirements in the
catalogs, these institutions offer a variety of courses and ex-
periences which are presumed to be available for student selection
as a part of the program of elementary teacher education.   In some
cases such offerings are known to exceed the institutional or state
certification requirements.   For example, three percent of the insti-
tutions surveyed offered an undergraduate minor in reading or
language arts for elementary teachers.   Forty of the 374 institutions
(11%) also indicated that an elementary campus laboratory school
was utilized in the program for preparing elementary teachers.

Preparation of secondary teachers.   The institutional require-
ments for the preparation of secondary teachers reflects an empha-
sis upon various content areas of the curriculum such as social
studies, science, math, English, foreign language, etc.   The review
of the catalogs from the 324 institutions provided the following
specifications of requirements for courses in reading:

1) Eighteen institutions (six percent) require a reading methods
   course for all students preparing for secondary teaching.

2) Ten institutions (three percent) require a reading
   course for students preparing to teach in the junior high
   schools.

3) Five institutions require a reading course for English
   teaching majors.

4) Two institutions require a reading course for social
   studies/history teaching majors.

5) One institution requires a reading course for language
   arts majors.

While only six percent of the institutions list a required
reading course for the preparation of secondary teachers, 220 of
the 374 institutions (59%) offer one or more courses in reading
methods at the secondary level.   Two of the institutions specify
that an undergraduate minor in reading is offered for secondary
teachers.   Additional offerings (in contrast to requirements)
are illustrated by 57 institutions (18%) describing reading

clinics or centers used for preparation and 31 institutions (nine percent) indicate the availability of full-time intern programs.

An assessment of the preparation of secondary teachers was also provided by an examination of the offerings of graduate programs in reading. One hundred sixty-three of the 374 institutions surveyed through their catalogs offered a graduate program in reading. The titles of the graduate courses in reading strongly suggest that they are planned for both elementary and secondary preparation with more emphasis upon instruction in reading for elementary age students. It is also observed that graduate offerings in reading courses provide more frequent opportunities for clinical experience than are found in the elementary course offerings.

Among the 374 institutions in 49 states and the District of Columbia surveyed through their published catalogs, six percent of the institutions specify a required course in reading for the preparation of secondary teachers. While it is recognized that many institutions do not list specific courses for secondary preparation, these requirements are in sharp contrast to the 64% of the institutions requiring a course in reading as a part of the preparation for elementary teachers.

A comparison of the preparation of teachers of reading in 1960 and 1970. Austin's study, The Torchlighters, Tomorrow's Teachers of Reading, provided a summarization of the preparation of teachers of reading a decade ago (Austin and Morrison, 1961). During the past decade the need for change in teacher education and teacher certification has been abundantly postulated in the literature. This survey of the catalogs of 374 institutions preparing elementary and secondary teachers during 1970-71 provided a summary of information which may be compared with Austin's findings.

Table 28 summarizes the common elements of the nature and extent of preparation in reading at the time of Austin's study and in the current survey. Nearly all (97%) of the institutions now preparing elementary teachers require a course in reading instruction, which is an increase of four percent over the incidence in 1960. A 14% increase (from 50 to 64%) in institutional requirements for a separate reading methods course is noted during this decade. In contrast, a slight decline (from nine percent to six percent) in institutional requirements of a reading course for the preparation of secondary teachers was found.

From 1960 to 1970 an increase (23% to 44%) in offerings of graduate programs for reading specialists is indicated. The current survey also shows a 32% increase in the number of institutions offering courses in secondary reading.

TABLE 23

COMPARISON: SELECTED RESULTS OF AUSTIN'S 1960 QUESTIONNAIRE SURVEY
AND 1970 CATALOGS SURVEY

	AUSTIN 1960	Teacher Education Institution Catalogs 1970
	N-371	N-374
1. Schools requiring some form of reading instruction for undergraduate elementary education students:	93%	(315 of 324) 97%
2. Schools requiring separate reading methods course:	50%	(207 of 324) 64%
3. Schools having campus laboratory schools:	38%	(40 of 374) 11%
4. Schools offering graduate programs for reading specialists:	(73 of 316) 23%	(163 of 374) 44%
5. Schools requiring a reading course for all secondary education students:	(28 of 315) 9%	(18 of 324) 6%
6. Schools offering a course in secondary reading:	(100 of 371) 27%	(220 of 374) 59%

During the decade there has been a decline in the number of institutions that maintain campus laboratory schools (from 38% to 11%). Reports from some institutions terminating their laboratory schools suggest that this decline was caused by restricted finances rather than by preference or a planned change in the nature of the teacher preparation program.

Of interest in this comparison of the preparation of teachers in 1960 and 1970 are the recommendations that Austin made as a result of the 1960 study. Of the 22 recommendations made, there are only four which can be related to the information obtained from the examination of the 1970 catalogs.

1) Austin recommended "All students to be required to make formal application to teacher education programs at the end of the sophomore year - selection criteria to include degree of academic proficiency, mental or emotional maturity, aptitude for teaching, and competency in the elementary grade skills" (p.142). Such information was not regularly available in the catalogs. However, the majority of institutions stated that they require a formal application to the teacher education program at the end of the sophomore year. Criteria for admission to the teacher education program, when listed, were generally described as a "C" grade average in college work and the passing of a physical examination. These observations would suggest that the implementation of an early application and selection procedure has been initiated, but that there is little evidence of the use of criteria of academic proficiency, mental maturity, aptitude for teaching, or competency in elementary grade skills for selection of candidates for teacher preparation.

2) Austin recommended that "a course in basic reading instruction be required of all prospective secondary teachers" (p. 147). The survey of the 1970 catalogs found that 18 of the 324 institutions (six percent) require a course in basic reading instruction of all prospective secondary teachers. As observed previously, this is a decline from nine percent to six percent during the decade since Austin's study.

3) Austin recommended that "schools require practical experience concurrent with reading methods instruction" (p. 148). The catalog survey found that 39 of 324 institutions (12%) require practical experience concurrent with reading methods instruction. The absence of such descriptive information in some catalogs makes it difficult to generalize concerning this recommendation.

4) Austin recommended that, "where the student is found to
have a specific weakness in understanding the total read-
ing program, he be required to return to college follow-
ing practice teaching, for additional course work . . .
and . . . where a student is weak in the area of instruc-
tional techniques his apprenticeship be prolonged until a
predetermined degree of competency is attained" (p. 156).
The catalog survey found only one of 374 institutions
that described the use of a performance-based teacher ed-
ucation program (Weber State College, Utah) with re-
quirements based on specified competencies rather than
specified courses or semester hours of credit.
The information provided in the catalogs suggests very
little likelihood that students may or would be required to
return for additional preparation if weaknesses in instruc-
tion were detected during practice teaching. The vast ma-
jority of schools (129 of 135 or 96%) in which the year
of required student teaching is specified, listed the
senior year and often the final semester, as the period
for this preparation.

Of these selected recommendations, it can be observed that
very little response, action, or change has occurred in the past
decade.

Additional contrasts for the preparation of teachers in the
1950's with the preparation in the 1960's are possible to make
from Conant's study of the Education of American Teachers (1963),
G.K. McGuire's national study of secondary reading programs (1969),
and Kinder's summarization of reading certification requirements
in the United States (1968).

There appears to have been a very small amount of change in
the educational requirements for certification from 1960 to 1970.
In 1960, as in 1970, the most frequent requirement for certifica-
tion as a regular elementary or secondary teacher was one course
in reading and /or language arts. The institutional requirements for
preparation in reading increased slightly for the elementary teacher,
while there was a slight decline in the reading course require-
ments for secondary teachers. At the same time, institutions in-
creased their offerings in courses for the preparation of second-
ary reading teachers and graduate programs for reading specialists.

The most common requirement for practice teaching continued
to be eight weeks full time or 16 part time, usually during the
last semester of the senior year in the undergraduate degree pro-
grams.

In 1970, as in 1960, the majority of institutions preparing
teachers had requirements that exceeded the certification re-
quirements of the state in which the institution was located. The
marked emphasis of the reading courses offered was on the prepara-
tion of teachers for the instruction of reading in the early ele-
mentary grades. Required reading courses commonly included
methods and materials for beginning reading instruction, word at-
tack skills, adjusting the materials and methods to the learner,
organization of the reading program and concepts of learner
readiness for reading and reading instruction. Generally, cor-
rective techniques for reading disabilities, diagnosis of learner
characteristics, and prescriptions of special remedial or develop-
mental techniques were included in advanced courses offered at
the graduate level.

During this period, surveys of teachers in training and
teacher educators repeatedly reported the perception that there
was insufficient time given in the education program for adequate
preparation in the diagnosis of Pupil's reading problems and in
the use of individualized or special techniques for the remediation
of reading difficulty. Some analysts of both teacher education and
teacher practice have been caustic in their observations that
"teachers appear to be teaching as they were taught. In the teacher
education there was no individualization. Teachers in training take
the same course, read the same chapters, and listen to the same
lectures generally without response." The analysts go on to point
out the similarity of the didactic approach used in teacher prepara-
tion to the didactic approach to reading instruction used by teach-
ers in the elementary and secondary schools.

The survey data are inadequate to answer the question of the
contents and methods used by institutions to prepare teachers of
reading. The information which was available in the documents of
the institutions preparing teachers was almost entirely restricted
to number of courses or semester hours of study in courses of
various titles. It is recognized that the nature of the prepara-
tion is intimately related to the materials, methods and ex-
periences included in the teacher education. For example, the same
required course in reading may have different text books, different
methods of instruction, different learning activities, and dif-
ferent required or anticipated outcomes within or among several
institutions. The survey data, while presenting institutional re-
quirements for courses and semester hours of instruction, do not
provide information concerning the specific contents, methods, and
outcomes of the teacher education programs.

During the past decade there has been an increasing amount of
literature and experimentation which has emphasized the need for a

more diagnostic, prescriptive, and individualized approach to the
teaching of reading. In spite of such widespread exhortations,
the requirements for teacher education and certification have
shown no substantial change, according to the surveys in 1960 and
1970. Although the current requirements for teacher education
and certification have shown slight change from the requirements
of the 1950's, a marked increase has been noted in courses in
reading offered by institutions providing teacher education, as
well as an increase in the credentials for special teachers of
reading.

Preparation Requirements for Teachers of Reading Specialists in the Largest Cities of the United States

The local education agency, through board-adopted rules and
regulations, defines the practices for implementing the state-
required educational program. The literature contains many inci-
dental observations about the variation of procedure in selected
districts in the same state. However, the survey of the litera-
ture for this project did not reveal a current source which sum-
marized the policies and practices of local education agency
requirements for the preparation of those who teach reading or
provide special services in reading instruction.

To obtain a sample of such information, a request was sent to
the 20 largest school districts in the United States, asking them
to submit the formally adopted requirements for those who teach
and who provide documents or written information which would:

1) identify the preparation required for reading specialists;

2) define the preparation required for those who teach read-
    ing;

3) provide information on special reading programs staffed by
    personnel with particular preparation or competencies in
    the teaching of reading.

The rationale for soliciting such information from the 20
major cities included the assumptions that:

1) the largest districts are responsible for providing in-
    struction to student populations of great diversity;

2) large districts, in serving heterogeneous populations,
    would employ more instructional specialists to meet
    special needs of students, and;

3) the largest public school systems would be responsive to
current recommendations for exemplary practice in the
preparation and competencies suggested for specialists
in reading.

It was assumed that the 20 major cities would provide a sample
of the nation's population which would be similar to the total popu-
lation in such characteristics as percentage of various ethnic
groups, foreign born, urban residence, age, and education completed.
To compare the similarity of the major cities' sample to the total
population of the United States, data were obtained from the
Yearbook of Cities and Counties, published by the Department of
Commerce (1967). Data from this source are summarized in Table 29.
The data indicate that characteristics of the major cities, in
composite, are similar to the characteristics of the total United
States population. The largest differences were a higher percent-
age of urban and foreign born population and a slightly lower per-
centage of persons with less than five years of schooling in the
large cities. This sample of major cities included approximately
one-third of the nation's population and represents many, if not all,
of the diverse reading needs presented local educational agencies
throughout the United States.

Documents and information were received from 17 of the 20 major
cities (85%). No information was received from Baltimore, Boston,
and Milwaukee. A summary of the pre- and inservice education re-
quirements of special reading personnel in the major cities is pre-
sented in Table 30.

All major cities employ some type of special reading teacher;
however, there is wide variation in the preservice preparation re-
quirements for those special teachers of reading. Seven cities
(Cleveland, Dallas, Houston, New Orleans, New York, Pittsburgh, and
Seattle) require no formal preservice preparation beyond that re-
quired for a regular teacher certification. Five other cities
(Chicago, Los Angeles, Philadelphia, San Francisco and San Diego)
do not require special preparation for some of their reading teacher
categories, while special preparation is required for other posi-
tions providing special reading services. Three of the cities re-
quire a master's degree with specified course work in reading. They
are, Chicago (special reading teachers), Philadelphia (language
arts - reading supervisors and language arts consultants) and
Washington, D.C. (reading clinicians). Approximately ten percent
of the major cities indicated that the I.R.A. minimum requirements
for reading specialists were closely followed; however, no specifi-
cations of degree, course, or competency requirements were stated as
being implemented. The most extensive education requirement was
found in Pittsburg, which specified one academic year residency in
a training clinic. Only Cleveland, Los Angeles, San Diego, and

TABLE 29

COMPARISON OF SELECTED DEMOGRAPHIC CHARACTERISTICS OF POPULATION
OF MAJOR CITIES AND TOTAL UNITED STATES POPULATION

	20 Largest U. S. Cities	Total United States
Population in Millions	57	179
Percentage Black	11.6	10.5
Percentage Urban Residence	87	70
Percentage 65 years & Older	9	9
Percentage Foreign Born	39.9	19
Median School Years Completed	10.9	10.6
Percentage With Less Than Five Years of Schooling	7.1	8.4

Source: Yearbook of Cities and Counties, U.S. Department of
Commerce, 1967.

TABLE 30

PRE- AND INSERVICE REQUIREMENTS OF SPECIAL READING PERSONNEL IN MAJOR CITIES OF THE UNITED STATES

City		Programs	Personnel	Pre-Service Requirements	Inservice Requirements
1. Chicago	1.	Reading clinics & centers	Special reading teachers	Master's degree in remedial rdg., or education w/ courses in remedial reading	None
	2.	Intensive reading project, reading laboratories, intensive language development, special assistance in reading, instructional teams, basic occupational & skill training centers, primary continuous development, reading environment & development schools	Differentiated teaching roles determined by project design	None	None
2. Cleveland			Reading consultants & clinicians		Training provided when needed
3. Dallas		Reading clinics	Reading clinicians (21)	None	Monthly training sessions
4. Detroit			Remedial reading teachers	a) Temporary approval: 1 year teaching experience. 6 semester-hours in reading instruction. b) Full approval: 3 years teaching experience. 12 semester hours read-	

TABLE 30 (cont'd.)

PRE- AND INSERVICE REQUIREMENTS OF SPECIAL READING PERSONNEL IN MAJOR CITIES OF THE UNITED STATES

City	Programs	Personnel	Pre-Service Requirements	Inservice Requirements
Detroit (continued)			...ing instruction (6 in diagnosis)	
5. Houston	Reading clinics	Reading specialists	None	
6. Kansas City	Reading clinics	Reading teacher	Missouri State Reading Certificate	
7. Los Angeles	1. Miller-Unruh basic reading program (96 schools)	Specialist teacher in reading (224)	1. California Specialist in Reading Credential. 2. Passing score on National Teacher Examination (Reading)	Meetings and demonstrations
	2. ESEA Title I programs	No special teacher category	None	
	3. California SB 28 Elementary Program	No special teacher category	None	
	4. District Elementary Program	Reading coordinators	None	Initial & continued participation in training programs

TABLE 30 (cont'd.)

PRE- AND INSERVICE REQUIREMENTS OF SPECIAL READING PERSONNEL IN MAJOR CITIES OF THE UNITED STATES

City	Programs	Personnel	Pre-Service Requirements	Inservice Requirements
Los Angeles (continued)	5. Secondary Reading Program	Reading teachers	4 semester hours of reading course work Student teaching or paid experience in teaching reading Passing score on objective written examination	
	6. Reading Laboratory Program – Secondary – five schools			
	7. S.C.O.P.E. Secondary Reading Program			
	8. Adult Education Program	No special teacher category	None	None
8. New Orleans	1. Elementary Individualized Program	Reading clinicians	5 years success-ful teaching experience	Workshops & on-the-job training
	2. Title I Project	Reading resource teachers	5 years success-ful teaching experience	Workshop & on-the-job training
	3. Ginn Tutorial Program	Para-professionals	Special training	Special training
	4. Junior High School Program	Remedial reading teachers	5 years success-ful teaching experience	Workshops & on-the-job training
	5. Senior High School Reading Program	Reading labora-tory teachers	same as above	same as above

TABLE 30 (cont'd.)

PRE- AND INSERVICE REQUIREMENTS OF SPECIAL READING PERSONNEL IN MAJOR CITIES OF THE UNITED STATES

City	Programs	Personnel	Pre-Service Requirements	Inservice Requirements
New Orleans (continued)	6. Title I Focus on Reading Program (in planning stages)	Reading resource teachers	same	same
9. New York	Reading Skills Center Diagnostic Reading Centers	No special category or license for teachers	None	
10. Philadelphia	1. Regularly Funded On-going Programs	a) Supervisor of language arts-reading	1. Masters Degree w/12 graduate credits in reading or English-Language Arts 2. Pennsylvania certificate valid for teaching reading, English, or elementary curriculum 3. 5 years teaching experience (2 as teacher of reading or English)	
		b) Teacher of reading, secondary schools	1. Pennsylvania Certificate valid for teaching reading or elementary certificate + 6 graduate credits in reading or secondary certificate + 6 graduate credits in reading 2. One year teaching experience or 18 graduate credits in	

TABLE 30 (cont'd.)

PRE- AND INSERVICE REQUIREMENTS OF SPECIAL READING PERSONNEL IN MAJOR CITIES OF THE UNITED STATES

City	Programs	Personnel	Pre-Service Requirements	Inservice Requirements
Philadelphia (continued)			reading 2. One year teaching experience or 18 graduate credits in reading 3. Score of 540 on NTE-Common	
		c) Teacher of reading, elementary	1. Pennsylvania reading certificate or elementary certification + 3 graduate credits in reading or secondary certification + 6 graduate credits in reading 2. One year teaching experience or 18 graduate credits in reading 3. Score of 540 on NTE-Common	
		d) Teacher in extension classes & evening schools. Basic education & remedial reading		
		e) General reading teacher	1. Bachelor's Degree + 3 graduate credits in reading 2. 1 year teaching experience	

TABLE 30 (cont'd.)

PRE- AND INSERVICE REQUIREMENTS OF SPECIAL READING PERSONNEL IN MAJOR CITIES OF THE UNITED STATES

City	Programs	Personnel	Pre-Service Requirements	Inservice Requirements
Philadelphia (continued)		e) General reading	1. Bachelor's Degree + graduate credits in reading 2. 1 year teaching experience	
	2. District Reading Program	Language arts consultant	1. Pennsylvania certificate valid for elementary, English or reading 2. Experience in organizing & implementing reading program for level assigned 3. 5 years teaching experience	
	3. Model CitiesReading Skills Center Program	Reading skills centers teachers	1. Pennsylvania elementary or secondary certificate 2. 6 semester hours in reading or equivalent Pennsylvania school district in-service courses 3. Experience as collaborating, lead, consulting or reading teacher	

TABLE 30 (cont'd.)

PRE- AND INSERVICE REQUIREMENTS OF SPECIAL READING PERSONNEL IN MAJOR CITIES OF THE UNITED STATES

City	Programs	Personnel	Pre-Service Requirements	Inservice Requirements
Philadelphia (continued)			4. 540 on NTE-Common	
11. Pittsburgh		Clinical Reading Specialists	5 years teaching experience	1 academic year as resident in training clinic
12. St. Louis		Reading Teachers	Missouri state reading certificate	
13. San Antonio	1. Learning Centers	a) Language arts coordinator b) Reading teachers		
14. San Diego	1. Miller-Unruh Basic Reading Program (38 schools)	Specialist teacher in reading	1. California specialist in reading credential 2. Passing score - National Teacher Examination - Reading	
	2. District Reading Program	Reading Teachers	None	
		ESEA teachers (12)		

TABLE 30 (cont'd.)

PRE- AND INSERVICE REQUIREMENTS OF SPECIAL READING PERSONNEL IN MAJOR CITIES OF THE UNITED STATES

City	Programs	Personnel	Pre-Service Requirements	Inservice Requirements
15. San Francisco	1. Miller-Unruh Basic Reading Program	Specialist teacher in reading	1. California specialist in reading credential 2. Passing score National Teacher Examination - Reading	
	2. ESEA Title I Ocean View-Merced Heights-Ingleside (O.M.I.) South East Educational Development (SEED)	Reading specialists Learning specialists Reading resource teachers	None	None
16. Seattle	1. Reading Improvement Program	Reading improvement teacher (frequently combined w/school librarian role)	None	
	2. Individualized Reading Centers	Counselors	None	Approximately 20 hours of direct class time and follow-up training

TABLE 30 (cont'd.)

PRE- AND INSERVICE REQUIREMENTS OF SPECIAL READING PERSONNEL IN MAJOR CITIES OF THE UNITED STATES

City	Programs	Personnel	Pre-Service Requirements	Inservice Requirements
17. Washington, D.C.	District Reading Program	a) Reading Clinicians	1. District of Columbia reading clinical license 2. Master's Degree (12 semester hours in reading)	
		b) Staff Development Team		

San Francisco offer a salary differential for special reading personnel.

Approximately one-third of the districts require inservice training for their reading teachers. In some districts, this is provided on an "as needed" basis, while others report special workshops or regular monthly inservice education. Cleveland, Dallas, Los Angeles, New Orleans, Pittsburg, and Seattle require various types and amounts of inservice training for the several kinds of reading specialists. The most extensive requirements for inservice education were found in Seattle where twenty hours of inservice course work as well as continuous inservice classes throughout the year are required of reading center counselors.

The local rules and regulations regarding the preparation and competency of staff who will provide special reading assistance in the local school districts do not consistently mention the reading certification of the state in which the city is located. Illustrations of this point are found in the following comparison of state reading certification, as specified in the Status of Reading Certification in the United States (Sinclair et al, 1970) and the city reported requirements for reading certification:

1) Illinois - "special certificate may be issued in the field of specialization such as reading" (p. 15). Chicago does not require special certification for reading teachers;

2) Ohio - "The Elementary certificate or English certificate may be validated for reading certificate" (p. 29). Cleveland does not require such validation for reading consultants or clinicians;

3) Missouri offers a reading specialist certification. Kansas City and St. Louis require such certification for reading teachers;

4) Pennsylvania certifies reading teachers and reading specialists. Philadelphia requires that the language arts reading supervisors must have either a state reading or English certificate, and that language arts consultants have either reading, elementary, or English certificates. Elementary and secondary general teachers of reading need no state certification. No Philadelphia reading position requires a state reading specialist certificate. Pittsburg requires no state reading certification for reading teachers.

5) Michigan approves remedial reading teachers (not a certified position). Detroit requires such approval for its reading teachers;

6) California offers a special reading teacher certification. Los Angeles, San Diego and San F. ncisco require such special reading certification for services as "Miller-Unruh teachers" but not for other special reading positions in these districts.

A comparison of the state requirements for specialized reading certification in those states in which the major cities are found reveals that at least one half of the cities do not require the state special reading certification for their categories of reading teachers and reading specialists. This was true in such cities as Chicago, Cleveland, Philadelphia, Pittsburgh, and San Diego. However, it should be noted that in the states where special reading programs have been created by the legislature, special certification for teachers in these legally directed programs are in each case required by the local district. However, in these same districts, when the local board designates special reading teachers or special reading services, the requirements for such specialized positions are not necessarily related to state certification. Forty percent of the major cities state a requirement of one to five years of successful teaching experience for specialists in reading or reading teachers. This suggests that the large cities, through their supervisory and administrative personnel, identify teachers in service who have demonstrated competence and successful performance in teaching reading. Such local identification of competencies has apparently developed the rather common practice of requiring a number of years of successful teaching experience for a special position in reading instruction.

The information from the major cities suggests that the categories or titles for specialists in reading for state certification are not inclusive of the variety of special reading teachers and reading specialists employed in these largest school districts. There is a marked discrepancy between the state-offered reading certification categories and the largest city districts' classifications of reading teachers and specialists in reading.

The analysis of these data from the major cities suggest that even when the city is within a state having certification for reading specialists, some (if not all) of the local positions for reading teachers and reading specialists have other requirements than those of the state certification. The major cities also rely upon inservice observation and preparation for both the selection and preparation for both the selection and designation of specialists in reading.

The most extensive requirements in the major cities are found for the position of clinical reading specialists or reading skills center teachers in the Model Cities reading skills center projects. The reading skills center teacher requirements include: regular elementary

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or secondary teaching certificates; three years of full time
teaching experience; experience as a collaborating, lead, consulting,
or reading teacher; six semester hours in reading or the equivalent
in the district inservice education courses; and a "satisfactory
score" on the National Teacher Examination.

Approximately one-half of the major cities reported special
reading programs developed by federally funded E.S.E.A. monies for
disadvantaged students. In such programs the common practice is to
provide special inservice and preservice workshops concerned with
the nature of language, language growth and development, and language
and reading as they relate to the needs of disadvantaged students.
Such special project requirements are not described or required for
the special reading teachers who provide reading services in the
school districts' regular reading programs.

In summary, the major cities all reveal a response to suggestions
in the literature that there is need for teachers of reading and read-
ing specialists by their designation of positions of a variety of
titles dealing with special reading services. Approximately one-third
of the cities utilize the state certification requirements for such
positions by the state in which they are located. In addition, all
of the major cities have some or all of their special reading posi-
tions based on preparation requirements other than those required by
the certification of the state in which they are located.

In the major cities special reading programs and services are
apparently utilized in a selective manner by various schools within a
district, presumably with student populations of greater or unique
needs. A particular illustration is the E.S.E.A. Title I programs
for students from disadvantaged backgrounds who may receive special
assistance in the "target" schools. However, in the same district
students of similar background and need not residing in the school
attendance areas of the highest concentration of such need will not
receive these special E.S.E.A. services, and may or may not be re-
ceiving special assistance in reading through the regular district in-
structional program. In general, no common descriptive evidence was
available as to the nature and extent of service from specially
trained reading personnel to student populations having a particular
or the greatest need for such services.

The Preparation of Those Who Are Teaching Reading

Incidence of public school personnel specially prepared in read-
ing instruction. In 1970 the USOE conducted a questionnaire survey
(not yet available) of school principals throughout the nation to
determine the incidence of pupils with reading problems and the avail-
ability of special reading assistance. Each school was asked to re-
port the number of pupils with reading problems who were and were not
receiving special instruction or assistance (Dwyer, 1971).

The results indicated that 318,500 teachers provided specialized instruction in reading, but about 20% of them taught reading only and instructed in separate classes. The data from this 1970 survey indicated that educators perceived from 15% to 20% of their student population as having reading problems; and of this population, 63% of the elementary pupils and 53% of the secondary pupils received no special instruction or assistance. For students with reading problems who did receive special assistance, 55% of the schools provided this as part-time instruction in special classes, while 40% received assistance in the regular classes, and 5% had such assistance in a full-time special class. This is further reinforced by the survey's finding that 80% of the teachers who provided special instruction and assistance to pupils with reading problems instructed in the regular classroom, and approximately 20% provided such instruction in separate classes. The survey noted 29% of the 56,900 elementary schools and 30% of the secondary schools reported they had no special reading personnel regularly assigned or on call. Among all schools surveyed in the United States (81,000), 32% reported they had no special reading personnel regularly assigned or on call.

McGuire reported the findings of a questionnaire survey of high school English teachers (McGuire, 1969). The survey was termed "national," though no questionnaires were sent to teachers in Oregon, Washington, Hawaii, or Alaska. The questionnaires were mailed to 2004 randomly selected secondary school members of the National Council of Teachers of English. The author obtained a 60% response from teachers in public, private, and parochial schools. Summarization of the responses from public school teachers, which represented a 46% response to the total number of questionnaires sent out, revealed that 42% of the teachers reported their schools had no reading specialist, 37% reported one reading specialist, 17% two or three reading specialists, 2% four or five, while 1% reported more than five reading specialists. Since no precise definition of "reading specialist" was given, teachers might have interpreted the meaning of the expression differently.

McGuire's survey indicated that junior high schools have more reading specialists (28.4% reported none) than schools with grades 7 - 12 (42% reported no specialists), or schools with grades 9 - 12 (48% reported no specialists), or schools with grades 10 - 12 (49% reported no specialists). Larger schools were better supplied with reading specialists, while schools in rural areas and small towns were the most likely to have none. Fifty-one percent of the schools in rural areas and 54% of the schools in small towns reported having no reading specialists. In contrast, only 27% of suburban schools reported no reading specialists. Fewer (30%) schools in smaller cities had no reading specialists than schools in larger cities: 40% in cities with populations of 150,000 to 300,000 had no reading specialists; 46% in cities of populations ranging from 300,000 to

500,000; and 41% in cities with populations over 500,000.

Fifty-three percent of the teachers responding to the survey indicated that consultant help in the teaching of reading was rarely or never given, while 23% reported such help was occasionally given, and 15% reported regular consultant help.

McGuire's survey also obtained information concerning the background and preparation of teachers currently teaching reading. This survey showed that 84% of the public high school teachers of English responding had not taken a course at the undergraduate level in the teaching of reading. Seventy-two percent of those who had a course in English methods indicated that the course treated teaching of reading to little or no extent; eight percent indicated that it was treated to a considerable extent. Fifty-four percent indicated that no form of inservice education in the teaching of reading had been given them in their school during the last five years. When the number of years of teaching experience was cross tabulated with preparation, the results indicated that no improvement had taken place in the preparation of newer English teachers for reading instruction.

The 1969 assessment of reading instruction in the New England Public Schools provides information regarding the preparation of teachers in reading instruction and of reading consultants for kindergarten, and grades 1, 4, 7, 10 and 12 (New England Education Assessment Project, 1969). The survey questionnaire was sent to elementary principals, elementary and secondary teachers, and consultants in the New England s. es (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.) The elementary survey reported that 59% of kindergarten, 74% of grade 1, and 70% of grade 4 teachers have had at least one reading course in the past six years.

The secondary New England Public School survey questionnaires were sent to grades 7 and 10 teachers responsible for some phase of reading programs. This survey reports: "Reading teachers at the 7th grade level appear to be somewhat better prepared than tenth grade reading teachers in terms of college credits in developmental reading. There is little or no difference between seventh and tenth grade reading teachers in terms of credits in remedial/corrective reading and children's or young adult's literature (p. 27)." Approximately one-third of the seventh and tenth grade reading teachers had three or more college credits in teaching reading.

The survey of reading consultants in the New England Public Schools was concerned with those persons who s. at 50% or more of their time supervising or consulting with teachers or working with administrators on matters concerning the teaching of reading.

Forty nine percent of the reading consultants held masters degrees; 37% - masters degrees plus 30 hours in graduate education; and 6% reported doctoral degrees. Sixty percent of the responding consul- tants had more than 21 credit hours in reading courses; 29% - from 16 to 21 hours; and 2% - fewer than 9 hours of reading courses. Sixty-nine percent of the consultants reported having at least one reading course within the previous two years.

In 1970 Farr conducted a survey of Indiana secondary schools' reading programs. Farr's study showed that 73% of the schools responding assigned the basic responsibility of reading instruction to regular English teachers. The author observed that secondary English teachers are not required to take graduate or undergraduate courses in the teaching of reading. Sixty-nine percent of the responding teachers in the Indiana survey had taken no courses in the teaching of reading as undergraduates; 58% had taken no courses in the teaching of reading as graduate students; while 12% were then enrolled in a reading course. Only 10% of the schools respond- ing employed reading teachers who had completed graduate programs in elementary or secondary reading.

Berry surveyed the education of American Indians and estimated that while 10,000 teachers in the United States have Indians in their classes, no college offers special preparation for teaching Indian children (Berry, 1968). A few institutions such as Arizona State, University of New Mexico, Brigham Young University, Ft. Lewis (Colorado), and University of Saskatchewan offer courses in Indian education. Berry observed that little or no literature on inservice education programs for teachers of Indian children existed. Berry indicated the special problems of the preparation of teachers for teaching English as a second language. While all 50 states require teachers of foreign language to have at least 45 hours course work in the language they are to teach, there are no require- ments for the teaching of English as a second language.

The surveys reviewed describing the reported need for special- ized assistance to pupils with reading problems suggested that be- tween 50% and 60% of students so identified were not receiving special reading assistance. Surveys from several regions of the United States (New England, Midwest and West) suggested that the majority of regular teachers who are engaged in the instruction of reading had two to four hours of preparation in reading in their preservice education. The surveys also suggested that among those teachers having two to four units of preservice courses in reading, a higher percentage of elementary than secondary teachers have had such reading courses. All surveys are consistent in reporting a need for more reading specialists than are currently available. The surveys also suggested that rural and suburban schools have a lower incidence of reading specialists than larger city districts; however, prob   because of the greater perceived need for reading

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assistance in the urban schools, a larger percentage of these
schools reported a greater need for specialized reading assistance
than do the smaller districts and suburban schools. In the USOE
Annual Report of People Who Serve Our Schools and Colleges, 1969-70,
a statistical report on poverty schools is presented. This report
suggests that poverty schools have a staffing of special reading
teachers superior to non-poverty schools, and that classes are
smaller in poverty schools than in non-poverty schools. These
findings, however, would have to be viewed in light of the evidence
which suggested a greater incidence of unmet needs for specialized
reading assistance in urban centers having poverty schools than re-
ported in the non-poverty schools (1970c).

Comprehensive data were not available on the incidence of read-
ing problems and the special assistance available for the various
ethnic groups, all regions, types of reading or language problems,
population characteristics, etc. The survey of the literature does
not provide information to answer reliably the questions of interest
concerning the preparation and characteristics of those who teach
and provide special assistance in reading to pupils in all regions
of the nation and with various needs and backgrounds.

Some New Approaches to Teacher Education and Teacher Competency

This survey of the literature on reading identified a great
quantity of books and articles devoted to describing the need for
developing more effective methods of reading instruction and teacher
education programs. Few of these met the criteria for inclusion in
this survey because they did not present systematically accumulated
data to document the needs or hypotheses they were presenting. At
the same time, such voluminous literature is believed to indicate
the level of concern for reading and interest in new approaches to
teacher education.

The federal interest in education exemplified by E.S.E.A. leg-
islation of 1965 has a parallel in the special assistance to the
field of higher education. Colleges and universities have received
funds to develop new approaches to teacher preparation. In addition,
several of the federally funded regional laboratories and research
and development centers have been engaged in developments to im-
prove the effectiveness of teacher preparation. A few of the cur-
rent developments are presented as illustrations of the variety of
approaches that are being planned to revise or modify teacher educa-
tion.

The Stanford Center for Research and Development in Teaching,
supported in part by funds from the USOE, is an example of regional
laboratories' efforts to contribute to teacher education. This Center
is concerned with the study of teaching in American schools and the

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effectiveness of American teachers in promoting the achievement of
higher cognitive objectives, especially in serving the needs of
students from low income areas. Of equal concern is the adequacy
of American schools as environments for fostering the teachers'
motivations, skills, and professionalism. The Center has formu-
lated integrated programs of research, development, demonstration,
and dissemination. In the heuristic teaching area, the strategy
is to develop a model training system, integrating components that
dependably enhance teaching skill. The program concerned with
teaching students from low income areas plans to develop materials
and procedures for engaging and motivating such students and their
teachers. In the program on environment for teaching, the strategy
is to develop patterns of school organization and teacher evalua-
tion that will help teachers function more professionally at higher
levels of morale and commitment.

Several of the findings of the preliminary or pilot studies
of the Center are suggestive of the current definition of need, of
proposals for increasing the effectiveness of teacher education,
and the consequences of input characteristics, process variables,
and teacher characteristics and competencies.

For example, Project 0309, Characteristics of Effective
Teachers and the Distribution of Teacher Services, is an illustra-
tion of the development of policy oriented models to improve the
efficiency and effectiveness of schools. The model suggests a set
of simultaneous equations to solve for school outputs. A single
equation was developed to show how students' socioeconomic status,
teachers', fellow students' and other student characteristics are
related to each of the following: student verbal scores, sense of
adequacy, grade aspirations, and parents' attitudes. The raw data
for the study had been obtained from several thousand sixth graders
attending 35 schools in a large Eastern city in 1965-66 and were
collected by the USOE Survey of Educational Opportunity. Estimates
yielded by the system of equations suggested that student backgrounds
are probably less important direct determiners of academic achieve-
ment than has been reported in other studies. Tentative interpreta-
tions were that teachers' degree levels showed no significant rela-
tionship with students' verbal scores, while teachers' experiences
were strongly related to them. The model and some tentative inter-
pretations of its results were reported in Do Teachers Make a
Difference? (United States Office of Education, 1970, pp. 55-78).

New models of teacher education. In 1967 the U.S.O.E. conceived
the Model Teacher Education Project as a strategy for improvement
of programs of elementary teacher education. The interest was in
large-scale and extended projects representing an emerging trend in
the use of federal funds for research and development programs. In
1967 RFP's were issued, and 80 proposals were received. Nine model

programs were selected for funding in Phase I. Phase 2, currently
in progress, is concerned with determining the feasibility of de-
veloping, implementing, and operating the model teacher education
programs based on the specifications developed in Phase I.

The System Development Corporation (S.D.C.) made an analysis
of the model teacher education program published in the document,
Analytic Summaries of Specifications for Model Teacher Education
Programs, (1969). This study utilized a systems analysis of the
models to allow a consistent procedure of judging the conceptualiz-
ing of the system, the parts or subsystems, stating the objectives
of the system, developing the needed procedures for achieving the
objectives, selecting the best alternatives, and implementing the
system. This document provided an analysis of behaviors presented
in the ten models and indicated the difficulties encountered in
trying to understand the teaching processes. The S.D.C. report
suggested that some broad areas of teacher behavior can be analyzed,
objectified, and described so that criterion levels of acceptable
performance can be stated. On the other hand, the models showed
that very little research evidence substantiates direct relation-
ships between teacher preparation activities and role performance.
Teaching remains an exceedingly complex activity, and a clear ex-
plication of some of the parts should not be taken to imply under-
standing of the whole. The authors suggested that the models
reflected the present state of the art and suggested important
frameworks for further research and development.

This analysis suggested that even though the whole of teaching
cannot be derived from behavioral analysis of its parts, some im-
portant directions might be identified for preparation, planning
and management. For example, if it can be demonstrated that teachers
educated in the use of many audio-visual devices are better able to
select appropriate individualized learning experiences, then such
evidence might recommend significant behavioral objectives for
teacher education programs. In contrast, while the coping skills
for dealing with problem children in a classroom are not fully
understood, certain teacher reactions have been accepted as counter-
productive; thus some behavioral objectives have specified the
elimination of these reactions from the teachers' repertoire of
classroom behavior.

Contrasting new and old programs of teacher education in the
course of analyzing the new models, the S.D.C. study presented a
review of past and present practices. It was noted that although
1200 colleges and universities prepare teachers for America's ele-
mentary schools, 300 institutions account for more than 90% of the
graduate teachers. The observation was made that there was little
diversity in program structure or goals across these many institu-
tions.

In general, programs are structured so that an undergraduate student pursues a four-year program and receives approximately 125 semester credits; when an appropriate number of educational courses including student teaching have been completed, a provisional teaching certificate is awarded upon graduation. In contrast, the ten models envision elementary teacher education as a process of continuous training throughout the teacher's career. For example, the Georgia model outlines alternative entry levels as a part of developing an educational career ladder, and Michigan seeks to shorten the time between the student's entry into colleges and his first professional responsibility. Each of the ten models emphasizes the importance of continuing inservice education. In addition, the Comfield group is attempting to separate the education leading to a degree and the professional preparation resulting in certification.

The concept of the elementary teacher as a "generalist" overseeing the self-contained classroom is challenged by all ten models. In each of the models the teacher is viewed as an emerging manager of the learning process. The recognition of the contributions of differentiated staffing roles is exemplified by the Michigan model, which provides for aides and media specialists. Other programs, such as Comfield's, envision instructional managers, instructional engineers, and instructional analysts. The team concept emerges in various ways throughout all models.

The variety of proposed changes in the structure of elementary education suggests that the traditional grade structure, physical structures of the buildings, use of large-small group instructional areas, resource centers, computer terminals, study cubicles, incentives for pupil-parent-teacher-community interaction are apparently all being considered in the new proposed models of teacher education. It is alleged that the new instructional management systems will make possible the control and adjustment of a pupil's program and will free teachers to work with students at a more creative level.

The models show an emergence of emphasis on specialized training for elementary teachers. Thus, Florida emphasizes academic preparation, so the teacher must be a specialist in at least one teaching field, while Syracuse, Toledo, and Michigan developed program components to train teachers in the selection, control and preparation of technology-based learning systems. Pittsburgh, Michigan, and Toledo have attempted to individualize teacher preparation through alternate program organizations. It is alleged that these models are an attempt to develop teachers who will be able to function not only in the organizational structure of the present school but will be leaders in the "school of tomorrow." It is said that the ten models all seek to prepare a person who can function effectively in an elementary learning situation; however, it is suggested that the emphasis varies. While Florida emphasizes the cognitive domain, Massachusetts and Teachers College

emphasize human relations skills, and Toledo emphasizes instructional
procedures and technology, while Michigan emphasizes the behavioral
sciences. The common underlying thread, however, in almost all models
is that the goals of preservice and inservice programs consider teach-
ing skills as representing an ascending set of behaviors and that
there is emphasis on continuing education.

A major focus of attention of the several models is the curric-
ular pattern, which has historically suggested an academic major and
minor in general education as prescribed by the college. In addition,
historically, teacher education programs have been directed by the
constraints imposed by a four-year program in which success is mea-
sured by the completion of a fixed number of Carnegie units. The
ten model programs have reacted differently to this historical tra-
dition. Comfield seeks to separate certification and degree re-
quirements entirely. Michigan has redesigned the educational program.
Syracuse, on the other hand, has established minimum levels of achieve-
ment to be reached at the end of four years but permits students to
start and progress to points which are individually determined.
Georgia, sensing resistance from some sectors of the University, is
planning studies to determine the consequence of removing time and
credit requirements. Georgia, Syracuse, and others plan a 12-month
school year, while Florida has planned to have its graduates return
to the campus for each of the three summers following graduation.
Each of the models makes some attempt to address the current concern
for achievement levels and operational proficiency rather than re-
quiring completion of a number of hours of Carnegie units. Although
none of the models have suggested a move totally away from the tra-
dition of the Carnegie-unit requirements, many are proposing systems
by which validation for the effectiveness of such a move might be
demonstrated.

In curriculum design the new emergence is away from a basic
course organization to the instructional module as a basic unit of
curriculum. The module is organized around the single objective,
and pretests to determine a student's readiness to attempt the module
and remedial experience are provided to assist in the development of
readiness and accomplishment, as well as a plan for each student to
pace himself in the work as rapidly as his ability permits achieve-
ment of the objective. In those schools that are developing the
instructional model, a variety of techniques such as computer assisted
instruction, sensitivity training, micro-teaching and simulation are
employed.

Historically, student teaching has been the first formal class-
room experience in teacher preparation programs. Moreover, it has
been scheduled near the end of the professional sequence of the col-
lege program, at which time there has been little opportunity to have
a meaningful interaction between academic training and classroom
performance. Pittsburg, Massachusetts, Syracuse, and Toledo have

specified sequencing the new models for both simulated and real
experience for students. Georgia has provided a hierarchy of class-
room experience, while Comfield and Michigan are concerned that the
student have adequate opportunities to work with children, both in
and out of school. Each model seeks to organize the student's
experiences with children in learning situations from simple to com-
plex, so that developing skills can be tested as the student grows
in accepting himself as a teacher.

Another emerging trend of these ten models is their utilization
of the operating school as a part of the educational effort. Florida
has instituted the concept of the "portal school." This faculty will
cooperate in the design and operation of the preparatory experiences
for teachers. Syracuse has involved many local districts and other
groups in the planning of their model and its operation. All in all,
the models have made forthright attempts to improve communication
among the groups responsible for preparing and using teachers so as
to achieve the benefits of mutual cooperation among the systems.

The aforementioned references to management and control in the
work of the teacher are characterized as responding to two condi-
tions: (1) the control of an increasing amount of information and
an increasing number of decision points for evaluating students'
progress, and (2) modification of the program and interrelating it
with additional sources of information. Florida, to meet this
challenge, suggests a computerized management system for handling
student and program information, while Michigan is developing the
capability to store learning modules in the computer and locate them
by means of a natural language retrieval system.

In the course of developing these new models, a byproduct has
been the recognition of the need for reeducating and upgrading those
who will provide education or preparation of prospective teachers.
Several of the institutions such as Pittsburgh, Syracuse, and Florida
have already outlined the need for reeducating the staff and, in
addition, there is increasing emphasis that teacher education can no
longer be isolated from the rest of the university curriculum.
Indeed, most of the models suggest increased emphasis on the multi-
disciplinary approach and unity of various elements and offerings of
the university for the effective planning and implementation of
teacher education.

The emphasis on individualized and performance based teacher
education programs is exemplified by the recent award to Weber State
College (Ogden, Utah) by the American Association of Colleges for
Teacher Education (AACTE) of the 1971 distinguished achievement
award. Weber State College received this award for its achievement
in handling such problems as recruiting the most capable students,
eliminating extraneous clutter of requirements, encouraging personal

commitment, treating individual student needs and ability, using a variety of teaching models, developing skills in human relations, and applying technological developments to teaching needs.

As a reflection of the concern for humanism in teacher education, programs such as the University of Texas (Austin) "block program for personalizing teacher education" is illustrative. The University of Texas program is planned to help candidates determine whether they are suited for the teaching profession. Among their efforts are those directing the student teacher's attention to self-examination, including a videotape of early teaching experiences and a comprehensive personal assessment battery for review by a psychologist and the candidate. Every aspect of the experience is aimed at making the candidate aware of what he is doing, what the effect of his actions is, and what he wants to a.hieve with pupils.

Dr. Gari Lesnoff-Caravaglia has instituted a teacher education program at Sangamon State University, Illinois, which is committed to the principle, "teaching cannot be learned by imitation." The two year program is so designed that students will be immediately engaged in a teaching situation on entering the program; moreover, it is felt that teaching is an art and as such can neither be measured nor explicated. Although an artist in any field must develop particular skills and has been exposed to and has access to specialized kinds of information, what constitutes the art of any profession is how the individual can appropriately apply such information. "To attempt to determine beforehand what tools each student might need in order to become an effective teacher is tantamount to rigidifying the system and surreptitiously taking the lead from the student. A student, in effect, cannot be trained as a teacher. He becomes one."

The Sangamon State University (Springfield, Illinois) teacher education program is entitled "Teaching Encounters." The purpose of the teaching encounters is to have the student interact with the University, the schools, and the community. "It is important for the prospective teacher to see himself as a key figure in the community in which he lives and works and to feel some responsibility for what occurs in that community." The program deemphasizes the role of methods and courses. The problems of methods will be met as they arise within the teaching situation and will be handled through consultation with a master teacher, the University personnel, and student seminar interactions. Three quarterly teaching encounters offer progressively more involvement within the classroom.

Each teaching encounter constitutes a third of the regular student load during the two years. The first encounter focusses

on the problems facing the school and contemporary society and consists of four hours a week in community service agencies. The second teaching encounter involves a series of all-day observations within the schools, and the student will also tutor a particular child several times a week in the child's home whenever possible. The third teaching encounter emphasizes teaching small groups within the schools. Concurrent seminar enrollment focusses on particular subject area needs and on the production of various materials and programs. In the senior year, the fourth encounter offers the student classroom experience three mornings a week. During this teaching encounter, the student will be asked whenever feasible to board with a family in the neighborhood of the school. The fifth teaching encounter is planned to meet the individual needs of the students. Problems encountered in the teaching of a particular subject may be one form of the seminar. The seminar is also a time when the student pursues an independent study program. The sixth and final quarter of the student's experiences within the teaching encounter structure will involve teaching experiences at two different grade levels. The student will spend four and one-half days a week within the classroom, with the other half day allotted to seminar work for independent study.

Students will maintain a log for the entire two years. They will record what they are learning, why, from whom, and its personal significance. They will be encouraged to evaluate critically existing situations and suggest improvements. The primary purpose of this student log, although it will be a major source for student evaluation, will be to gauge the student's own growth. Evaluations from master teachers, principals, university professors and the student himself will also be incorporated in the student's record. The primary use of these evaluations is for the student's own instruction. The philosophy, then, is that to teach or to become a teacher is not a passive role but one which requires constant involvement and commitment on the part of the individual. Such personal dedication is further projected as care and concern, not only for the individual himself and his profession, but for the obligations which he assumes as his own as a teacher toward the rest of humanity.

A similar approach to teacher education is exemplified by the program of Dr. Robischon at U.C.L.A. This program is based on the following principles:

1) Integration of theory and practice in both content and timing;

2) Teacher education as a learning experience for student teachers, teacher educators and university personnel;

3) The involvement of teachers being educated in planning teacher education programs and the redefinition of the university's role as a resource to be drawn upon as needed;

4) Program flexibility accounting for individual competencies and needs of each student;

5) An emphasis upon encouraging each student to develop his own theoretical and philosophical orientation toward teaching through experience, reading and other instruction.

Several evaluation reports from Title I, III, and VII programs for disadvantaged or retarded students have noted the apparent success of utilizing paraprofessionals and student tutors to assist in reading instruction (Los Angeles City Title VII Bilingual Program, 1969; Bakersfield, California Title I Program, 1969, 1970). The identification of the potential of student tutors and paraprofessionals of all ages to assist students with their reading has apparently been influential in the recently announced plan of the national reading centers' "Ten Million Tutors Program" to advance the Right to Read effort. This program plans to prepare adult volunteers for tutoring children in kindergarten through grade 3, initiating a pilot project in five Washington, D. C. schools. The Ten Million Tutors Program is also exploring the possibility of installing a statewide tutorial training program in 16 Iowa community colleges, as well as establishing a nationwide network of training centers for volunteer reading tutors, with the help of the American Association of College Teachers of Education.

As observed in a previous section of this report, every teacher is to some extent a teacher of reading. Acting on this belief, the Connecticut State Board of Education has recently voted to require all prospective elementary teachers to take courses in the teaching of developmental reading and children's literature. Connecticut has also initiated the requirement that all high school teachers of English must take similar courses in the teaching of developmental reading and in methods of teaching English.

The trend of many of the model teacher education programs to specify competencies as criteria for teacher preparation is reflected by the recent action of the New York State Regents in mandating reading instruction for elementary teacher certification. The New York mandate requires that education institutions preparing elementary teachers provide evidence to the state that persons recommended for certification have demonstrated specific competencies in teaching reading. The competencies required include: word analysis skills, word recognition, pronunciation, spelling, techniques for testing, and improving the ability to discriminate orally and visually.

Summary: Atomistic versus Humanistic Philosophies and Values

New architectural structures, an endless array of technolog-
ical advances in the equipment and delivery systems, specializa-
tions and subdivisions of curricular contents, and the societal
request for explicit accountability can all be viewed as determi-
nants or referrants for those models of teacher education that
attempt to describe systematically the system, subsystems and com-
ponents of the educational experience. Such systematic analysis
also leads directly to an emphasis upon behavioral evidences of
proficiency in knowledge, attitude or skills. Many of the models
and the innovations currently being experimented with are firmly
rooted in the conviction that teacher education programs shall now
address themselves to explicitly defined exit proficiencies. This
emphasis suggests that the sum total of these behavioral profi-
ciencies or mosaic of such proficiencies would exemplify an effec-
tive teacher.

Those adopting a more humanistic philosophy toward teachers
and their functions in a democracy present strong arguments that
the teacher cannot be described as the sum of the parts or as the
collective mosaic of the profile of individual proficiencies de-
monstrated in knowledges, skills and attitudes. In contrast, they
state there is a unique configuration of the person called a teach-
er, who demonstrates effectiveness in his interactions with learners
and in an almost unending variety of relationships that may incor-
porate the didactic explanations, drill experiences and students'
spontaneous inquiries. The humanistic approach further reinforces
its position by the observation of the rapidly changing demands of
the present and future society and argues that the role and effec-
tiveness of the teacher may not be equated with presently defined
skills or the mechanics of instructing another. Rather, it is
argued that instruction must be seen as the teacher's creatively
using the relationships, experiences, and environments to stimulate
the learner to new-found concepts, understandings, commitments and
participations.

The disparate emphasis of these two philosophical positions
toward teacher education and the education of youth can be seen in
the field of reading as one considers the emphasis, on the one
hand, with the specific mechanized practices by which teaching is
to occur; and on the other hand, the role of the teacher as an
understanding, compassionate stimulator of the self direction of
the student as he seeks to acquire learning. Dual and somewhat
antagonistic forces are operating to shape the efforts of teacher
education and teaching. On the one hand is the current emphasis
on explicit definition of behavioral outcomes that may be measured;
on the other hand is the resolute commitment that teaching is an
art which defies explication, let alone finite measurement. Inso-
far as the ten models currently being researched and implemented

contain substantial components of the polarity, and other experimen-
tal programs in large universities and small private colleges also
exemplify these two relatively extreme positions, one might only
conclude that future research must be so designed to allow adequate
description of the nature of teacher preparation as well as the
effects of such education on the instructional process that occurs
eventually under the teacher's leadership.

The polarity of the developments identified as atomism and
humanism are viewed with some lament by those teacher educators
who observe that extraordinary emphasis on either pole has never
been demonstrated as providing all that is needed for an effective
teacher. Recognition of this necessary marriage of technological
developments and stress on specific competencies and performance
outcomes with a broadly based preparation that attempts to accom-
plish the development of the insights and understandings of the
individual (both for himself and those he is to teach) probably
brought the citation to Weber State College in Utah. This citation
praised the college for handling not only individual student needs
and abilities with a variety of teaching models, skills in human
relationships and technological developments, but also for paying
attention to the development of personal commitment and shifting
of responsibility of initiative to the student as an active parti-
cipant in the teaching-learning situation.

It is hoped that the several emphases of the emerging models
of teacher education may supply an information base for a more
comprehensive analysis and definition of the several skills, com-
petencies, and personal characteristics that may more adequately
describe the effective teacher.

The Relationships between Teacher Preparation, Teacher Performance, and Student Achievement in Reading

An attempt to summarize the research evidence of the "teacher
variable" effect upon student achievement is immediately confounded
by the lack of agreement on definitions of the input, process, and
output variables of an educational program. Among the variety of
studies of teacher effectiveness there is little agreement about
the meaning or nature of the teacher variable. "Teacher variable,"
or "teacher effect," as found in the research literature, is a gen-
eral term which may refer to teacher preparation, teacher performance,
teacher attitudes, or teacher characteristics. For each of these
dimensions there is an even greater number of specific definitions.
For example, teacher education may be defined as the academic degree
received, the number of reading courses taken, or the nature and
the extent of practice teaching. Frequently, research reports do
not acknowledge these complexities; definitions are vague or non-
existent, and the variables (and their interactions) are unspecified.
One reason for this may be the apparent lack of a common theoretical

framework. With a theoretical perspective for research, any variable
may be as important as any other, and there becomes no way to
differentiate the independent variables, intervening variables,
and dependent variables. Such confusion makes comparisons of the
existing research problematic at best and summarization of what is
known about teacher effect most difficult. In spite of these dif-
ficulties, it is possible to categorize many studies of teacher
effect according to three major hypotheses:

1) Students' achievement in reading depends on the amount of
   training the teacher has had. Requiring more training for
   teachers of reading will result in greater achievement in
   reading;

2) Students' achievement in reading depends on the quality of
   training the teacher has had. Reading achievement can be
   increased by upgrading teacher education. In some instances,
   this is interpreted to mean teacher training in general;
   in other instances it means the training a teacher receives
   either in a specific area, such as the teacher's knowledge
   of phonics, or with a specific skill, such as the teacher's
   awareness of and sensitivity to the cultural heritage of
   the students;

3) Students' achievement in reading depends on the presence
   of specific teacher characteristics. Successful teachers
   possess characteristics different from those of less success-
   ful teachers. Selecting teachers on the basis of such
   characteristics will lead to better reading achievement.
   Characteristics may re' +r to demographic factors such as
   age and sex, or to att: ides, or to abilities.

The research does not prov   r disprove any of these hypotheses
definitively. It does, howevei suggest priorities. It suggests
that some teacher variables are probably more important than others
and that there may be a logical relationship among teacher variables
which separates them according to whether they are antecedents or
consequences. On the basis of the research reviewed for this pro-
ject, teacher characteristics did appear to have a greater effect
on pupil reading achievement than the amount, quality, or type, of
teacher training. Of all the teacher characteristics, verbal facil-
ity and flexibility appear to be the most significant. It may be
almost a truism to say that the capacity of a student to learn de-
pends, above all else, on the ability of the teacher to communicate
with the student. But it is a truism that may be too often ignored.
Given the present situation in the United States today, where the
greatest reading deficiencies exist among population groups which
are generally of a different class, race, and social and psycholog-
ical reality than the people teaching them, the ability of a teach-
er and a student to achieve mutual understanding cannot be assumed.

Other teacher variables are important. But their importance, perhaps, can be best determined if communication already exists.
Other teacher variables may be of more importance once it is determined what kind of verbal ability a teacher needs in order to facilitate communication. For example, it may very well be that teacher training could take on added significance in terms of its effect on reading achievement if much of that training was concerned with developing not only the technical skills required of a teacher, but also the requisite verbal or communicative skills.

In order to demonstrate how these suggestions emerged from the research on the teacher variable, it is necessary to discuss fully the findings for each of the three major hypotheses. Before proceeding to this specific discussion of the research reviewed, some words of caution are indicated. None of the research reviewed here was definitive. The samples and scope of many studies were limited. Some of the methodology was questionable. However, the problems might have resulted more from the limited ways in which the research was reported than from the actual quality of research itself.

One of the greatest problems was that a commonly used model or design for many of the studies was a correlational analysis with a single variable studied, without examination of the interaction of other variables. The findings of studies with such designs can, at best, be viewed as offering suggestions for further investigation but cannot be used as sources of definitive conclusions. The conclusions which may be drawn can, therefore, only be considered tentative.

The amount of teacher preparation and student achievement. In 1968, the International Reading Association published a revised statement concerning the Minimum Standards for Professional Training of Reading Specialists. The roles, responsibilities, and qualifications of the special teacher of reading, the reading clinician, the reading consultant, and the reading supervisor were set forth in this statement. According to the IRA, reading specialists have major responsibility for:

1) remedial and corrective and/or developmental reading instruction;

2) diagnosis, remediation, or the planning of remediation for severe reading disabilities;

3) development and implementation of reading programs; and

4) leadership in all phases of the reading program in a school system. The implication of this definition of the function of the reading specialist is that it is desirable to place

responsibility for all aspects of teaching reading, in-
cluding developmental reading instruction, in the hands
of specially trained personnel.

The IRA also appears to be suggesting that the development
and implementation of regular reading instruction demands extensive
special preparation beyond that required for regular teachers. To
qualify as a reading specialist, the IRA standards demand completion
of a Master's program (including courses on foundations of reading,
diagnosis and correction of reading disability, and clinical or
laboratory practicum in reading) as well as successful completion
of at least three years of teaching experience which include read-
ing instruction. Reading clinicians, consultants, and supervisors
must also complete a second year of graduate work. These standards
clearly indicate that the IRA believes the effective teacher of
reading must have a great deal more preparation than is required
for regular teacher certification. It would follow that the pro-
fessional reading association is suggesting the way to increase
the level of reading achievement is to increase the amount of pre-
paration of reading teachers. One of the few studies which included
evidence on the relationship of teachers' degrees and students'
reading achievement identified in this search of the literature was
the First Grade Studies (United States Office of Education, 1967).
In this study the five projects which showed the greatest increase
in reading achievement were compared with the five projects which
showed the least increase, according to the extent of the teachers'
education. The following results were reported:

	Bachelor or lower	Bachelor to M.A.	M.A. plus
Upper five projects	39%	55%	6%
Lower five projects	44%	54%	2%

The report of the First Grade Studies did not indicate whether
any significant differences were found. However, since extremes
were compared (which should produce the greatest differences) and
because the differences in percents did not appear great, the re-
sults do not suggest that any substantial relationship was found
between the amount of teacher education for classroom teachers and
the level of student reading achievement.

Several studies reported that a large percentage of reading
specialists hold advanced degrees. In 1966, Oyster made a survey
of elementary school reading specialists in 15 states (states not
specified) and found that more than 76% held both Bachelors' and
Masters' degrees (Oyster, 1966). Similarly, a study by Kolker of

special reading teachers in Tennesee found that of all categories
of special reading teachers (with the exception of teacher aides),
20% had at least a Master's and 57.4% had at least some graduate
study (Kolker, 1970). A survey of reading specialists in the high
schools around Hartford, Connecticut, reported that 87% of the
respondents had at least an M.A. degree, and 75% of those had spe-
cialized in the field of reading (L. Smith, 1969).

Among the research articles included in this review, there
were no studies which compared the reading achievement of students
taught by reading specialists having advanced degrees to reading
achievement of students taught by reading specialists without
advanced degrees. A few small scale studies do claim beneficial
effects on reading achievement as a result of using reading special-
ists. Overfield, in a study of the use of remedial reading special-
ists in California schools, reported that the Stanford Achievement
Test "results, though inconclusive, show cause for optimism ...
(Overfield, 1968, p. 269)." Trione found that the use of the school
psychologist in the role of an inservice teacher-centered consul-
tant resulted in improved pupil achievement in reading in grade
four (Trione, 1967). The results of several other studies seem to
cast doubt on the assumption that advanced degrees or specialized
training is directly related to either specialist or classroom
teacher effectiveness. Briscoe (1969) reports on a study where
teacher aides were used in grade 9 where pupils' reading achieve-
ment was below the fifth grade level. The aides were given pre-
and inservice training. After three months of instruction, some
students showed as much as three grade levels of improvement in
reading. Hassinger (1969) summarized a study in which 100 high
school age students who had poor attendance records and were them-
selves retarded by two to three years in reading were used as tutors.
The tutors worked for a six-week period with grades 4, 5, and 6
students with reading disabilities. At the end of the six weeks,
the elementary school students showed a 4.6 month gain in reading
achievement, and the high school tutors themselves showed a mean
gain of 8 months.

The most striking evidence of the dubiousness of the assumption
that student reading achievement depends upon the amount of teacher
preparation was contained in a large-scale field test of four read-
ing systems developed for functionally illiterate adults (Greenleigh,
1966). The 1,815 students involved were all public welfare recipients
above the age of 18 with reading scores at or below the 4.9 grade
level. The field test was conducted in New York, New Jersey and
California. The four reading systems evaluated were: 1) "Learning
to Read and Spell" (American Incentive to Read); 2) "Reading in High
Gear" (Science Research Associates, Inc.); 3) "The Mott Basic
Language Skills Program" (Allied Education Council); and 4) "Systems
for Success" (Follett Publishing Company). The 108 participating
teachers represented three levels of preparation: 1) certificated

teachers, "preferably experienced in adult education;" 2) college
graduates; and 3) high school graduates. All teachers received
one week of preservice preparation. Nine classes in each state
used each of the four systems and, among the nine classes using a
given system, three classes received instruction by teachers pre-
pared at each of the levels. No significant differences were found
in student gain scores by reading system. However, on the work-
study skills subtest and on the composite test score, there were
significant differences in the gain in scores of the students of
teachers who were high school graduates. The authors observed,
"On the basis of Iowa gain scores alone, teachers who had no more
than a high school education were more effective. Therefore, in
planning for adult basic education, persons who are high school
graduates should be considered an important resource and should be
recruited. The fact that the majority of high school graduates,
unlike the college graduates and certified teachers, were Negro
and the majority of students were also Negro may have contributed
to the better success in terms of gain scores of the high school
graduate" (p. 18).

As a part of this study of reading programs for the function-
ally illiterate, teacher educators and reading and learning theory
specialists observed classes and rated the teachers. No correla-
tion was found between student gain scores and these ratings. The
authors reported: "On the basis of observations, certified teachers
had the most skill in dealing with learning problems, grouping
students, and class management." Even so, classes with certified
teachers using the various systems of instruction did not have
significant differences in gain scores. "This raises the question
of the relative importance of accepted class management techniques
in teaching adult basic literacy classes." At the conclusion of
this study, the authors made the following recommendations for
teacher preparation:

a) "Although not supported by gain scores, on the basis of
observation it seems that teachers for adult basic educa-
tion should be selected for their warmth, interest, moti-
vation, flexibility, understanding and patience."
b) "On the basis of Iowa gain score alone, teachers who had
no more than a high school education were more effective;
therefore, in planning for adult basic education, persons
who are high school graduates should be considered an
important resource and should be recruited (Greenleigh,
1966, pp. 15-18)."

From the evidence of the available studies, it is not possible
to accept or reject the hypothesis that reading achievement of
students depends upon the amount of preparation of the teacher.
Although the studies provided no evidence that significant differ-
ences in student achievement resulted from various levels of pre-

paration, they did suggest that factors (unrelated to teacher education) such as individual attention, warmth, empathy for the student, understanding, patience, etc., may be relevant to the teacher's effectiveness.

Quality of teacher training and the relationship between training and performance. The National Education Association survey of a national sample of public school teachers presented the most comprehensive information with regard to teachers' evaluation of the amount and quality of their undergraduate teacher preparation (National Education Association, 1967). A large percentage of teachers reported that "just about the right amount" of training had been offered in the following areas:

Depth of knowledge in subject fields of specialization	75.9%
General education	81.6%
Psychology of learning and teaching	68.5%
Human growth and development	72.7%
History and philosophy of education	68.0%

More than half of the teachers indicated they had received too little instruction in classroom management (52%) and use of audio-visual equipment and materials (57%), while more than one-third reported too little instruction in teaching methods (36%). About a third of the teachers rated their preparation in subject fields of specialization as excellent (33%). In general, this survey indicated that the largest problems in teacher education lie not with the amount or quality of instruction in subject areas, but rather with the amount and quality of instruction in teaching methods and related topics. However, these findings are somewhat different from those of other studies of this type. Perhaps the fact that this was a survey of all public school teachers, not just reading teachers, accounts for a large part of the inconsistency.

A directly contradictory finding resulted from a survey designed to see how well elementary school teachers were being prepared to teach the communicative arts (N.C. Chase, 1963). Eighty colleges throughout the United States were asked to answer two questions with reference to a list of subject-matter areas and professional areas. The questions were: 1) do you require a course or courses leading to competence in the area?; and 2) do you feel such elementary teacher preparation should be required? The subject matter areas, considered to be taught in undergraduate school, included the nature of the English language, foreign language study, speech, oral composition, creative dramatics, written composition, American literature, and literature of another culture. The professional areas, considered to be taught in schools of education, included sociological and psychological bases of teaching, directed observation of children in school, methods of teaching reading, methods of teaching English, children's literature, methods of

teaching a foreign language, and student teaching. Less than 50% of the respondents indicated that requirements existed for all of the subject areas except speech and written composition, while more than 50% indicated that all of the courses should be required except for foreign language and creative dramatics. In contrast to this were the responses with regard to the professional areas. Here, more than 80% indicated that the courses were required (except for methods of teaching a second language) and that they should be required (again, methods of teaching a second language was the exception). The conclusion the author drew from these findings is that elementary teachers of communicative skills did not have enough preparation in the liberal arts to back up their professional training. Unfortunately, it was not possible to tell from this study whether this was the feeling of teachers themselves, for it was not clear who responded to the questionnaire. The respondents may very well have been the administrators of the colleges and not the teachers.

There are two studies included in this review which do indicate that classroom teachers feel inadequately prepared in both substantative and technical areas. Neither of these studies surveyed a national sample. A survey of the elementary schools in Madison, Wisconsin, (R.J. Smith et al, 1970) asked teachers to evaluate how well their preservice training had prepared them to teach reading in their first regular teaching assignment.

TABLE 31

PERCENT OF TEACHERS CHOOSING RESPONSE CATEGORIES REGARDING
PRESERVICE TRAINING

Response Category	Teaching Level	Years of experience			
		1	2-5	6-10	11+
Very Adequately	Primary	17.4	23.1	15.8	44.4
	Intermediate	0.0	10.0	7.7	10.0
Adequately	Primary	60.9	59.6	52.6	33.3
	Intermediate	57.1	28.0	38.5	25.0
Undecided	Primary	13.0	1.9	26.3	11.1
	Intermediate	9.5	16.0	7.7	25.0
Inadequately	Primary	8.7	13.5	5.3	11.1
	Intermediate	33.3	40.0	30.8	25.0
Very Inadequately	Primary	0.0	1.9	0.0	0.0
	Intermediate	0.0	6.0	15.4	15.0

The primary teachers were more satisfied with their preservice education than the intermediate teachers. Both intermediate and primary teachers felt a need for more information about providing for the disabled reader and diagnosing individual instructional needs.

The second study dealing with the training needs of elementary reading teachers also indicated a lack of preparation in specific areas (Farr, 1969). In this survey of elementary teachers in Indiana, it was found that classroom teachers felt a lack of knowledge of diagnostic and corrective techniques, using groups for reading instruction, using tests and evaluative techniques, and knowing criteria for selecting students for remedial instruction. The majority of the respondents believed that a minimum of six undergraduate credits should be devoted to language arts and reading, and many of them felt that six hours in reading alone should be provided, with three of those hours devoted to diagnosis and correction.

On the basis of these two studies, it does not appear that elementary teachers perceive large difficulties in either the scope or quality of their preparation. Although the teachers commonly felt a need for additional training in the areas of remedial reading, the overall feeling was that their training had been quite adequate. However, this is not consistently true when teachers at other levels evaluate their training.

In 1969 a nationwide survey of English teachers in public high schools was conducted (G.K. McGuire, 1969). Although the teachers indicated a belief that reading should be taught in high school, they felt, in general, inadequately prepared to teach reading. Eighty-three percent had not had a formal course in the teaching of reading during their undergraduate training. Seventy percent of those who had taken a course in methods of teaching English reported that the teaching of reading had been treated to little or no extent. Fifty-four percent reported that no form of inservice training in the teaching of reading had been given to English teachers in their schools during the last five years. Furthermore, 53% said that consultant help in teaching reading had been given to them rarely or never (only 15.2% reported such help given on a regular basis).

This lack of preparation and guidance for teachers of reading in the secondary school was also reported by McGinnis (1961). In this survey of high school teachers, about one-third reported that they were expected to provide instruction in reading, while less than 10% of them had received any instruction on how to teach reading to high school students. A further indication of the lack of preparation for the high school reading teacher came from a survey of junior and senior high school reading teachers in Indiana (Farr et al, 1969). The results of this study indicated that the basic

responsibility for reading instruction was assigned to English teachers in 75% of the cases. Fifty-four percent of the reading teachers were former content area teachers. Sixty-nine percent of the reading teachers had no courses in the teaching of reading at an undergraduate level, and 58% had no course on the teaching of reading on the graduate level.

These studies seem to indicate that the preparation of teachers of reading was seen as more adequate by elementary teachers, although they perceived certain significant deficiencies. In contrast, the high school teachers have had much less adequate preparation and noted many critical deficiencies.

However, it is possible that these deficiencies are being overcome. A follow-up of Austin's "Torchlighters" (Austin and Morrison, 1961), suggested that this is the case (Kies, 1970). This study was made to determine whether or not a significant change had occurred in university and college preparation of teachers of reading in the nine years since the Austin study. The questionnaire from the Austin study was used, with additional items included to assess areas of interest which have emerged since the Austin report. This questionnaire was distributed to 530 randomly selected institutions of higher education throughout the United States. Three hundred sixty-five institutions responded. The findings were:

1. "More universities and colleges are offering reading as a separate course than as an integrated (with other language arts) course.
2. Universities and colleges which offer reading as a part of an integrated (with other language arts) course are devoting more time to the teaching of reading than they were nine years ago.
3. More universities and colleges are offering and requiring a secondary reading course today than they were nine years ago.
4. More professors of reading now believe that:
   a. the beginning reading vocabulary should be loosely controlled and come from a variety of sources;
   b. the basal reading text is only one of a variety of tools for beginning reading instruction;
   c. the forms and letters of the alphabet should be taught before the child has learned a sight vocabulary;
   d. the approach used in teaching beginning reading should be varied from school to school depending upon factors such as pupil socio-economic level, intelligence, and teacher competency;
   e. the use of phonetic analysis in isolation and in conjunction with other word recognition techniques as a means of word identification is more important than it was nine years ago.

5. More universities and colleges are requiring student teaching without concurrent course work than with concurrent work.
6. Undergraduates majoring in elementary education in institutions of higher learning observe more days of teaching than they were required to observe nine years ago.
7. More universities and colleges are requiring undergraduates majoring in elementary education to tutor children as a part of undergraduate education than were requiring tutoring experiences nine years ago (Kies, 1970, pp. 106-108).

On the basis of these findings, Kies rejects the hypothesis that there has been no significant change in university and college preparation of teachers of reading. There are, however, some problems in accepting the author's interpretations regarding the changes in preparation of teachers of reading. The other studies discussed here showed that two of the areas in which teachers felt most ill-prepared were in secondary reading instruction and in the diagnosis and remediation of reading disabilities. The data from the Kies study did not show remarkable improvement in either of these areas. Of the 365 institutions which responded to the questionnaire, only 159 offered courses in secondary reading instruction; and of those 159, only 55 required such a course. One hundred eleven institutions offered an undergraduate course in classroom diagnosis but it is unknown how many of these actually required such a course. More importantly, the data presented in this study did not indicate the specific content of courses. For instance, it was found that the most frequently taught courses in reading were a survey of developmental reading, reading in the primary grades, children's literature, and methods of teaching language arts. But it is unclear exactly what is included under these course titles. From these studies it is impossible to know whether or not the content of teacher preparation has been changed significantly or if the changes which have occurred exist primarily in the titles of courses and the numbers of requirements.

Even if the findings of the Kies study do indicate significant changes in the nature of teacher preparation in reading, it is still unclear as to how or why such changes are important. Until the nature of the relationship between teacher training, teacher performance and students' reading achievement is understood, the significance of improving teacher education, either generally or in specific areas or skills, will remain speculative. An important question, then, which deserves attention is: To what extent does a teacher's education affect the teacher's practice? Unfortunately, the existing evidence which relates to this question is complex and inconclusive.

There are indications that, because of a variety of factors, a teacher's education is not as determinative of a teacher's perfor-

mance as might be expected. One factor which needs to be consider-
ed is the extent to which both funds and personnel are available
for meeting the needs of particular positions. One study included
in this review does deal, in a way, with these factors (H.M. Levin,
1968). The purpose of the Levin study was to explore the criteria
and methods for recruiting and retaining adequate numbers of more
highly qualified teachers for large city schools. The teacher data,
which were collected for the school year 1965-66 by the USOE, came
from four Standard Metropolitan Statistical Areas, each of which
coincides with an urban labor market representative of a particular
section of the country: Northeast, Midwest, Far West and South.
Although many types of analyses were made in this study and a num-
ber of different variables examined, the variables of direct rele-
vance here are the examination of the allocation of teachers by
undergraduate major on the one hand and teaching assignment on the
other.

By comparing teachers undergraduate majors with the specific
areas in which they were actually teaching, Levin concluded that
there was a fair degree of "misassignment."

"In the first place, courses in the sciences, mathematics and
humanities, for which the appropriate majors cannot be found,
are primarily staffed from the ranks of the social studies
and elementary education majors wherever possible... The re-
sult of filling these shortages in the other areas results
in a particularly large deficit of appropriate majors for the
elementary grades. However, the principals of the elementary
schools fill their openings mainly from the ranks of that re-
latively abundant major - social studies. Thus Eastmet's
schools showed 38% of its social studies majors teaching in
the elementary grades; Midmet showed 48% in that category;
South - 29%; and Westmet - over 54%.

On the other hand, the premise appears to be that virtually
any major tends to have adequate training for 'servicing'
courses in the social studies. Thus, the junior high schools
filled their social studies openings primarily by utilizing
elementary education and miscellaneous majors as well as human-
ities majors (H.M. Levin, 1968, pp. 5-33)."

In other words, particularly in large city schools, it is not
accurate to assume that teachers are assigned to the subjects or
levels for which they have been prepared. Clearly, the quality of
teachers' education should not be expected to affect teachers' per-
formance or students' achievement if the teachers who are hired and
assigned for any given position have not been prepared to teach
either that level or that subject.

A further consideration in determining the relation between the quality of teacher education and the performance of the teacher in service is the teacher's perception of whether his preparation was or was not an important influence on him. In 1961 Columbia University conducted a national survey of 1500 teachers in grades 1 - 6. Respondents were asked to indicate on a four-point scale the extent to which they felt a number of specific items had influenced their beliefs and opinions regarding the teaching of reading. For all of the teachers, the most important influence was the reading series and teachers' manuals used in the school: 59% of the teachers of grade 1, 67% of the grade 2 and 3 teachers, and 58% of the grade 4 - 6 teachers considered these very important (Columbia University, 1961)

The two other items most frequently mentioned as very important were: 1) the teacher's own reading of articles or books on reading; and 2) practice teaching connected with the teachers' college. Undergraduate courses in teachers' colleges were thought to be very important by 39% of the teachers in grades 1 - 3 and 30% of those teaching grades 4 - 6. Summer or graduate courses were considered very important by about one-third of the teachers. At least three-fourths of the teachers thought their undergraduate courses were of at least some importance, while approximately two-thirds thought that summer or graduate courses were of some importance. Even when the "very important" and "somewhat important" categories are combined, reading series and teachers' manuals, practice teaching, and independent reading of books and articles on reading were considered to be more influential than coursework

One other study also indicates the secondary importance of coursework in the preparation of the teacher of reading (Barton and Wilder, 1964). Neither the Barton and Wilder nor the Columbia University study can be accepted as indicating that a teacher's undergraduate education would still be regarded as of lesser importance than other influences in 1970, however. If the Kies (1970) conclusion, that there have been significant changes in the quality and extent of teacher education in the past decade is accepted, then it may be misleading to accept the results of studies reported in 1961 and 1964. Since no studies comparable to the Barton and Wilder and the Columbia study were conducted at a later date, there is no way to determine whether or not these results may be considered valid today.

Several studies report that specific kinds of preservice or inservice training do affect the behavior of the teachers involved. While in only one of these studies was the effect of these teacher behavioral changes on students' reading achievement examined, in that study some positive effects were notes (Heilman, 1966).

Kelly (1969) compared the effectiveness of a simulation type of inservice education program on teacher awareness of pupil's instructional reading levels in relation to the time of the school year

that the training was conducted. Specific simulation processes, including sound films, audio tapes, overhead transparencies and instructional booklets, provided teachers with a knowledge of, and an ability to administer, an informal reading inventory. The effectiveness of the teacher's informal inventory was measured by comparing it to the results of the McCracken's Standard Reading Inventory. The findings indicated that this type of inservice program had short term effectiveness when conducted before the school year began. Teache who participated in the program were no more aware of pupils' in ructional levels later in the school : ar than were those who did not participate (Kelly, 1969). Utsey u d simulation to prepare approximately 200 students enrolled in an elementary reading methods course to use an informal reading inventory (Utsey, 1966). After training, the students were able to identify correctly the independent, instructional, and frustration reading levels with a 92% accuracy. Although no comparison control group was used in this study, the students tested in a previous study were able to identify these levels with only a 42% accuracy.

Steen and Lipe (1970) reported on the results of the PLAN teacher training program. "The purpose of the PLAN Teacher Training Program is to provide training for the teachers in skills specific to the use of the PLAN system of individualized instruction (pp. 1-2)." The skills of managerial, organizational, counseling and tutoring techniques were assumed to be essential for the operation of the individualized approach to education called PLAN. It was hypothesized that PLAN teachers would spend more time than control teachers in diagnostic and didactic inquiry, decision facilitating, leading small group discussion, tutoring in a small group, and giving positive verbal or nonverbal messages. It was also hypothesized that control teachers would spend more time than PLAN teachers providing content in small or large group discussion, giving verbal or non-verbal messages, managing records, managing learning materials and equipment, and interacting with a large group of students. Observation of the teacher behavior supported the hypotheses that the specially trained PLAN teachers would spend more time in diagnostic and didactic inquiry, decision facilitating, tutoring in small groups, and use of positive responses. Control teachers spent more time managing learning materials, giving negative responses, instructing large groups, and providing content. On the basis of these preliminary findings it was concluded that PLAN teachers showed behavioral changes in the desired directions.

Sawyer and Taylor established 15 teaching practices as goals for an inservice education program for 60 elementary and junior high school teachers. These teaching practices included knowledge of materials, effective use of materials, balanced program use of student experience, and individual differences and diagnoses (Sawyer, 1968). Evaluation of all 15 teaching practices at the beginning and end of the program indicated that the program was

effective in bringing about the desired teacher behavior. Elementary teachers gained most in knowledge of appropriate instructional material, encouraging free reading, and sharing materials with other teachers. The junior high school teachers made the greatest increases in knowledge of appropriate instructional material, understanding the reading process, ability to diagnose reading problems, and attention to individual differences.

Heilman investigated the effect of an intensive inservice program on teachers' classroom behavior and students' reading achievement (Heilman, 1966). As a result of the inservice education, the teachers reported an increase in: 1) teacher awareness of sex differences in learning to read; 2) teacher efforts to devise motivating experiences for boys; 3) teacher emphasis on ongoing diagnosis; 4) emphasis on pupil reading of material other than basal materials; 6) teacher writing of experience stories for individual pupils; and 7) recognition of the teachers' need for reading the professional literature related to reading instruction. Analysis of the pupils' Stanford Achievement Test results showed no significant differences in reading achievement between pupils of teachers in the control group and those receiving the special inservice education. However, when the boys' scores were examined separately from the girls' scores, a difference was noted. The mean achievement of boys in the experimental teacher group exceeded that of the boys in the control teacher group on each of the five reading subtests, and the mean score of the boys in the experimental group exceeded that of the girls in both groups on the vocabulary subtest.

Borg (1969) presents data collected from Minicourse I, a program designed to bring about changes in 12 specific teacher behaviors relating to the methods a   er uses in conducting a class   on lesson. The behaviors under examination included redirection, prompting, clarification, and proportion of teacher talk. Fourth, fifth and sixth grade teachers were pre- and post-tested for these specific skills, and the author reports that the teachers showed behavioral changes in the desired directions.

These studies all seem to point to the same conclusion, a training program can affect a teacher's performance. However, it is difficult to generalize from these studies. In all of the studies which have been discussed, the samples were very small and might or might not have been representative of the teacher population as a whole. Furthermore, with the exception of the Borg study, there was no followup to determine whether the effects were sustained over one or several years. Even in the Borg study the followup was done such a short time after the initial testing (four months later) that it cannot be taken to be very meaningful evidence of sustaining change. It is possible, given the variety of behaviors that were focused on and the fact that all the programs necessitated special attention to be given to the participants, that the Hawthorne

effect would explain many or all of the observed changes.

More important, perhaps, is the fact that none of these studies, either individually or together, indicates what teaching behaviors are desirable. It is hardly a surprising finding that human behavior, be it a teacher's or anyone else's, is learned and is therefore subject to change and relearning; but clearly this is not all that needs to be known. If the primary concern is with increasing the level of reading achievement, the first task of teacher preparation should be the identification of a teacher's classroom behavior which will directly bear on students' reading achievement. Once those dimensions are defined and understood, then it becomes appropriate to attempt to translate the processes for learning those behaviors into a teacher's education.

The existing research appears to have approached this whole issue from another direction. Because teacher training is a relatively easy variable to manipulate, researchers have apparently assumed that by assessing the effects of a variety of training techniques, the essential aspects of training will emerge. This has not been the result. Rather, a range of relationships has been demonstrated to exist, none of which appears as any more necessary, desirable, or appropriate than any other.

Because none of the studies dealing with the relationship between teacher training and teacher performance have tried to investigate with what circumstances, with what teachers, or with what students any given teaching behavior might be most effectively applied, it is yet unknown what the relationship is between teacher performance and students' reading achievement. To try to understand this relationship, it is necessary to examine the research which deals with teacher characteristics and the effect of these on students' performance.

Teacher characteristics and their relationship to student performance. One common assumption made about the teacher population is that it is predominantly female. Statistics indicate the validity of this assumption. Of all the teachers in public schools throughout the United States, 69% were women (National Education Association, 1967). Of those 69%, 47% teach at the elementary level and 22% at the secondary level. Of the 31% of the teachers who are men, 5% teach in elementary grades while 26% teach in the secondary grades. The distribution of teachers by sex for each of the four regions of the country appears to be about the same (of the 69% of the female teachers, 16% teach in the Northeast, 17% in the Southeast, 20% in the Mid-states and 16% in the West; of the 31% of the male teachers, 8% teach in the Northeast, 5% in the Southeast, 9% in the Mid-states, and 9% in the West). Unfortunately, there is no comparable survey containing this information specifically for reading teachers.

A national survey of public school reading teachers in grades one through six indicated an even higher percentage of female teachers than for the teacher population as a whole (Columbia University, 1961). This 1961 study found that 88% of the teachers in grade 1, 91% of the teachers in grades 2 and 3, and 77% of the teachers of grades 4 through 6 were female. A study of reading teachers in four Standard Metropolitan Areas (one from each region of the country) indicates that 61% of the teachers in "Eastmet" were female, 69% in the "Midmet", 74% in the "Southmet" and 67% in the "Westmet" (Levin, 1968). The data also suggest that reading specialists were predominantly female. In a survey of reading specialists in 15 states (unspecified) 93% of the respondents were female (Oyster, 1967). However, Maxwell (1967) found in a survey of the members of the College Reading Association, about 61% of the college reading teachers were men. The several studies of the sex distribution of the teacher population suggest the generalizations that elementary reading teachers are overwhelmingly female and secondary reading teachers (and probably reading specialists) are largely female, but less than half of college reading teachers or administrators are female.

The age and experience distributions of the teacher population in the United States provided by the 1967 NEA survey report that 34% were under 30 years of age, 23% were between 30 and 39, 17% were between 40 and 49, and 26% were over 50. The mean years of teaching experience was 11.8 years. Men had a mean of 9.0 years of experience while women had a mean of 13.4 years. In the southeast, the mean years of experience of teachers is higher (14%) than in any other region. More than half of all U.S. teachers with only one or two years experience (54%) were teaching in the secondary schools.

No information was available with regard to the age distribution of reading teachers in particular, except for what may be deduced from information concerning the extent of teaching experience of reading teachers. Fourteen percent of the teachers in grade 1, 18% in grades 2 or 3, and 8% in grades 4 through 6 have had only two years or less of teaching experience. Twenty-two percent of the teachers in grade 1, 17% in grades 2 or 3, and 18% of those in grades 4 through 6 have had 25 or more years of experience (Columbia University, 1961). A comparison with a survey of reading teachers at both elementary and secondary levels (comparability is limited since the survey of teachers in grades 1 through 6 was a national sample while the survey of reading teachers which includes the secondary level is a sample only of Indiana teachers) suggested that secondary reading teachers are generally younger than elementary reading teachers (Farr et al, 1969).

Apparently, college reading teachers have less teaching experience than either teachers as a whole or reading teachers as

as a whole. Forty-eight percent of the College Reading Association membership holding doctoral degrees (and 47% without the Ph.D.) have had no years of professional experience in reading. Only 12% of those with doctoral degrees and 7% of those with lesser degrees have had more than 10 years professional experience in reading (Maxwell, 1967).

There do not appear to be any large regional differences in teaching experience, at least as far as large cities are concerned. The mean number of years of teaching experience was 11.6 in "Eastmet", 11.5% in "Midmet", 9.1% in "Southmet", and 11.7 in "Westmet" (H.M. Levin, 1968).

The literature provides very limited information about the ethnicity or the socioeconomic status of the reading teacher population. Some information about teachers' socioeconomic status comes from the Levin study. The average parents' income of teachers in "Eastmet" was $7,190, $6,999 in "Midmet", $5,840 in "Southmet", and $7,073 in "Westmet". These data suggest that at least for teachers in the large cities, the socioeconomic background of teachers was about the same for all regions of the United States with the possible exception of the south, where teachers seem to come from slightly lower socioeconomic status than elsewhere in the country. However, Levin reported a significant regional difference in terms of teacher ethnicity. Seventy-two percent of the teachers in "Eastmet" were white, 76% in "Midmet", 79% in "Westmet", but only 36% in "Southmet". This becomes especially striking when it is compared to the ethnicity of the students in those areas. Twenty-two percent of the students in "Eastmet" were white, 21% in "Midmet", 23% in "Westmet", and 8% in "Southmet" (H.M. Levin, 1968). In other words, there are more black teachers teaching black students in the South than elsewhere in the country.

It is not clear what significance or meaning such demographic information concerning the nature of the teacher population has in terms of pupil achievement. There is a good deal of speculation but very little objective documentation. For example, the psychological soundness of the preponderance of female teachers is questioned by the statement, "It might well be asked if it would not be better to have more men in remedial work, since the incidence of boys to girls is greater in remedial reading classes... (Oyster, 1966, p. 455)." However, such hypotheses have not been systematically tested. Researchers often provide demographic information for their samples, but it is provided apparently more for descriptive than analytic purposes. Researchers also often control for demographic variables in the analysis of whatever other independent and dependent variables they might be examining, apparently assuming some effect of demographic variables. But demographic variables have rarely, if ever, been considered as primary independent variables in their own right.

A number of studies have attempted to investigate the effect of a variety of other teacher characteristics on students' achievement. However, such a wide range of characteristics has been investigated that there exists very little cohesiveness or comparability among the studies.

The findings of several studies suggest that both a relatively high level of verbal facility and empathy for the needs of the students are crucial in terms of student achievement. In the study of four metropolitan regions, Levin examined the verbal performance of teachers and obtained the following results: 1) the average verbal score of teachers in the Southmet region was considerably below those of Eastmet, Midmet, and Westmet; 2) higher verbal facility was significantly associated with higher amounts of education; 3) humanities majors showed the highest verbal performances followed by social studies science and mathematics majors (the lowest verbal scores were associated with miscellaneous and elementary education majors); 4) female teachers and those from urban background were higher in measured verbal skills, while nonwhite teachers showed lower performance levels; and 5) a highly significant association was found to exist between teachers' attitudes towards special education provisions for disadvantaged children and teacher verbal facility. Levin concluded, "In short, it appears that the teachers with the highest verbal performances were the ones who were most sympathetic to the special needs of the ghetto child (H.M. Levin, 1968, p. 3-49,50)." In a second study, Levin applied cost-effectiveness analysis to decisions on teacher recruitment and retention. Evidence relating teacher characteristics to student achievement was combined with data on the cost of obtaining teachers with different characteristics. This evaluation suggested that recruiting and retaining teachers with higher verbal scores was five to ten times as effective per dollar of teacher expenditure in raising achievement scores of students then was the strategy of obtaining teachers with more experience. "For each additional point of teacher verbal score, the Negro students showed an increment of .175 points and the white students an increment of .179 points in student verbal score. For each additional year of teacher experience, the test scores of Negro students were about .108 points higher and the test scores of white students were about .060 points higher" (H.M. Levin, 1970, p. 29). These data suggested that teacher verbal ability contributed more to students' reading achievement for both white and black children than did teacher experience.

The importance of a teacher's verbal behavior was also reflected in a study by Amidon and Giammatteo (1965). In this study, the verbal behavior patterns of superior teachers were compared with those of average teachers and were found to differ substantially. The superior teachers talked about 40% of their total classroom time, while the average group talked about 52% of the time. The superior teachers were reported to be more accepting of pupil-initiated ideas,

tended to encourage such ideas more, and made a greater effort to build
on these ideas than the average teachers. The study did not specify
the criteria principals used to select the superior teacher, nor was
there evidence presented concerning pupil achievement of the superior
and average teachers.

Chall and Feldman (1966b) investigated the interrelationship of
level of prereading skills, the reading method used in the class, the
teacher's implementation of that method, and reading achievement at the
end of first grade. Eighty-three teacher characteristics, representing
teaching style and teaching methods, were explored for 14 teachers
using an eclectic basal-reading method. The authors reported that the
teacher characteristics that had a positive relationship to pupil reading
achievement were a thinking approach to learning, a symbo-sound emphasis
and appropriateness of the lesson. In a subsidiary analysis to assess
what the teacher ratings were measuring, the most important behaviors of
the more successful teachers were attention to individual differences,
encouragement of pupil participation, and mixing methods according to
the situation. Turner (1967) examined a variety of teacher character-
istics to determine the effect of a particular characteristic on a
teacher's success. The teachers who had difficulty in teaching reading
were reported to be lacking organization, warmth, or friendliness; a
high level of imaginative behavior; and a favorable attitude toward
democratic pupil practices. This study and the Chall and Feldman study
suggest that success in the teaching of reading depends on the teacher's
ability and flexibility in communicating to the students (warmth,
friendliness, attention to individual differences) and ability to en-
courage students' communication back to the teacher (encouragement of
pupil participation, democratic pupil practices).

Two other studies also suggested that a teacher's attitudes towards
students affected pupil's reading achievement. Goldenberg, in an effort
to assess how teachers viewed and responded to their children, investi-
gated the ways in which suburban teachers dealt with different groups of
beginning readers (1969). The results indicated that most of the teach-
ers spent more time teaching reading to the higher-ranked groups than
to the lower-ranked groups. In almost every instance, the amount of
time spent with a group varied directly with the "status" of the partic-
ular group. These results suggested that the teachers found it easier
to communicate with and to help the brighter, quicker students. Lipton
(1968) examined the relationship between the gains in reading achieve-
ment of children with reading disabilities and the degree to which their
teachers manifested social and cognitive rigidity. Significant differ-
ences were noted, among the results described, only between the cognitive
rigidity patterns of teachers (as measured by a dogmatism scale) and the
students' reading achievement, with low cognitive rigidity leading to
more gains.

In a review of nine studies dealing with the generality of teacher
effects on student achievement, Rosenshine observed that there was a

lack of information from well controlled studies from which to make any conclusion concerning either teacher consistency or the stability and effects of teacher consistency on student achievement gain scores (1970). Gage observed that the stable teacher characteristics of aptitude, marital status, years of education, and number of courses in a given field, when correlated with unstable residual gain measures, had repeatedly produced correlations which were insignificant, inconsistent, and generally lacking in either psychological or educational meaning (1963).

Although studies dealing with the relationship of teacher characteristics to pupil reading achievement present data on limited samples and do not investigate identical characteristics or outcomes, the two characteristics of "verbal facility", and "flexibility or sensitivity" in dealing with a variety of pupils, seem to emerge. The implications of these findings are that the most effective teacher of reading may be one who can relate to the pupils in ways which are meaningful and intelligible to the students. Two subgroups emerge: one group of effective teachers would be those who have a high level of verbal facility and flexible attitudes, so that they can teach students of background and/or abilities different from theirs (H. M. Levin, 1970); the other group (Greenleigh Associates, 1966; Hassinger, 1969; Briscoe, 1969) by virtue of their background and experience, would be able to communicate with certain diverse groups of students with whom many white, middle-class teachers have difficulty.

On the basis of the research reviewed, no definitive conclusions may be drawn about the relationships between teacher preparation, teacher performance, and students' reading achievement. The existing research does suggest certain priorities and directions for future research efforts. Top priority should be given to precise definition of a model which will provide reliable description and analysis of the contents and interactions of the input, process, and output variables of an educational program. The apparent assumption that "a teacher is a teacher is a teacher in any situation" has prevented obtaining answers to such questions as: which teachers are most effective in what situations and why? The quest for one best teaching behavior, one best set of education requirements, or one best method of teacher education, seems to ignore the fact that the teacher and the student exist within a large and complex context. A satisfactory knowledge base may be developed only from the context and the interactions among the variables of society, school, teachers, and students.

Summary

The purpose of this review of the published literature was to determine whether there was documented evidence to describe adequately the nature, extent and effects of teacher education for those who teach reading. To facilitate a summarization of the task, the following specific questions were proposed:

1. What are the (state) certification requirements for the preparation of teachers of reading in the 50 states and the District of Columbia?
2. What are the current practices of institutions preparing those who teach reading (among four-year institutions which prepare at least 100 elementary teachers every year)?
3. What are the certification requirements for the preparation of reading specialists?
4. What methods of teacher preparation are employed by educational institutions to meet the certification requirements of teachers and specialists in reading instruction?
5. What pre- and inservice education for teachers and specialists in reading is provided or required by local educational agencies?
6. What evidence exists that there are relationships between teachers' preparation, how teachers teach, and how their students achieve in reading?

The following highlights of the review of the literature illustrate the extent to which evidence exists to answer the foregoing questions:

To provide a statutory background for the certification requirements of the states, the education code of each state was reviewed to determine the nature and extent of the laws which might pertain to the teaching of reading. Most states (28) do not have laws that mention reading as a specific requirement, although 16 of these states have statutes which require instruction in specific subjects. Twenty-three states have legislation requiring that reading be taught in the schools. None of the state education codes require specific materials, time or methods of instruction for reading or any other subject. The education codes tend to be quite consistent in assigning the determination of such requirements to the state board of education and/or the governing board of the local school district.

All 50 states and the District of Columbia have statutes which require licensing or certification of teachers; however, almost all states have made provisions to grant probationary credentials for those who have not met the regular credential requirements in the event no fully credentialled teachers are available. Although only one state has a statute specifying the certification of reading teachers, 22 have made provision for the state board of education to issue "special" certificates for certain subjects or fields as deemed necessary.

The state education codes provide a broad framework for the establishment, governance and operation of the public schools but generally do not make specific requirements for the content, materials, methods, or teacher certification related to the teaching of reading.

What are the State certification requirements for those who teach reading? All states require professional school personnel who teach in the public schools to hold certificates issued by the legal authority. In all but four states a minimum of a Bachelor's degree is required for elementary and secondary credentials. While the predominant practice is to "endorse" the fields of preparation on the secondary teaching certificates, such endorsement is not found in the issuance of elementary credentials. The credential requirements are commonly stated in terms of degrees or amount of academic preparation with extensive use of "approved programs" of training institutions as the means by which teachers may be certified.

The literature contains conflicting and ambiguous information concerning the incidence of reading and reading-related courses required for elementary and secondary certification. The extensive use of the "approved program" approach to certification makes it impossible to form definitive conclusions regarding the presence or absence of reading requirements.

The review of the existing literature indicates that it is not possible to adequately describe the nature and extent of the preparation of elementary and secondary teachers to teach reading from the reports of state certification requirements.

The available literature suggests that states designate specialists in reading by a variety of titles, endorsements or credentials. The common certification requirement is in terms of courses of particular title or content, with the majority of states also specifying teaching experience. The requirements for all states are described in such a variable and inconsistent manner that explicit conclusions are impossible. The only conclusions that may be made are that no apparent regional trends exist and no common criteria are used by all states for the certification of reading specialists.

What are the current practices of institutions preparing those who teach reading? Since the review of the literature revealed no current national summarization of the offerings and requirements of institutions providing teacher education programs, the published catalogs from 374 of these institutions were used as the source of the most current information. Institutional requirements and offerings for teacher preparation in reading were specified in the catalogs of 324 institutions in 49 states and the District of Columbia.

Sixty-four percent of the institutions required a separate reading methods course involving from two to three semester hours of study in the undergraduate preparation of elementary teachers. One-third of the institutions required an integrated reading - language arts course or a general-methods course which included

reading for elementary teachers. Twelve percent of the institutions required some form of practical experience or practice teaching concurrently with the required reading courses for the elementary teacher. Only three percent of the institutions listed no reading-methods course requirement for the preparation of the elementary teacher. In addition, 47% of the institutions required those preparing for elementary teaching to take a course in children's literature. All institutions preparing elementary teachers require practice teaching which involved 6 to 16 semester hours generally to be accomplished in the senior year.

The catalog-specified requirements of secondary teachers for preparation in reading were significantly less than the requirements for the elementary teachers. Although only six percent required a reading-methods course, nearly 60% of the institutions offered one or more courses in reading methods at the secondary level. While the requirements related to reading were small, a variety of offerings including clinics, intern programs, and an array of graduate courses were available but not required for those preparing for secondary teaching.

During the past decade, there appears to have been a very slight change in the requirements of institutions that prepare teachers for elementary and secondary certification. In 1960, as in 1970, the most frequent requirement for certification as a regular elementary or secondary teacher was one course in reading and/or language arts. The institutional requirements for preparation in reading increased slightly for the elementary teacher, while there was a slight decline in the reading course requirements for secondary teachers.

The survey data are not adequate to answer the question of the contents and methods used by institutions to prepare teachers for the instruction of reading. The available information is restricted to courses and semester hours of instruction, and no comprehensive information is available concerning the specific contents, methods and outcomes of the teacher education programs.

What preparation for teachers or specialists in reading is required or provided by local educational agencies? A survey of the 20 largest cities in the United States revealed that all of the 17 responding cities employ some type of special reading teacher. There is wide variation in the preparation requirements for these special teachers of reading which commonly do not relate to the state certification requirements. More than half of the cities do not require any academic preparation beyond the regular state certification for any or some of the special reading teachers. At the same time, approximately one-third of the cities require or provide inservice education, and 10% of the major cities surveyed have indicated adoption of the IRA requirements for reading specialists.

The major cities appear to rely on inservice observation and prep-
aration for both the selection and designation of specialists in
reading. Successful experience as a teacher of reading is a common
requirement for those who are designated as specialists or teachers
of reading in the local educational agency.

Neither the reviewed literature nor the documents provided
from a sample of the major cities supplied sufficient information
to determine adequately the practices and requirements of local
educational agencies for the preparation and function of locally
designated teachers and specialists in reading.

The surveys reviewed in the literature suggest that profes-
sional school personnel commonly perceive the need for more assis-
tance in providing for the students with reading disability. Indeed,
the surveys suggest that between 50% and 60% of the students identi-
fied as having reading problems were not receiving special assis-
tance. Those involved in the preparation of teachers have observed
from the survey data that the nature and extent of the preparation
in the teaching of reading are inadequate and far less than the pro-
fessional reading association recommends. The limited surveys of
special ethnic and cultural student populations provide incomplete
but suggestive indication that special problems in reading and lan-
guage development for these groups are to a great extent receiving
little attention or assistance. Unfortunately, the literature does
not provide comprehensive information concerning the preparation
and characteristics of those who teach and provide special assis-
tance in reading to pupils with various needs in all regions of the
nation.

What is the relationship between teacher preparation, teacher
performance and student achievement in reading? The review of the
literature failed to provide adequate evidence to answer these im-
portant questions concerning teacher effect on student achievement
in reading. The lack of evidence from the literature is not due
to a dearth of surveys, writings, and investigations. On the con-
trary, the volume of literature concerning reading is among the
most extensive in the field of education. A substantial obstacle
to obtaining answers to these questions has been the limited or
inadequate design of the investigations to account for multiple
variables which interact in a system of education.

Although no definitive conclusions concerning the relation-
ships of teacher preparation, teacher performance, and student
achievement can be made, some of the studies suggest that verbal
facility, flexibility, and empathy for individual learners are
more important teacher characteristics than the degrees and courses
acquired in academic preparation. Other studies amplify these
suggestions with the observations that pupils from diverse ethnic
and cultural backgrounds may be understood and communicated with

effectively in a learning situation by those who understand and
share such experiences by virtue of their own background.

The research and analysis reported in the USOE publication,
"Do Teachers Make A Difference?" suggest the new developments
needed in research concerning educational systems. Gagne contri-
butes to this publication by analyzing the shortcomings of previous
research with the statement:

> "If an administrator or policymaker asks the question, "What
> do teacher characteristics have to do with the outcomes of
> school learning," the answer should be- "We have no way of
> answering that question at present. First, we have no measure
> of learning outcome worthy of the name." Second, we have in-
> adequate measures of input. And third, even if we had such
> measures, the question about teacher characteristics should
> not be asked until we know better what processes the teacher
> is employing to insure learning (United States Office of
> Education, 1970, p. 172)"

There appears to be a growing acceptance that future education-
al research must be designed to explain the model of the system of
education that includes input, process, and output variables.

At the outset it was stated that the requirements and programs
for teacher education are the product of an extremely complex system
of institutions and people. The inability of the existing research
to provide definitive answers to the questions proposed appears to
be partially explained by the design of the investigations which
commonly used correlational analyses of single variables of student
or teacher characteristics. The principle of parsimony appears to
be reflected in the designs of the majority of investigations which
have sought the one best set of requirements for teachers, the one
best teaching behavior, or the one best method of preparing teachers.
Surveys and research studies have commonly identified an array of
demographic differences among teachers and students but have not
investigated the interactions of the multiple variables in an educa-
tional system. From this review of the literature, it appears clear
that reliable description and understanding of the complex system of
education will depend on future research which investigates the con-
text, input, process, and output interactions among the variables of
students, teachers, schools, and society.

CHAPTER VI

SUMMARY AND RECAPITULATION

The work done in this project has involved both an extensive
and intensive examination of the literature relevant to three
problems in the field of reading:

1) the determination of the extent and distribution of
   the national "reading problem";
2) the determination of the "use frequency" and "use
   distribution" of instructional methods, approaches,
   procedures, materials, and equipment for reading
   instruction; and
3) a description of the nature and extent of current
   practice in teacher training in the field of
   reading.

The extensiveness of the literature search is indicated,
first, by the size of the bibliography which numbers approxi-
mately 1800 items. This bibliography contains all source docu-
ments reviewed critically by a committee of reader-evaluators,
plus those secondary documents read as general background
information by the authors of the synthesis statements con-
tained in this report. Secondly, the source documents listed
in the bibliography are only those which survived the examina-
tion of a committee of acknowledged experts who reviewed source
lists (described in Chapter 2) containing thousands of document
abstracts and titles.

The intensiveness of the examination is indicated by the
fact that all source documents listed were reviewed by a
committee of reader-evaluators, using a model for review (the
Gephart Model) which permitted the profiling or rating of the
elements of each of the documents according to three dimensions:
representativeness of the population studied, treatment, and
measurement. Two hundred source documents were read indepen-
dently by pairs of readers (as described in Chapter 2) and the
congruency of their judgments has been shown to be significantly
high on appropriate elements of the profiling procedure.

This literature review may be the most extensive ever
conducted in the field of reading on the relevant topics, and
is probably the only one which has had the intensiveness of
analysis described here.

It would be redundant to summarize again the discussions,
summarizations, and recommendations of the results of the
literature review, which are contained in Chapters 3, 4, and 5.

Those chapters document the existence of a national reading
problem of significant size, particularly among certain popula-
tion subgroups, and describe the personnel and material resources
used to teach reading in the United States. It is appropriate,
however, to summarize briefly the findings of the project, one
of three funded as part of the USOE Targeted Research and Develop-
ment Program in Reading, as they relate to those basic assump-
tions listed below which underlie all three projects:

1. Improvement in reading seems to have reached a plateau;
2. Differing methods for teaching reading do not produce
   significantly different results;
3. A broadly accepted model of reading, showing its con-
   stituent elements and their interactions, does not
   exist;
4. Summaries of research on reading indicate that most of
   the research in the field has been done in a manner
   that prohibits synthesis;
5. Previous attempts to concentrate emphasis on reading,
   undertaken on the part of funding agencies, have pro-
   duced proposals for research on parts of the problem
   with little hope for cumulative solution of the total
   problem (Gephart, 1970a, pp. 2-3).

Has improvement in reading reached a plateau? We do not
think the literature surveyed for this project supports this as
a general assumption. The answer depends, in part, on what
sub-questions are asked to define the main question.

If the question is examined from the standpoint of improve-
ment in reading achievement, the work of Gates (1961a) and
Schrader (1968) suggest, at least tentatively, that the reading
ability of pupils in the public schools may have improved over
the last few decades. Recent Population Reports of the Bureau
of the Census indicate that illiteracy, on the whole, has de-
clined in the United States during several decades, despite a
significant increase in the population itself. However, the
results of this literature search abundantly support the
position that low achievement in reading, and even illiteracy,
is a significant problem in segments of the population.

The incidence of reading problems in the United States
(see Chapter 3) among both the school age and adult populations
is related to ethnic and racial group membership, socioeconomic
factors, and location of residence. These and other factors,
such as age, begin to describe the groups in our population who
may be on a plateau of achievement and, thus, appropriate tar-
gets for intervention. The generalization that overall improve-
ment in reading achievement has reached a plateau could be
supported only when and if optimum effort has been made to
effectuate appropriate developmental reading programs for mem-
bers of these subgroups.

If the question of improvement in reading is examined from the standpoint of the methodologies used to teach reading, it may be that a plateau has been reached. Most methods used to teach reading (as they are generally described) have a long history in American education. It is difficult to find in current descriptions of some methods anything not described by Huey in 1908. The examination of method-against-method reports reviewed in this project showed few significant differences (see Chapter 4) in achievement among the pupil population. In those studies which did ascribe differences in achievement to method, the differences tended, almost inevitably, to disappear over time. And in spite of the research effort that has gone into establishing the desirability for individualization in education, most teachers continue to achieve that individualization in teaching reading through the methodology of the basal readers. This practice is no different in the decade of the 1960's than it was in the decade of the 1950's (Austin and Morrison, 1963).

If the question of improvement is examined from the standpoint of the availability of materials, it is apparent that the American teacher has been offered an increasing over-abundance of materials from which to select in the 1960's. The problem is with the selection from among these materials. Komoski (1971) has indicated that there are too few field tests and learner-verification tests in support of these materials to know whether or not there is an increase in value as well as increase in abundance.

If the problem is examined from the standpoint of improvement in teacher education, it is apparent from our survey of the descriptions of courses in reading instruction that there has been little institutional response to the challenges of Austin and Morrison (1961) to improve teacher education.

Some indicators of positive change do exist, however. The work of such agencies as the Southwest Regional Educational Laboratory and the Wisconsin Design for Reading Improvement, and the engineered approach to the determination of the natural order of words suggested by E.B. Coleman (1970), indicate new directions in the development and use of materials. The interest in a performance-based teacher education curriculum as suggested by the Nine Models Program and Weber State College, and the work of H.M. Levin (1970) in attempting to define the teacher variables with highest payoff for the teaching of reading, are indicators of a breakout from an assumed plateau.

Do different methods of teaching reading produce significantly different results? We believe that the assumption that they do not is valid. Almost all of the methods used to teach reading are concerned primarily with the beginning stages of learning to read or with remedial work. The largest percentage

of studies reviewed in this project was concerned with first-grade pupils. Although, in some cases, experimental methods showed significantly different results in reading achievement, the studies are based on a variety of measuring instruments not all measuring the same thing. Followup studies reviewed in this project indicated that any differences attributed to method had inevitably disappeared by third or fourth grade level.

One important problem in considering the validity of the assumption that different methods do not achieve different results is that it is difficult to control and monitor what actually happened in a classroom. Teachers seem to create their own eclectic methods for teaching reading, once the classroom door is closed, and it is difficult to know what procedures they are actually using.

Does a broadly accepted model for the teaching of reading, showing its constituent elements and their interactions, exist? This question was beyond the scope of this project which was not asked to look for an accepted model for the teaching of reading, but for the most effective models utilized under different conditions, with different groups. If acceptance is defined as general use, however, it seems clear that most teachers base instruction in reading upon use of some one of the basal reading series, accepting an eclectic method. In effect, the eclectic method is probably so eclectic that it is no model at all.

Authorities in reading whose works were reviewed as background for this project all recommend an eclectic approach. The organization and emphasis of basal readers seems to respond to the social and political values of the time as well as to what is assumed to be the best current "research" in the field of reading. As a result, these series seem to be similar to a significant degree.

In view of the present state of the art in the reported literature on methods of teaching reading, this almost universal adoption of an eclectic approach seems extremely appropriate. A broadly accepted model of reading, showing its constituent elements and their interactions, did not appear in our review of the literature, however.

Has research in the field of reading been done in a manner that prohibits synthesis? Those who participated in this project sympathize with the problems of previous synthesizers in the field of reading. We find that the literature typically contains testimonials about programs or techniques or reports the results of research in a manner that is difficult to synthesize. Most of the research on method, for example, has been based on the assumption that method alone makes a major

difference in learning to read and has ignored or left uncontrolled other significant variables such as learner and teacher characteristics. The reader-evaluators who worked in this project and the authors of Chapters 3, 4, and 5 of this report point out that the application of sophisticated statistical analyses to variables that are vague, lack operational definition, and do not reflect the complexity of the reading act is futile.

Chapters 3, 4, and 5 could better be called state-of-the-art reports rather than syntheses of knowledge. Our agreement on the state of the art in research in reading tends to confirm the basic assumption that research, as reported, has been done in a manner that, if not prohibiting synthesis, does make any synthesis difficult and tenuous.

Have previous attempts to concentrate emphasis on reading, undertaken on the part of funding agencies, produced proposals for research on parts of the problem with little hope for cumulative resolution of the problem? This is the basic assumption leading to a justification for the Targeted Research and Development Program in Reading. We can take no position on the assumption because our project review did not include an analysis of these proposals.

Penney and Hjelm (1970) report the history of the USOE's support of reading research from 1957 to 1968. A staff study, supplemented by outside consultative advice, of the results of the USOE support recommended the application of a systematic research planning technique similar to that utilized by the National Cancer Institute for any future program of basic research and theory-building for reading.

The intent of the recommendation was to make more orderly the accumulation of knowledge about reading achievement and reading instruction and to provide a mechanism for feeding such knowledge into solution-oriented programs. Gephart (1970a) detailed how such systematic planning might be used by the USOE. As a portion of the implementation of the new research planning technique, Gephart and his advisors recommended, as the first stage of the TDR Program, an immediate analysis of the contents of the existing research literature and preparation of state-of-the-art syntheses. This recommendation was accepted by the USOE and three major projects were funded.

The question posed to Project No. 3 by the United States Office of Education was whether or not it was possible to document from existing literature the status of the several tasks posed to the project. This was to be accomplished by the review of that literature in a manner which utilized a defined and consistently applied set of standards. The

standards suggested to be applied were those defined by Gephart
(1970a) as dimensions required of quality research. We have
applied those standards in an extensive review of the relevant
literature.

Documentation of the results of that review are described
in Chapters 2, 3, 4, and 5 of this report.

APPENDICES

APPENDIX A

REVIEW FORM, DIRECTIONS AND GENERAL

SUGGESTIONS TO PROJECT READERS

DIRECTIONS TO READERS

1. For the reference include, in complete detail, the following:

    a. Author(s) (name(s) as given in article
    b. Title (in full)
    c. Journal
    d. Volume
    e. Issue
    f. Date of publication
    g. Page number(s) of article.

2. Scan the article quickly; decide whether or not the article is relevant to the project. Complete questions 1 and 2 on cover sheet. Circle appropriate description of article.

3. If answers to 1 and 2 are both negative, or if article is irrelevant to project, complete the cover page, write a brief explanation on the back of the cover sheet, indicating why the questions are inappropriate and why the article is being excluded, and complete the innovative ideas section on page 7.

4. If answer to either question 1 or 2 on cover is yes and article is relevant to tasks of project, complete entire form in the following order: (NOTE: there will be exceptions. If, in your opinion, an article should be included, review it – e.g., a theoretical paper on methods of teaching reading.)

    a. Complete appropriate sections of search list;
    b. Read article again, reading carefully for real understanding of what went on;
    c. Finish results section on page 5, including any relevant numerical details;
    d. Complete abstract on page 6. If a quality abstract is available, reproduce, annotate or modify if necessary, and attach. Abstract should be a verbal description of the article;
    e. Reproduce relevant data tables, annotate for both clarification and interpretation; critique, and attach. List tables on page 7;
    f. Complete innovative ideas section;

g. List additional bibliography in article on page 8;
h. Complete question III through "comments" on cover sheet.

GENERAL SUGGESTIONS FOR READERS

1. Anytime you use quotes supply page numbers.

2. Search list is a quick guide to the contents of article. Fill it in with verbal descriptions of how variables are measured as well as with numerical descriptions of the categories into which the sample fits. To complete relevant sections on search list, provide quotes wherever possible.

3. Write in succinctly all relevant information. We have suggested categories, but responses should be modified to fit particular articles wherever necessary.

4. Results section should, in general, be more comprehensive than abstract section. Do not include specific results in the abstract section. Abstract should contain general results and conclusions author draws from results. The two together should present a verbal (abstract) and numerical (results) description of the article.

5. Examine the relevant data tables; reproduce, annotate and attach relevant data tables to establish their correspondence with the author's reported results.

6. If you are reading a review of the literature, the bibliography should be searched for inclusion in project. If it is an important article, replicate the entire article and attach. If not, reproduce bibliography with annotations where appropriate.

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REFERENCE

Name:

Date:

Hours spent:

Reject_____ Accept_____

_____

I. Is this a test of an hypothesis? (experimental, quasi-experimental
or   or demonstration only) YES_____ NO_____

II. Is this an answer to an empirical question? (survey, description,
exploratory question or review of Literature) YES_____ NO_____

(Now Complete Search List Pages 2, 3, 4)

_____

III. (Answer to Question II is yes) The hypothesis is supported by
the author's conclusion(s)?
Not Supported_____ Somewhat Supported_____ Supported_____

IV. (Answer to Questions I or II is yes) Was the quality of the data
generation procedure Appropriate_____ Inappropriate_____ N. A_____

V. (Answer to Questions I or II is yes) Was the data analysis
Appropriate_____ Inappropriate_____ N. A_____

VI. This article describes the status of Task I_____ Task II_____ Task III_____

VII. Comments:

LEVELS		AGE		SEX		ETHNICITY	
Pre K	___	4	___	Male	___	White	___
K	___	5	___	Female	___	Black	___
1	___	6	___	M + F	___	Indian (Tribe)	___
2	___	7	___	No Info.	___	Cuban	___
3	___	8	___	Other	___	Puerto Rican	___
4	___	9	___			Mexican-Am.	___
5	___	10	___	**S.E.S.**		Oriental	___
6	___	11	___	Lower	___	Japanese	___
				LL	___	Chinese	___
7	___	12	___	ML	___	Other	___
				UL	___		
8	___	13	___	Middle	___	Other Mother Tongue	___
				LM	___		
9	___	14	___	MM	___	Other	___
				UM	___		
10	___	15	___			No Info.	___
				Upper	___		
11	___	16	___	LU	___		
				MU	___		
12	___	17	___	UU	___	**GEOGRAPHIC AREA**	

Young Adult (18-25) ___   18-25 ___   Name of Scale ___   However Researcher Describes: ___

Adult (25 & up) ___   25+ ___

However Researcher describes: ___

Description of Scale ___

ALL MEASURES OF LEARNER POTENTIAL	ALL MEASURES OF LEARNER ACHIEVEMENT	METHOD	MATERIALS

However Researcher Describes:

However Researcher Describes:

Measure (A)____

Mean_____
S.D._____

Measure (B)____

Mean_____
S.D._____

Measure (C)____

Mean_____
S.D._____

Special Population
E.H._____
E. MR._____
Deaf_____
Blind_____
Other_____
Define:_____
_____
_____
_____

Ability level of Subjects:
Low_____
Average_____
High_____

Other kinds of In-
formation:_____
_____
_____
_____

Measure (A)_____

Mean_____
S.D._____

Measure (B)_____

Mean_____
S.D._____

Is achievement based
on normative data?
_____

If not, describe:
_____
_____
_____

If author has identi-
fied any reading sub-
skill, copy, annotate
and attach appropriate
pages.

COSTS OF INSTRUCTION TIME & MATERIALS

Teacher/Pupil
Ratio_____

Per Pupil Cost of
Instruction_____
_____

Time Required to
Teach Method_____
_____

Materials_____
_____

Special Equip._____
_____

Other_____

Meaning
Emphasis   __

Code
Emphasis   __
  Synthetic __
  Analytic __

Linguistics__

Modified
Alphabet   __

Responsive
Envt.   __

Programmed __
Learning

Individual-__
ized Reading

Language   __
Experience

Eclectic   __
or Author's own

Researcher's des-
cription of method,
use quotes or copy
and attach_____
_____
_____
_____
_____

Comparison of
Methods:
  Yes_____
  No_____

Sullivan_____

SRA   _____

EDL   _____

Ginn   _____

Scott _____
Foresman

American____
Books Co.

Words in____
Color

ITA   _____

Other (list)
_____
_____
_____
_____
_____

TYPE OF PROGRAM

Remedial   _____

Corrective _____

Developmental___

EVIDENCES OF TEACHING PERFORMANCE AS A CONSEQUENCE OF TRAINING

TEACHER CHARACTERISTICS

Sex _____

Experience _____

Race/ _____
Ethnicity

Style _____

Degrees _____

Other _____
_____
_____

No info. _____

READING PERSONNEL

Teachers:
Pre-School _____
Elementary _____
Jr. High _____
High School _____
Young Adults _____
Adult Educ. _____
Jr. College _____
College _____
Other _____

Reading Specialists
Developmental _____
Remedial _____
Corrective _____
Other _____

Reading Supervisors
_____
_____

Other _____

REQUIREMENTS

State _____

Local _____

Training Inst. _____
_____
_____

Specify:
Method _____

Materials _____

In-Service _____
Pre-Service _____
Other _____
_____

No Info. _____

However Researcher measures: _____
_____
_____
_____
_____
_____
_____
_____

DATA GENERATION PROCEDURE: REPRESENTATIVENESS

R_5 ____
____

R_4 ____
____

R_3 ____
____

R_2 ____
____

R_1 ____
____

Not Appropriate ____

TREATMENT

T_6 ____
____

T_5 ____
____

T_4 ____
____

T_3 ____
____

T_2 ____
____

T_1 ____
____

Not Appropriate. ____

DATA ANALYSIS MEASUREMENT

M_5 ____
____

M_4 ____
____

M_3 ____
____

M_2 ____
____

M_1 ____
____

Not Appropriate ____

AUTHOR'S RESULTS

-6-

ABSTRACT: Includes purpose, method, conclusion, and reviewer's critique

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List relevant tables, annotate for clarity and interpretation and attach.
    Data Tables included are:

Aside from the adequacy of the research, are there any innovative or useful
ideas contained in this study? (implications for future research, or ideas
the author did not test?) Specify.

-8-

Other bibliography which should be searched:

APPENDIX B

THE GEPHART ORDINAL SCALES

FOR PROFILING THREE DIMENSIONS

OF RESEARCH QUALITY

Representativeness

R_5 = The entire population was studied
R_4 = Random selection from a specified population was employed to determine which units were studied
R_3 = Purposive sampling from a specified population established the group studied
R_2 = Volunteers were studied
R_1 = An unidentified group of subjects was studied

Treatment

T_6 = A theoretically based treatment was administered and described and controls were employed for mediating variables identified in the theory AND for variables extraneous to the theory that might have an effect.
T_5 = Same as T_6 with the exception of the lack of controls for extraneous variables.
T_4 = Same as T_6 with the exception of the lack of controls for theory encompassed mediating variables and extraneous variables.
T_3 = No theory stated but the employed treatment described in detail sufficient for replication.
T_2 = Commonly known treatment administered but not described in detail.
T_1 = Something of an undescribed nature was experienced by the units studied.

Measurement

M_5 = Data were generated through the use of either a commercially standardized or ad hoc instrument AND data are presented which establish high validity and reliability for its use in this measurement task.
M_4 = Data generated through the use of a commercially standard-ized instrument and evidence presented indicating moderate validity and reliability for this application.
M_3 = Data generated through a commercially standardized test but no evidence presented as to its validity and reliability for this application.

M_2 = Data generated through an ad hoc instrument and evidence of
moderate validity and reliability presented.

M_1 = Data generated through an ad hoc instrument with either no
supporting evidence as to validity and reliability or evi-
dence indicating poor validity and reliability on either
a commercially standardized or ad hoc instrument.

ILLITERACY OF PERSONS 14 YEARS OLD AND OVER, BY YEARS OF SCHOOL COMPLETED, AGE, RACE, AND SEX: NOVEMBER 1969

(Numbers in thousands. Civilian noninstitutional population)

Years of school completed

Age, race, and sex	None Total	None Illiterate Number	None Illiterate Percent	1 year Total	1 year Illiterate Number	1 year Illiterate Percent	2 years Total	2 years Illiterate Number	2 years Illiterate Percent	3 years Total	3 years Illiterate Number	3 years Illiterate Percent	4 years Total	4 years Illiterate Number	4 years Illiterate Percent	5 years Total	5 years Illiterate Number
ALL RACES																	
Total, 14 years and over....	1,456	836	57.4	335	156	46.6	765	167	21.8	1,388	151	10.9	1,656	74	4.5	2,155	49
14 and 15 years.............	25	18	(B)	-	-	(B)	-	-	(B)	4	1	(B)	4	-	(B)	43	3
16 to 24 years.............	98	54	65.3	4	1	(B)	14	-	(B)	25	4	(B)	51	3	(B)	69	3
25 to 44 years.............	170	112	65.9	42	14	(B)	159	46	28.9	184	29	15.8	253	17	6.7	414	19
45 to 64 years.............	348	232	66.7	122	58	47.5	252	52	20.6	525	63	12.0	633	32	5.1	821	12
65 years and over...........	815	410	50.3	167	83	49.7	339	69	19.8	651	54	8.3	715	22	3.1	808	12
Male, 14 years and over......	644	367	57.0	182	88	48.4	441	94	21.3	755	94	12.5	882	32	3.6	1,071	33
14 and 15 years.............	13	10	(B)	-	-	(B)	-	-	(B)	4	1	(B)	-	-	(B)	27	3
16 to 24 years.............	59	43	(B)	2	-	(B)	8	-	(B)	10	1	(B)	16	-	(B)	39	3
25 to 44 years.............	67	45	(B)	20	7	(B)	100	30	30.0	104	17	16.3	135	7	5.2	238	12
45 to 64 years.............	171	118	69.0	72	40	(B)	146	28	19.2	297	48	16.2	365	14	3.8	403	9
65 years and over...........	335	151	45.1	88	41	46.6	186	36	19.4	340	27	7.9	366	11	3.0	383	6
Female, 14 years and over....	812	473	56.3	153	70	45.8	324	70	21.6	633	57	9.0	774	42	5.4	1,084	15
14 and 15 years.............	12	8	(B)	-	-	(B)	1	-	(B)	4	1	(B)	-	-	(B)	16	-
16 to 24 years.............	39	22	61.5	1	1	(B)	6	-	(B)	15	3	(B)	36	3	(B)	30	-
25 to 44 years.............	103	67	61.6	21	8	(B)	59	16	(B)	80	12	15.0	113	11	9.3	176	7
45 to 64 years.............	177	115	62.1	50	19	(B)	105	23	21.9	227	15	6.6	268	17	6.3	418	2
65 years and over...........	481	261	54.3	80	42	52.5	153	31	20.3	311	27	8.7	349	11	3.2	445	6
WHITE																	
Total, 14 years and over....	1,101	580	52.7	182	60	33.0	529	95	18.0	998	93	9.3	1,204	42	3.5	1,622	21
14 and 15 years.............	25	18	(B)	-	-	(B)	-	-	(B)	2	1	(B)	3	-	(B)	24	3
16 to 24 years.............	78	48	61.5	3	1	(B)	8	-	(B)	16	3	(B)	38	-	(B)	55	1
25 to 44 years.............	146	90	61.6	28	7	(B)	110	27	24.5	139	23	16.5	192	11	5.7	315	12
45 to 64 years.............	240	149	62.1	52	15	(B)	166	29	17.5	341	35	10.3	412	15	3.6	557	5
65 years and over...........	612	275	44.9	99	37	37.4	243	39	16.0	498	31	6.2	562	15	2.7	670	-
Male, 14 years and over......	476	247	51.9	94	33	35.1	286	42	14.7	542	56	10.3	653	17	2.6	810	15
14 and 15 years.............	13	10	(B)	-	-	(B)	-	-	(B)	2	1	(B)	-	-	(B)	16	3
16 to 24 years.............	45	31	(B)	1	-	(B)	4	-	(B)	7	1	(B)	11	-	(B)	31	1
25 to 44 years.............	53	32	(B)	11	1	(B)	61	13	(B)	76	13	17.1	103	4	3.9	179	7
45 to 64 years.............	119	76	63.9	27	9	(B)	94	14	14.9	197	27	13.7	244	6	2.3	273	4
65 years and over...........	246	98	39.8	55	23	(B)	128	15	11.7	260	14	5.4	296	7	2.4	311	-

See footnotes at end of table.

APPENDIX C

ILLITERACY OF PERSONS 14 YEARS OLD AND OVER, BY YEARS OF SCHOOL COMPLETED, AGE, RACE, AND SEX: NOVEMBER 1969--Continued

(Numbers in thousands. Civilian noninstitutional population)

Age, race, and sex	None Total	None Illiterate Number	None Illiterate Per-cent	1 year Total	1 year Illiterate Number	1 year Illiterate Per-cent	2 years Total	2 years Illiterate Number	2 years Illiterate Per-cent	3 years Total	3 years Illiterate Number	3 years Illiterate Per-cent	4 years Total	4 years Illiterate Number	4 years Illiterate Per-cent	5 years Total	5 years Illiterate Number	5 years Illiterate Per-cent
WHITE--Continued																		
Female, 14 years and over.....	625	336	53.8	88	25	28.4	242	52	21.5	454	34	7.5	551	24	4.5	812	6	0.7
14 and 15 years..........	12	8	(B)	-	-	(B)	1	-	(B)	-	-	(B)	3	-	(B)	9	-	(B)
16 to 24 years..........	33	18	(B)	1	1	(B)	4	-	(B)	9	1	(B)	25	1	(B)	25	-	(B)
25 to 44 years..........	93	59	63.4	17	5	(B)	49	14	(B)	63	9	(B)	89	7	(B)	136	5	3.7
45 to 64 years..........	121	73	60.3	25	8	(B)	73	15	(B)	144	8	5.6	169	8	(B)	284	1	0.4
65 years and over.......	366	178	48.6	44	13	(B)	115	23	20.0	237	16	6.8	267	8	3.0	358	-	-
NEGRO																		
Total, 14 years and over.....	301	230	76.4	150	94	62.7	229	66	28.8	380	61	16.1	431	31	7.2	507	27	5.3
14 and 15 years..........	-	-	(B)	-	-	(B)	-	-	(B)	1	-	(B)	1	-	(B)	18	1	(B)
18 to 24 years..........	20	16	(B)	2	-	(B)	5	1	(B)	9	2	(B)	16	1	(B)	13	2	(B)
25 to 44 years..........	18	15	(B)	14	8	(B)	49	19	(B)	41	6	(B)	56	7	(B)	89	6	6.7
45 to 64 years..........	98	83	84.7	67	41	(B)	83	21	25.3	179	29	16.2	214	16	7.5	252	7	2.8
65 years and over.......	165	116	70.3	69	45	(B)	91	26	28.6	150	24	16.0	144	7	4.9	135	12	8.9
Male, 14 years and over.....	147	110	74.8	85	52	61.2	148	48	32.4	205	38	18.5	215	15	7.0	249	19	7.6
14 and 15 years..........	-	-	(B)	-	-	(B)	-	-	(B)	1	-	(B)	-	-	(B)	12	-	(B)
18 to 24 years..........	14	11	(B)	1	-	(B)	4	-	(B)	3	1	(B)	5	-	(B)	7	2	(B)
25 to 44 years..........	12	11	(B)	10	6	(B)	39	17	(B)	26	3	(B)	29	3	(B)	56	6	(B)
45 to 64 years..........	47	42	(B)	42	29	(B)	51	13	(B)	98	22	22.4	116	8	6.9	121	7	2.8
65 years and over.......	74	46	(B)	33	17	(B)	54	18	(B)	77	13	16.9	65	4	(B)	52	12	8.9
Female, 14 years and over.....	154	120	77.9	65	42	(B)	81	19	23.5	175	22	12.6	216	17	7.9	258	8	3.1
14 and 15 years..........	-	-	(B)	-	-	(B)	-	-	(B)	-	-	(B)	1	-	(B)	6	-	(B)
16 to 24 years..........	6	5	(B)	1	-	(B)	1	-	(B)	8	2	(B)	11	1	(B)	6	-	(B)
25 to 44 years..........	9	4	(B)	4	2	(B)	10	3	(B)	15	2	(B)	26	4	(B)	33	1	(B)
45 to 64 years..........	52	41	(B)	25	12	(B)	32	8	(B)	81	7	8.6	98	9	9.2	131	1	0.8
65 years and over.......	90	70	77.8	36	28	(B)	38	8	(B)	73	11	(B)	80	3	3.0	83	6	7.2

- Represents zero.   B Base less than 75,000.

APPENDIX D

YEARS OF SCHOOL COMPLETED BY PERSONS 14 YEARS OLD AND OVER, BY AGE, RACE, AND SEX, FOR THE UNITED STATES: MARCH 1970

(Numbers in thousands. The March 1970 survey includes 1,161,000 members of the Armed Forces in the United States living off post or with their families on post, but excludes all other members of the Armed Forces)

AGE, RACE, AND SEX	TOTAL POPULA-TION	ELEMENTARY				HIGH SCHOOL				COLLEGE					MEDIAN SCHOOL YEARS COM-PLETED
		TO 5 YEARS	5 YEARS	6 AND 7 YEARS	8 YEARS	1 YEAR	2 YEARS	3 YEARS	4 YEARS	1 YEAR	2 YEARS	3 YEARS	4 YEARS	5 YEARS OR MORE	
TOTAL															
TOTAL, 14 YEARS AND OVER	147 472	6 070	2 220	10 566	19 339	10 610	12 134	9 245	47 256	6 539	7 013	3 021	8 539	8 899	12.1
14 AND 15 YEARS	8 016	89	84	2 150	3 559	1 990	123	12	9	8	10	-	-	-	8.5
16 AND 17 YEARS	7 653	64	11	162	945	1 721	3 097	1 896	118	842	57	12	1	-	10.4
18 AND 19 YEARS	6 001	49	19	98	165	342	592	1 447	3 297	943	1 042	493	74	1	12.2
20 AND 21 YEARS	6 268	85	18	99	183	821	381	319	2 690	736	692	975	1 065	233	12.8
22 TO 24 YEARS	9 325	73	29	183	202	376	431	430	4 209	4 011	5 212	1 941	7 398	4 605	12.7
25 YEARS AND OVER	109 310	5 747	2 058	7 865	16 195	5 982	7 590	5 100	37 134	604	829	387	1 433	783	12.2
25 TO 29 YEARS	13 513	183	30	294	363	670	871	728	9 957	570	625	276	1 034	676	12.6
30 TO 34 YEARS	11 352	186	72	384	374	632	780	970	8 972	928	1 190	405	1 741	1 217	12.5
35 TO 44 YEARS	23 021	620	248	1 167	1 923	1 211	1 780	1 307	9 325	820	1 173	350	1 445	891	12.4
45 TO 54 YEARS	23 298	881	373	1 832	2 702	1 269	1 740	1 272	8 875	518	747	302	921	673	12.2
55 TO 64 YEARS	18 413	1 131	498	1 915	3 554	1 073	1 399	773	4 905	253	598	131	590	317	10.7
65 TO 74 YEARS	12 074	1 398	489	1 650	2 978	707	715	350	2 104	118	250	80	243	109	8.8
75 YEARS AND OVER	7 639	1 432	529	1 023	2 207	378	306	172	996	118	250	80	243	109	8.5
21 YEARS AND OVER	121 829	5 869	2 099	8 105	16 935	6 829	8 193	5 713	42 645	5 056	6 393	2 943	8 532	8 898	12.2
MALE, 14 YEARS AND OVER	70 270	3 196	1 126	5 379	9 805	4 988	5 611	4 350	19 830	3 223	3 576	1 590	4 975	5 824	12.1
14 AND 15 YEARS	4 074	41	68	1 215	1 783	934	83	4	5	3	1	-	-	-	8.4
16 AND 17 YEARS	3 867	29	7	100	340	911	1 563	855	54	425	21	6	1	1	10.3
18 AND 19 YEARS	3 380	34	9	58	78	181	285	789	1 452	458	544	248	32	-	12.2
20 AND 21 YEARS	2 778	21	18	46	58	114	144	107	913	378	364	343	488	155	12.9
22 TO 24 YEARS	4 428	50	13	92	139	143	186	203	1 833	1 958	2 626	995	4 093	3 248	13.7
25 YEARS AND OVER	51 784	3 031	1 016	3 868	7 081	2 294	3 370	2 331	15 571	399	453	226	796	575	12.2
25 TO 29 YEARS	6 659	90	28	163	314	312	349	300	2 693	295	341	128	376	505	12.7
30 TO 34 YEARS	5 577	99	46	231	281	311	391	283	2 140	457	639	226	1 047	886	11.6
35 TO 44 YEARS	11 239	375	142	640	1 071	527	795	531	3 902	398	647	188	844	611	12.4
45 TO 54 YEARS	11 236	456	185	740	1 430	614	800	609	3 710	248	321	146	430	420	12.2
55 TO 64 YEARS	8 710	621	257	942	1 704	488	648	391	2 084	114	141	45	293	192	10.5
65 TO 74 YEARS	5 333	717	229	736	1 352	287	320	156	750	47	84	36	104	68	8.7
75 YEARS AND OVER	3 031	672	129	617	889	115	115	60	293	47	84	36	104	68	8.3
21 YEARS AND OVER	57 668	3 090	1 037	3 989	7 208	2 394	3 630	2 604	17 912	2 477	2 270	1 561	4 574	5 823	12.2
FEMALE, 14 YEARS AND OVER	77 202	2 874	1 094	5 188	9 936	5 622	6 525	4 915	27 427	3 316	3 437	1 435	3 964	3 475	12.1
14 AND 15 YEARS	3 942	29	17	944	1 816	1 062	62	8	4	-	-	-	-	-	8.3
16 AND 17 YEARS	3 787	37	5	62	22	810	1 534	1 041	63	5	36	-	-	-	10.5
18 AND 19 YEARS	3 561	16	10	40	86	161	207	678	1 848	417	34	6	-	-	12.3
20 AND 21 YEARS	3 490	44	8	53	106	107	196	152	1 577	485	478	247	42	-	12.7
22 TO 24 YEARS	4 897	33	16	91	153	183	246	227	2 376	357	328	232	577	78	12.6
25 YEARS AND OVER	57 527	2 716	1 044	3 997	7 554	3 298	4 220	2 804	21 563	2 052	2 586	940	3 345	1 398	12.1
25 TO 29 YEARS	6 854	53	22	132	249	358	522	428	3 263	405	376	161	676	208	12.5
30 TO 34 YEARS	5 775	87	27	153	293	322	439	286	2 833	275	263	148	458	170	12.5
35 TO 44 YEARS	11 782	245	106	527	852	684	985	736	5 423	470	551	178	494	330	12.3
45 TO 54 YEARS	12 063	383	188	692	1 363	671	940	663	5 165	422	526	171	590	280	12.2
55 TO 64 YEARS	9 703	510	241	973	1 854	585	751	382	2 821	269	426	156	495	244	10.9
65 TO 74 YEARS	6 741	678	260	913	1 626	420	394	202	1 354	140	254	87	287	125	8.9
75 YEARS AND OVER	4 608	760	201	607	1 318	258	188	112	703	70	167	44	139	41	8.4
21 YEARS AND OVER	64 161	2 779	1 062	4 116	7 747	3 534	4 565	3 108	24 734	2 579	3 123	1 382	3 958	3 475	12.2
PERCENT DISTRIBUTION															
TOTAL, 14 YEARS AND OVER	100.0	4.1	1.5	7.2	13.1	7.2	4.2	6.3	32.0	4.4	4.8	2.0	5.8	3.3	(X)
14 AND 15 YEARS	100.0	0.9	1.1	26.9	44.4	24.9	1.6	0.2	0.1	-	-	-	-	-	(X)
16 AND 17 YEARS	100.0	0.9	0.1	2.1	7.4	22.5	40.5	24.8	1.5	0.1	0.1	-	-	-	(X)
18 AND 19 YEARS	100.0	0.7	0.3	1.4	2.8	5.0	8.0	21.3	47.8	12.2	0.8	0.2	(Z)	(Z)	(X)
20 AND 21 YEARS	100.0	1.0	0.3	1.6	2.6	3.5	5.4	5.1	39.7	15.0	16.6	7.9	1.2	-	(X)
22 TO 24 YEARS	100.0	0.8	0.3	2.0	3.1	4.0	4.6	4.6	45.1	7.9	7.4	6.2	11.4	2.5	(X)
25 YEARS AND OVER	100.0	5.3	1.9	7.2	13.4	5.4	6.9	4.7	34.0	3.7	4.8	1.8	6.6	4.3	(X)
25 TO 29 YEARS	100.0	1.1	0.4	2.2	4.2	5.0	6.4	5.4	44.1	6.0	6.1	2.9	10.6	5.8	(X)
30 TO 34 YEARS	100.0	1.6	0.6	3.4	5.1	5.6	6.9	5.0	43.8	5.0	5.5	2.4	9.1	6.0	(X)
35 TO 44 YEARS	100.0	2.7	1.1	5.1	8.4	5.3	7.7	5.5	38.1	3.5	5.0	1.5	7.6	5.3	(X)
45 TO 54 YEARS	100.0	3.6	1.6	6.1	12.0	5.5	7.5	5.5	26.6	2.8	4.1	1.6	6.2	3.7	(X)
55 TO 64 YEARS	100.0	6.1	2.7	10.4	19.3	5.8	7.6	4.2	26.6	2.1	3.3	1.3	5.0	2.6	(X)
65 TO 74 YEARS	100.0	11.5	4.0	13.7	24.7	5.9	5.9	3.0	17.4	1.3	3.3	1.0	4.8	1.8	(X)
75 YEARS AND OVER	100.0	18.7	4.3	13.4	28.9	4.9	4.0	2.3	13.0	1.3	3.3	1.0	3.2	1.8	(X)
21 YEARS AND OVER	100.0	4.0	1.7	6.7	12.3	5.3	6.7	4.7	35.0	4.1	5.2	2.4	7.0	4.0	(X)
MALE, 14 YEARS AND OVER	100.0	4.5	1.6	7.7	13.8	7.1	8.0	6.2	28.2	4.6	5.1	2.3	6.5	4.9	(X)
14 AND 15 YEARS	100.0	1.0	1.7	29.8	42.8	23.0	1.5	0.1	0.1	-	-	-	-	-	(X)
16 AND 17 YEARS	100.0	0.8	0.2	2.6	8.9	23.6	40.4	22.1	1.4	0.1	(Z)	-	-	-	(X)
18 AND 19 YEARS	100.0	1.0	0.3	1.7	2.3	5.4	8.5	23.6	43.5	12.7	0.6	0.2	(Z)	(Z)	(X)
20 AND 21 YEARS	100.0	0.8	0.5	1.7	2.1	4.1	5.2	6.0	32.9	16.5	20.3	8.9	1.2	-	(Z)
22 TO 24 YEARS	100.0	0.9	0.3	2.1	3.1	4.4	4.2	4.6	41.4	8.5	8.2	7.8	11.0	3.5	(X)
25 YEARS AND OVER	100.0	5.9	2.0	7.5	13.6	5.1	6.5	4.5	30.1	3.8	5.1	1.9	7.8	6.3	(X)
25 TO 29 YEARS	100.0	1.4	0.4	2.4	4.7	4.7	5.2	4.5	40.4	4.0	6.0	3.4	11.4	8.6	(X)
30 TO 34 YEARS	100.0	1.8	0.8	4.1	5.0	5.6	6.1	5.1	38.4	5.3	6.1	2.3	10.3	9.1	(X)
35 TO 44 YEARS	100.0	3.3	1.3	5.7	9.5	8.7	7.1	5.4	34.7	4.1	5.7	2.0	9.3	7.9	(X)
45 TO 54 YEARS	100.0	4.1	1.6	6.6	12.7	5.5	7.1	5.4	33.0	3.5	5.7	1.7	7.5	5.4	(X)
55 TO 64 YEARS	100.0	7.1	3.0	13.8	19.6	5.6	7.4	4.5	23.9	2.9	2.7	0.8	4.9	4.9	(X)
65 TO 74 YEARS	100.0	13.4	4.3	13.8	25.4	5.4	6.0	2.9	14.1	2.1	2.7	0.8	5.5	3.6	(X)
75 YEARS AND OVER	100.0	22.2	4.3	13.7	29.3	3.8	3.9	2.0	9.7	1.6	2.8	1.2	3.4	2.3	(X)
21 YEARS AND OVER	100.0	5.4	1.8	6.9	12.5	5.0	6.3	4.5	31.1	4.3	5.7	2.7	7.9	5.9	(X)

- REPRESENTS ZERO OR ROUNDS TO ZERO.   X NOT APPLICABLE.   Z LESS THAN 0.05 PERCENT.

APPENDIX D

YEARS OF SCHOOL COMPLETED BY PERSONS 14 YEARS OLD AND OVER, BY AGE, RACE, AND SEX, FOR THE UNITED STATES: MARCH 1970--Continued

(Numbers in thousands The March 1970 survey includes 1,161,000 members of the Armed Forces in the United States living off post or with their families on post, but excludes all other members of the Armed Forces)

AGE, RACE, AND SEX	TOTAL POPULA-TION	ELEMENTARY				HIGH SCHOOL				COLLEGE					MEDIAN SCHOOL YEARS COM-PLETED
		0 TO 4 YEARS	5 YEARS	6 AND 7 YEARS	8 YEARS	1 YEAR	2 YEARS	3 YEARS	4 YEARS	1 YEAR	2 YEARS	3 YEARS	4 YEARS	5 YEARS OR MORE	
TOTAL--CON.															
PERCENT DISTRIBUTION--CON.															
FEMALE. 14 YEARS AND OVER.	100.0	3.7	1.4	6.7	12.0	7.3	8.5	6.4	35.5	4.3	4.5	1.9	5.1	1.8	(X)
14 AND 15 YEARS.	100.0	0.7	0.4	24.0	44.1	27.0	1.6	0.2	0.1	-	-	-	-	-	(X)
16 AND 17 YEARS.	100.0	1.0	0.1	1.6	5.8	21.4	40.5	27.5	1.7	0.1	0.2	-	-	-	(X)
18 AND 19 YEARS.	100.0	0.4	0.3	1.1	2.4	6.9	7.5	19.0	51.8	11.7	1.0	0.2	-	-	(X)
20 AND 21 YEARS.	100.0	1.2	0.1	1.9	3.0	3.1	5.6	4.3	45.2	13.9	13.7	7.1	1.2	-	(X)
22 TO 24 YEARS	100.0	0.7	0.3	1.9	3.1	3.7	5.0	4.6	48.5	7.3	6.7	4.7	11.8	1.6	(X)
25 YEARS AND OVER.	100.0	4.7	1.8	6.9	15.1	5.7	7.3	4.9	37.5	3.6	4.5	1.8	5.6	2.4	(X)
25 TO 29 YEARS	100.0	0.8	0.3	1.9	3.6	5.2	7.8	8.2	47.6	5.2	5.5	2.4	9.9	3.0	(X)
30 TO 34 YEARS	100.0	1.5	0.5	2.7	5.1	5.6	7.8	5.0	49.1	4.8	4.9	2.4	7.8	2.9	(X)
35 TO 44 YEARS	100.0	2.1	0.9	4.5	7.2	5.8	8.4	6.2	46.0	4.0	4.7	1.5	5.9	2.8	(X)
45 TO 54 YEARS	100.0	3.2	1.6	5.7	11.3	9.6	7.8	5.5	42.8	3.5	4.4	1.4	5.0	2.3	(X)
55 TO 64 YEARS	100.0	5.3	2.5	10.0	19.1	6.0	7.7	3.9	29.1	2.8	4.4	1.6	5.1	2.5	(X)
65 TO 74 YEARS	100.0	10.1	3.8	13.5	24.1	6.2	5.9	3.0	20.1	2.1	3.8	1.3	4.5	1.8	(X)
75 YEARS AND OVER.	100.0	16.5	4.4	13.2	28.4	5.6	4.1	2.4	15.3	1.5	3.6	1.0	3.0	0.9	(X)
21 YEARS AND OVER.	100.0	4.3	1.7	6.4	12.1	5.5	7.1	4.8	36.5	4.0	4.9	2.2	6.2	2.3	(X)
WHITE															
TOTAL, 14 YEARS AND OVER.	131 125	4 352	1 729	8 674	17 351	9 121	10 528	7 889	43 461	5 999	8 317	4 034	8 049	4 821	12.1
14 AND 15 YEARS.	6 880	43	54	1 765	3 091	1 813	102	10	9	-	-	-	-	-	8.5
16 AND 17 YEARS.	6 596	59	10	102	417	1 460	2 728	1 712	94	7	9	-	-	-	10.5
18 AND 19 YEARS.	5 948	38	17	66	120	257	427	1 217	2 976	766	51	8	1	1	12.3
20 AND 21 YEARS.	5 403	57	18	73	129	171	254	253	2 132	815	975	454	71	-	12.8
22 TO 24 YEARS	8 185	49	24	145	240	297	338	312	3 751	854	618	543	994	222	12.7
25 YEARS AND OVER.	98 112	4 102	1 606	6 524	13 354	5 135	6 683	4 385	34 493	3 757	6 665	1 830	6 983	4 397	12.2
25 TO 29 YEARS	11 893	107	44	222	471	537	876	588	5 348	754	735	367	1 312	742	12.6
30 TO 34 YEARS	9 994	181	58	279	916	483	647	443	4 400	573	569	264	954	625	12.5
35 TO 44 YEARS	20 392	445	198	897	1 638	1 018	1 539	1 029	8 541	661	1 097	361	1 640	1 138	12.4
45 TO 54 YEARS	20 961	561	248	1 101	2 442	1 088	1 562	1 112	8 392	768	1 100	340	1 387	840	12.3
55 TO 64 YEARS	16 731	732	362	1 593	3 311	871	1 278	713	4 719	501	732	203	887	640	11.2
65 TO 74 YEARS	11 131	1 022	409	1 488	2 846	645	689	338	2 043	242	391	125	543	308	8.9
75 YEARS AND OVER.	7 010	1 092	272	944	2 130	347	291	163	970	115	241	79	281	104	8.0
21 YEARS AND OVER.	109 072	4 194	1 661	6 708	13 652	5 515	7 144	4 813	39 775	4 870	5 933	2 767	8 041	4 819	12.3
MALE, 14 YEARS AND OVER.	62 613	2 224	905	4 458	8 487	4 297	4 902	3 736	18 161	2 993	5 324	1 515	4 333	3 276	12.1
14 AND 15 YEARS.	3 507	27	46	887	1 533	851	55	5	9	-	-	-	-	-	8.5
16 AND 17 YEARS.	3 341	23	5	64	254	775	1 387	747	43	3	1	-	-	-	10.4
18 AND 19 YEARS.	2 882	27	9	36	56	139	229	666	1 306	395	17	4	1	1	12.2
20 AND 21 YEARS.	2 379	16	14	30	48	93	94	126	772	397	527	252	29	-	13.0
22 TO 24 YEARS	3 898	29	10	67	118	156	145	144	1 624	347	328	326	455	150	12.8
25 YEARS AND OVER.	46 606	2 102	821	3 273	6 478	2 287	2 992	2 010	14 410	1 852	2 454	953	3 848	3 124	12.2
25 TO 29 YEARS	5 990	66	25	123	263	250	266	241	2 402	374	410	217	702	551	12.7
30 TO 34 YEARS	4 946	74	37	161	260	239	274	214	1 953	274	309	127	539	475	12.6
35 TO 44 YEARS	10 047	261	105	507	930	445	700	444	3 584	438	592	211	987	842	12.5
45 TO 54 YEARS	10 149	308	144	595	1 270	521	725	540	3 475	373	607	179	817	595	12.3
55 TO 64 YEARS	7 923	396	190	812	1 608	451	550	363	1 996	237	313	140	413	411	10.9
65 TO 74 YEARS	4 898	504	204	674	1 289	278	314	150	720	110	141	43	287	186	8.8
75 YEARS AND OVER.	2 764	491	117	401	859	114	113	58	278	46	82	36	104	65	8.4
21 YEARS AND OVER.	51 736	2 145	840	3 361	6 618	2 645	3 174	2 201	16 461	2 312	3 037	1 491	4 332	3 275	12.3
FEMALE, 14 YEARS AND OVER.	68 512	2 128	824	4 216	8 864	4 824	5 626	4 153	25 299	3 006	3 193	1 314	3 715	1 345	12.1
14 AND 15 YEARS.	3 374	21	8	778	1 558	950	48	7	4	-	-	-	-	-	8.6
16 AND 17 YEARS.	3 256	36	5	34	163	687	1 340	924	51	4	7	-	-	-	10.6
18 AND 19 YEARS.	3 066	11	8	30	64	122	198	552	1 673	371	34	4	-	-	12.3
20 AND 21 YEARS.	3 024	41	4	43	82	78	161	128	1 361	418	447	222	42	-	12.7
22 TO 24 YEARS	4 287	20	14	76	121	140	189	168	2 129	509	290	216	539	72	12.7
25 YEARS AND OVER.	51 506	2 000	785	3 251	6 876	2 848	3 690	2 375	20 083	1 904	2 410	877	3 135	1 273	12.2
25 TO 29 YEARS	6 013	41	19	99	208	288	409	347	2 945	371	325	151	609	191	12.5
30 TO 34 YEARS	5 048	68	21	118	257	254	363	228	2 527	251	259	137	415	151	12.5
35 TO 44 YEARS	10 345	184	89	390	709	569	838	585	4 958	422	505	151	653	294	12.4
45 TO 54 YEARS	10 812	253	124	505	1 172	567	837	572	4 917	396	493	160	570	245	12.3
55 TO 64 YEARS	8 809	334	171	782	1 703	520	680	349	2 721	264	419	153	474	229	11.6
65 TO 74 YEARS	6 233	518	205	814	1 557	387	376	188	1 324	132	250	82	276	122	9.1
75 YEARS AND OVER.	4 246	601	155	543	1 270	233	179	105	691	69	159	43	137	41	8.6
21 YEARS AND OVER.	57 336	2 049	801	3 347	7 034	3 030	3 969	2 612	22 914	2 558	2 896	1 277	3 709	1 345	12.3
PERCENT DISTRIBUTION															
TOTAL, 14 YEARS AND OVER.	100.0	3.3	1.3	6.6	13.2	7.0	8.0	6.0	33.1	4.6	5.0	2.2	6.1	3.5	(X)
14 AND 15 YEARS.	100.0	0.7	0.8	25.7	44.9	26.2	1.5	0.1	0.1	-	-	-	-	-	(X)
16 AND 17 YEARS.	100.0	0.9	0.1	1.5	6.3	22.1	41.3	26.0	1.4	0.1	0.1	-	-	-	(X)
18 AND 19 YEARS.	100.0	0.6	0.3	1.1	2.0	4.3	7.2	20.5	50.1	12.9	0.9	0.1	(Z)	(Z)	(X)
20 AND 21 YEARS.	100.0	1.1	0.3	1.4	2.4	3.2	4.7	4.7	39.5	15.1	16.0	8.4	1.3	-	(X)
22 TO 24 YEARS	100.0	0.6	0.3	1.8	2.8	3.8	4.1	3.8	45.9	8.0	7.6	6.6	12.1	2.7	(X)
25 YEARS AND OVER.	100.0	4.2	1.6	6.6	13.6	5.2	6.8	4.5	35.2	3.8	5.0	1.9	7.1	4.5	(X)
25 TO 29 YEARS	100.0	0.9	0.4	1.9	4.0	4.5	5.7	4.9	45.0	6.3	6.2	3.1	11.0	6.2	(X)
30 TO 34 YEARS	100.0	1.4	0.6	2.8	5.2	4.8	6.5	4.4	44.8	5.3	5.7	2.6	9.5	8.3	(X)
35 TO 44 YEARS	100.0	2.2	0.9	4.4	8.0	5.0	7.5	5.0	41.9	4.2	5.4	1.8	8.0	5.6	(X)
45 TO 54 YEARS	100.0	2.7	1.3	5.3	11.6	5.2	7.5	5.0	40.0	3.7	5.2	1.6	6.6	4.0	(X)
55 TO 64 YEARS	100.0	4.4	2.2	9.5	19.4	5.8	7.6	4.3	28.2	3.0	4.4	1.8	5.3	3.8	(X)
65 TO 74 YEARS	100.0	9.2	3.7	13.4	25.6	6.0	6.2	3.0	18.4	2.2	3.5	1.1	5.1	2.8	(X)
75 YEARS AND OVER.	100.0	15.6	3.9	13.5	30.4	5.2	4.2	2.3	13.0	1.6	3.4	1.1	3.4	1.5	(X)
21 YEARS AND OVER.	100.0	3.8	1.5	6.1	12.5	5.1	6.5	4.4	36.1	4.3	5.4	2.5	7.4	4.2	(X)

- REPRESENTS ZERO OR ROUNDS TO ZERO.   X NOT APPLICABLE.   Z LESS THAN 0.05 PERCENT.

YEARS OF SCHOOL COMPLETED BY PERSONS 14 YEARS OLD AND OVER, BY AGE, RACE, AND SEX, FOR THE UNITED STATES: MARCH 1970--Continued

(Numbers in thousands. The March 1970 survey includes 1,161,000 members of the Armed Forces in the United States living off post or with their families on post, but excludes all other members of the Armed Forces)

AGE, RACE, AND SEX	TOTAL POPULA-TION	ELEMENTARY				HIGH SCHOOL				COLLEGE					MEDIAN SCHOOL YEARS COM-PLETED
		0 TO 4 YEARS	5 YEARS	6 AND 7 YEARS	8 YEARS	1 YEAR	2 YEARS	3 YEARS	4 YEARS	1 YEAR	2 YEARS	3 YEARS	4 YEARS	5 YEARS OR MORE	
NEGRO AND OTHER RACES--CON.															
PERCENT DISTRIBUTION															
TOTAL, 14 YEARS AND OVER	100.0	10.9	3.0	11.6	12.2	9.1	9.8	8.5	23.2	5.3	3.0	1.1	3.0	1.7	(X)
14 AND 15 YEARS	100.0	1.9	2.7	38.7	41.2	17.3	2.0	0.2	-	-	-	-	-	-	(X)
16 AND 17 YEARS	100.0	0.7	0.1	5.7	14.0	24.7	35.0	17.8	2.2	0.1	0.1	-	-	-	(X)
18 AND 19 YEARS	100.0	1.2	0.2	3.3	8.7	9.0	13.1	26.2	33.3	8.0	0.7	0.3	-	-	(X)
20 AND 21 YEARS	100.0	0.9	-	3.0	3.9	5.7	10.0	7.6	41.3	14.9	7.8	4.5	0.8	-	(X)
22 TO 24 YEARS	100.0	2.1	0.8	3.5	3.6	7.0	8.5	10.3	40.0	7.0	6.5	2.9	4.3	0.9	(X)
25 YEARS AND OVER	100.0	14.7	4.0	12.0	11.1	7.3	8.1	6.8	23.6	2.3	3.1	1.0	3.7	2.4	(X)
25 TO 29 YEARS	100.0	2.2	0.8	4.5	5.6	8.2	12.1	8.7	37.6	3.7	5.8	1.2	7.5	2.6	(X)
30 TO 34 YEARS	100.0	3.3	1.1	7.7	4.2	10.3	9.8	9.3	36.3	3.3	4.1	0.9	5.9	3.7	(X)
35 TO 44 YEARS	100.0	6.8	2.1	10.3	10.8	7.5	9.2	9.1	29.8	2.6	3.5	1.7	3.9	3.1	(X)
45 TO 54 YEARS	100.0	12.0	4.5	14.3	15.0	8.4	7.6	6.9	20.6	2.2	3.1	0.8	2.5	2.2	(X)
55 TO 64 YEARS	100.0	23.7	8.1	19.3	14.7	6.1	7.2	3.6	11.1	1.0	0.9	0.5	2.0	2.0	(X)
65 TO 74 YEARS	100.0	39.4	8.4	17.2	14.0	4.4	2.7	2.1	6.4	1.2	0.7	0.7	1.9	0.9	(X)
75 YEARS AND OVER	100.0	54.0	9.1	12.6	12.3	1.0	2.3	1.5	4.2	0.5	1.5	0.2	0.3	0.5	(X)
21 YEARS AND OVER	100.0	13.1	3.6	11.0	10.2	7.2	8.2	7.0	25.6	3.0	3.6	1.4	3.8	2.2	(X)
MALE, 14 YEARS AND OVER	100.0	12.7	2.9	12.0	12.0	9.0	9.2	8.0	21.8	3.0	3.3	1.0	3.2	1.9	(X)
14 AND 15 YEARS	100.0	2.4	3.8	40.1	37.1	14.8	1.4	0.2	-	-	-	-	-	-	(X)
16 AND 17 YEARS	100.0	1.2	0.3	8.9	17.1	26.4	35.3	12.9	2.1	-	-	-	-	-	(X)
18 AND 19 YEARS	100.0	1.5	-	8.8	8.9	10.0	12.2	26.9	31.9	6.6	0.9	0.3	-	-	(X)
20 AND 21 YEARS	100.0	1.2	-	3.9	2.6	8.8	12.6	10.4	35.5	15.4	9.3	3.5	0.9	-	(X)
22 TO 24 YEARS	100.0	2.1	0.8	4.6	3.9	6.9	7.6	11.1	39.4	5.0	7.5	3.2	6.3	0.9	(X)
25 YEARS AND OVER	100.0	17.9	3.8	11.5	10.9	7.1	7.3	6.2	22.4	2.1	3.3	0.8	4.0	2.8	(X)
25 TO 29 YEARS	100.0	3.1	0.4	5.1	6.5	9.3	10.6	7.5	37.3	3.2	5.5	1.1	6.9	3.1	(X)
30 TO 34 YEARS	100.0	4.0	1.4	11.1	5.4	11.4	9.0	10.9	29.6	3.4	5.1	0.2	5.8	4.9	(X)
35 TO 44 YEARS	100.0	9.5	3.1	11.1	11.9	6.9	7.9	7.3	26.7	1.6	3.9	1.3	5.1	3.7	(X)
45 TO 54 YEARS	100.0	13.8	3.8	15.3	14.7	8.5	6.9	6.8	21.6	2.3	3.7	0.6	2.7	1.5	(X)
55 TO 64 YEARS	100.0	28.3	8.5	16.6	12.2	4.7	7.3	3.6	10.9	1.4	1.0	0.8	2.3	2.4	(X)
65 TO 74 YEARS	100.0	46.9	5.8	14.4	14.5	2.2	1.5	1.4	7.0	0.9	-	0.4	1.5	1.4	(X)
75 YEARS AND OVER	100.0	67.6	4.5	6.0	11.1	0.4	1.9	0.9	5.3	0.4	0.6	-	-	1.2	(X)
21 YEARS AND OVER	100.0	15.9	3.3	10.6	9.9	6.9	7.6	6.8	24.5	2.8	3.9	1.2	4.1	2.5	(X)
FEMALE, 14 YEARS AND OVER	100.0	8.6	3.1	11.2	12.3	9.2	10.4	8.8	24.5	9.6	2.8	1.3	2.9	1.5	(X)
14 AND 15 YEARS	100.0	1.4	1.6	39.2	45.3	19.8	2.6	0.2	-	-	-	-	-	-	(X)
16 AND 17 YEARS	100.0	0.2	-	4.5	11.0	23.0	36.6	22.0	2.4	0.2	0.2	-	-	-	(X)
18 AND 19 YEARS	100.0	1.0	0.3	2.0	8.5	8.0	13.9	25.6	34.7	9.2	0.5	0.3	-	-	(X)
20 AND 21 YEARS	100.0	0.6	-	2.3	5.1	6.6	7.6	5.2	46.3	14.4	6.5	5.3	-	-	(X)
22 TO 24 YEARS	100.0	2.0	0.3	2.5	5.2	7.1	9.3	9.7	40.5	8.0	5.6	2.6	6.3	0.9	(X)
25 YEARS AND OVER	100.0	11.9	4.3	12.4	11.3	7.5	8.8	7.2	24.6	2.4	2.9	1.1	3.5	2.5	(X)
25 TO 29 YEARS	100.0	1.3	0.3	3.9	4.9	7.2	13.4	9.7	37.9	4.1	6.0	1.3	8.0	2.7	(X)
30 TO 34 YEARS	100.0	2.7	0.8	4.8	4.9	9.4	10.6	8.0	42.1	3.3	3.3	1.6	5.0	3.7	(X)
35 TO 44 YEARS	100.0	4.2	1.2	9.5	10.0	8.0	10.2	10.5	32.4	3.4	3.2	1.9	3.0	2.5	(X)
45 TO 54 YEARS	100.0	10.4	5.1	14.9	15.2	8.3	8.2	7.3	19.8	2.1	2.7	0.9	2.3	2.0	(X)
55 TO 64 YEARS	100.0	19.7	7.6	21.4	16.9	7.2	7.0	3.7	11.2	0.6	0.8	0.3	1.9	1.6	(X)
65 TO 74 YEARS	100.0	31.3	10.7	19.6	13.6	6.3	3.7	2.7	5.9	1.5	1.3	0.8	2.1	0.5	(X)
75 YEARS AND OVER	100.0	44.0	12.5	17.6	13.1	1.5	2.6	1.9	3.6	0.5	2.1	0.3	0.6	-	(X)
21 YEARS AND OVER	100.0	10.7	3.8	11.3	10.4	7.4	8.8	7.3	26.7	3.2	3.3	1.5	3.6	1.9	(X)
NEGRO															
TOTAL, 14 YEARS AND OVER	14 828	1 587	463	1 789	1 817	1 386	1 515	1 293	3 457	430	408	155	351	162	10.2
14 AND 15 YEARS	1 060	22	30	374	451	180	23	1	-	-	-	-	-	-	8.2
16 AND 17 YEARS	985	8	1	60	148	282	331	136	23	1	1	-	-	-	10.1
18 AND 19 YEARS	887	10	2	31	43	85	119	229	301	58	8	3	-	-	11.7
20 AND 21 YEARS	791	5	-	24	33	48	81	66	344	103	50	36	2	-	12.4
22 TO 24 YEARS	1 035	24	5	40	39	71	92	111	431	65	71	27	58	1	12.3
25 YEARS AND OVER	10 089	1 520	425	1 261	1 127	754	669	730	2 358	224	280	88	291	161	9.9
25 TO 29 YEARS	1 453	36	6	62	82	123	191	138	547	52	78	15	88	18	12.2
30 TO 34 YEARS	1 198	40	14	103	55	137	125	125	451	37	46	11	40	15	12.0
35 TO 44 YEARS	2 347	167	53	245	255	184	235	233	690	64	67	33	75	47	11.2
45 TO 54 YEARS	2 128	264	102	373	324	175	170	151	422	40	61	16	39	32	9.3
55 TO 64 YEARS	1 545	366	122	300	233	97	112	54	165	16	14	8	17	6	7.9
65 TO 74 YEARS	840	337	75	155	112	55	23	20	39	11	7	1	2	3	6.1
75 YEARS AND OVER	577	311	52	75	66	6	15	9	25	3	9	1	2	-	4.6
21 YEARS AND OVER	11 519	1 549	430	1 315	1 177	842	1 008	866	2 957	336	382	144	351	162	10.4
MALE, 14 YEARS AND OVER	6 907	899	206	872	839	659	665	580	1 512	196	205	56	158	80	10.0
14 AND 15 YEARS	531	14	21	217	190	81	8	-	-	-	-	-	-	-	8.1
16 AND 17 YEARS	478	5	1	36	88	128	150	59	11	-	-	-	-	-	9.8
18 AND 19 YEARS	451	5	-	22	22	46	56	111	138	26	4	1	-	-	11.6
20 AND 21 YEARS	365	4	-	16	9	17	48	41	137	54	25	11	2	-	12.3
22 TO 24 YEARS	483	11	3	24	19	29	38	59	200	24	38	14	24	-	12.3
25 YEARS AND OVER	4 619	859	180	557	511	339	364	310	1 025	92	137	32	132	80	9.6
25 TO 29 YEARS	701	24	3	39	45	68	82	57	272	24	34	5	57	10	12.1
30 TO 34 YEARS	543	22	9	68	21	70	55	67	163	18	20	1	18	7	11.4
35 TO 44 YEARS	1 074	107	36	121	134	74	90	88	290	19	35	1	40	27	10.7
45 TO 54 YEARS	985	147	41	141	153	61	71	67	198	15	34	9	14	14	9.1
55 TO 64 YEARS	707	203	54	119	89	35	55	23	74	11	6	6	17	8	7.4
65 TO 74 YEARS	368	188	25	58	50	6	8	6	15	4	2	-	7	4	4.9
75 YEARS AND OVER	240	168	12	12	21	1	5	2	13	1	2	-	-	3	3.6
21 YEARS AND OVER	5 513	875	184	590	536	373	434	392	1 503	142	194	54	158	80	10.2

- REPRESENTS ZERO OR ROUNDS TO ZERO.   X NOT APPLICABLE.

YEARS OF SCHOOL COMPLETED BY PERSONS 14 YEARS OLD AND OVER, BY AGE, RACE, AND SEX, FOR THE UNITED STATES: MARCH 1970--Continued

(Numbers in thousands. The March 1970 survey includes 1,161,000 members of the Armed Forces in the United States living off post or with their families on post, but excludes all other members of the Armed Forces)

AGE, RACE, AND SEX	TOTAL POPULA- TION	ELEMENTARY				HIGH SCHOOL				COLLEGE				5 YEARS OR MORE	MEDIAN SCHOOL YEARS COM- PLETED
		0 TO 4 YEARS	5 YEARS	6 AND 7 YEARS	8 YEARS	1 YEAR	2 YEARS	3 YEARS	4 YEARS	1 YEAR	2 YEARS	3 YEARS	4 YEARS		

WHITE--CON.

PERCENT DISTRIBUTION--CON.

MALE, 14 YEARS AND OVER. .	100.0	3.6	1.4	7.1	15.6	6.9	7.8	6.0	26.0	4.8	5.3	2.4	6.9	5.2	(X)
14 AND 15 YEARS.	100.0	0.8	1.3	28.1	43.7	24.3	1.6	0.1	0.1	-	-	-	-	-	(X)
16 AND 17 YEARS.	100.0	0.7	0.1	1.9	7.6	23.1	41.5	23.6	1.3	0.1	(Z)	-	-	-	(X)
18 AND 19 YEARS.	100.0	0.9	0.3	1.2	1.9	4.7	7.9	23.1	43.3	13.7	0.6	0.2	(Z)	(Z)	(X)
20 AND 21 YEARS.	100.0	0.7	0.6	1.3	2.0	4.0	3.9	5.3	32.4	16.7	22.2	9.7	1.2	-	(X)
22 TO 24 YEARS	100.0	0.8	0.3	1.7	3.0	4.0	3.7	3.7	41.7	8.9	8.3	8.4	11.7	3.9	(X)
25 YEARS AND OVER.	100.0	4.5	1.8	7.0	13.9	4.9	6.4	4.3	30.9	4.0	5.3	2.0	8.3	6.7	(X)
25 TO 29 YEARS	100.0	1.1	0.4	2.1	4.5	4.1	4.5	4.1	40.9	6.4	7.0	3.7	15.9	9.4	(X)
30 TO 34 YEARS	100.0	1.5	0.7	3.3	5.3	4.8	5.7	4.3	39.5	3.5	8.3	2.6	10.9	9.6	(X)
35 TO 44 YEARS	100.0	2.6	1.0	5.1	9.3	4.4	7.0	4.4	35.7	4.4	5.9	2.1	9.8	8.4	(X)
45 TO 54 YEARS	100.0	3.0	1.4	5.0	12.5	5.1	7.1	5.3	34.2	3.7	6.0	1.8	8.0	5.9	(X)
55 TO 64 YEARS	100.0	5.0	2.4	10.2	20.3	5.7	7.4	4.6	25.2	3.0	3.9	1.5	5.2	5.2	(X)
65 TO 74 YEARS	100.0	10.3	4.2	13.6	26.3	5.7	6.4	3.1	14.7	2.2	2.0	0.9	5.0	3.8	(X)
75 YEARS AND OVER.	100.0	17.8	4.2	16.5	31.1	4.1	4.1	2.1	10.1	1.7	3.0	1.3	3.8	2.4	(X)
21 YEARS AND OVER.	100.0	4.1	1.6	6.5	12.8	4.8	6.1	4.3	31.6	4.5	5.9	2.9	8.4	4.3	(X)
FEMALE, 14 YEARS AND OVER,	100.0	3.1	1.2	6.2	12.9	7.0	8.2	6.1	36.9	4.8	4.7	1.9	5.3	2.0	(X)
14 AND 15 YEARS.	100.0	0.6	0.2	23.1	46.2	28.2	1.4	0.2	0.1	-	-	-	-	-	(X)
16 AND 17 YEARS.	100.0	1.1	0.1	1.2	5.0	21.1	41.2	28.4	1.6	0.1	0.2	-	-	-	(X)
18 AND 19 YEARS.	100.0	0.4	0.3	1.0	2.1	4.0	6.5	18.0	54.6	12.1	1.1	0.1	-	-	(X)
20 AND 21 YEARS.	100.0	1.3	0.1	1.4	2.7	2.5	5.3	4.2	45.0	13.8	14.8	7.3	1.8	-	(X)
22 TO 24 YEARS	100.0	0.5	0.3	1.8	2.8	3.3	4.4	3.9	49.7	7.2	6.9	5.0	12.6	1.7	(X)
25 YEARS AND OVER.	100.0	3.9	1.5	6.3	13.4	5.5	7.2	4.6	38.0	3.7	3.7	1.7	6.1	2.5	(X)
25 TO 29 YEARS	100.0	0.7	0.3	1.6	3.5	5.0	6.8	5.8	43.0	6.2	5.4	2.5	10.1	3.2	(X)
30 TO 34 YEARS	100.0	1.3	0.4	2.3	5.1	5.0	7.2	4.5	50.1	5.0	5.1	2.7	8.2	3.0	(X)
35 TO 44 YEARS	100.0	1.8	0.9	3.8	6.8	5.5	8.1	5.7	47.9	4.1	4.9	1.5	6.3	2.6	(X)
45 TO 54 YEARS	100.0	2.3	1.1	4.7	10.8	5.2	7.7	5.3	45.5	3.7	4.6	1.5	5.3	2.3	(X)
55 TO 64 YEARS	100.0	3.6	1.4	8.9	19.3	5.7	7.8	4.0	30.9	3.0	3.4	1.7	5.4	2.6	(X)
65 TO 74 YEARS	100.0	8.3	3.3	13.1	25.0	6.2	6.0	3.0	21.2	2.1	4.0	1.3	4.4	2.0	(X)
75 YEARS AND OVER.	100.0	14.2	3.7	12.8	29.9	6.0	4.2	2.5	16.3	1.6	3.7	1.0	3.2	1.0	(X)
21 YEARS AND OVER.	100.0	3.6	1.4	5.8	12.3	5.3	6.9	4.6	40.0	4.1	5.1	2.2	6.5	2.3	(X)

NEGRO AND OTHER RACES

TOTAL, 14 YEARS AND OVER .	16 348	1 717	491	1 892	1 985	1 489	1 408	1 376	3 796	540	494	196	490	279	10.5
14 AND 15 YEARS.	1 136	22	30	344	468	197	23	2	-	-	-	-	-	-	8.3
16 AND 17 YEARS.	1 057	7	1	60	148	261	370	184	24	1	1	-	-	-	10.1
18 AND 19 YEARS.	953	12	2	32	45	85	124	250	318	76	6	3	3	-	11.7
20 AND 21 YEARS.	865	8	-	26	34	49	86	66	357	128	63	39	3	-	12.5
22 TO 24 YEARS	1 140	24	5	40	53	80	97	118	456	80	74	33	72	10	12.3
25 YEARS AND OVER.	11 198	1 646	453	1 341	1 240	817	905	756	2 641	254	348	111	415	268	10.1
25 TO 29 YEARS	1 619	36	8	72	91	133	195	140	609	60	94	20	121	41	12.2
30 TO 34 YEARS	1 358	45	14	105	57	140	134	127	492	45	56	13	80	50	12.1
35 TO 44 YEARS	2 629	175	54	270	285	197	241	238	788	67	93	44	101	80	11.4
45 TO 54 YEARS	2 337	280	105	331	350	196	177	160	483	51	73	20	58	51	9.5
55 TO 64 YEARS	1 682	399	136	322	247	102	121	61	186	16	15	8	34	33	7.9
65 TO 74 YEARS	943	372	80	162	132	42	25	20	60	15	7	4	17	9	6.2
75 YEARS AND OVER.	629	340	57	79	77	6	15	9	27	3	9	1	2	3	4.9
21 YEARS AND OVER.	12 757	1 675	458	1 397	1 303	913	1 051	899	3 270	386	460	176	490	270	10.6
MALE, 14 YEARS AND OVER. .	7 657	972	220	921	917	690	708	614	1 668	230	252	75	242	148	10.2
14 AND 15 YEARS.	567	14	21	228	211	64	8	1	-	-	-	-	-	-	8.1
16 AND 17 YEARS.	526	6	1	36	90	139	175	68	11	-	4	1	-	-	11.6
18 AND 19 YEARS.	458	7	-	22	22	46	56	123	146	30	-	14	3	-	12.4
20 AND 21 YEARS.	399	5	-	16	10	18	51	41	141	61	37	17	33	5	12.3
22 TO 24 YEARS	530	11	3	24	21	36	40	50	209	31	30	17	205	143	9.8
25 YEARS AND OVER.	5 177	929	194	595	563	347	378	321	1 161	107	172	42	54	24	12.2
25 TO 29 YEARS	779	24	3	39	51	73	83	59	291	25	43	9	37	31	11.0
30 TO 34 YEARS	631	25	9	70	22	72	57	69	186	22	32	1	60	48	10.9
35 TO 44 YEARS	1 193	114	37	132	142	82	94	88	318	19	47	18	30	16	9.5
45 TO 54 YEARS	1 086	150	41	145	160	93	75	70	235	25	40	9	18	19	7.6
55 TO 64 YEARS	787	223	67	130	98	37	58	28	86	11	8	6	7	6	5.2
65 TO 74 YEARS	435	213	25	62	63	10	7	6	30	4	-	2	-	3	3.7
75 YEARS AND OVER.	267	181	12	16	30	1	5	2	14	1	2	-	-	-	
21 YEARS AND OVER.	5 932	945	197	628	590	409	451	403	1 451	164	233	70	242	148	10.4
FEMALE, 14 YEARS AND OVER.	8 690	746	271	971	1 071	798	900	762	2 127	310	244	111	248	131	10.5
14 AND 15 YEARS.	568	6	9	166	258	113	15	1	-	1	1	-	-	-	8.4
16 AND 17 YEARS.	531	1	-	24	58	122	194	117	13	1	3	2	-	-	10.3
18 AND 19 YEARS.	495	5	2	10	22	40	69	127	172	46	6	-	-	-	11.8
20 AND 21 YEARS.	466	3	-	11	24	31	36	24	216	67	50	25	-	-	12.5
22 TO 24 YEARS	610	12	2	15	32	43	57	59	247	49	34	16	38	6	12.3
25 YEARS AND OVER.	6 020	717	259	746	677	450	530	434	1 480	147	176	69	210	125	10.3
25 TO 29 YEARS	840	11	3	33	40	60	112	82	318	34	51	11	67	17	12.2
30 TO 34 YEARS	727	20	6	35	34	68	77	50	306	24	24	11	43	19	12.2
35 TO 44 YEARS	1 437	61	17	137	143	115	146	151	466	48	46	28	41	37	11.7
45 TO 54 YEARS	1 251	130	64	196	191	104	103	91	248	26	33	11	29	35	9.5
55 TO 64 YEARS	895	176	70	192	151	65	63	33	100	5	7	2	17	14	8.1
65 TO 74 YEARS	509	159	54	100	69	32	19	14	30	7	7	4	11	3	6.6
75 YEARS AND OVER.	362	159	45	64	48	5	9	7	12	2	8	1	2	-	5.5
21 YEARS AND OVER.	6 825	730	261	769	713	504	600	496	1 819	221	226	106	248	131	10.7

- REPRESENTS ZERO OR ROUNDS TO ZERO.   X NOT APPLICABLE.   Z LESS THAN 0.05 PERCENT.

APPENDIX D

YEARS OF SCHOOL COMPLETED BY PERSONS 14 YEARS OLD AND OVER, BY AGE, RACE, AND SEX, FOR THE UNITED STATES: MARCH 1970--Continued

(Numbers in thousands. The March 1970 survey includes 1,161,000 members of the Armed Forces in the United States living off post or with their families on post, but excludes all other members of the Armed Forces)

AGE, RACE, AND SEX	TOTAL POPULA-TION	ELEMENTARY				HIGH SCHOOL				COLLEGE					MEDIAN SCHOOL YEARS COM-PLETED
		0 TO 4 YEARS	5 YEARS	6 AND 7 YEARS	8 YEARS	1 YEAR	2 YEARS	3 YEARS	4 YEARS	1 YEAR	2 YEARS	3 YEARS	4 YEARS	5 YEARS OR MORE	
NEGRO--CON.															
FEMALE, 14 YEARS AND OVER.	7 921	688	257	917	978	741	892	713	1 945	254	305	90	194	82	10.4
14 AND 15 YEARS	530	8	9	157	241	100	15	1	-	-	-	-	-	-	8.4
16 AND 17 YEARS	488	1	-	24	57	114	181	97	12	1	1	-	-	-	10.3
18 AND 19 YEARS	456	5	2	9	21	40	64	110	163	32	2	2	-	-	11.8
20 AND 21 YEARS	426	1	-	9	24	31	23	24	207	49	25	25	-	-	12.4
22 TO 24 YEARS	552	12	2	15	21	42	54	53	231	81	33	14	34	1	12.3
25 YEARS AND OVER	5 470	661	244	704	616	416	505	419	1 333	132	142	56	130	81	10.1
25 TO 29 YEARS	751	11	3	22	37	84	109	81	298	26	42	10	53	8	12.2
30 TO 34 YEARS	655	18	4	35	34	67	70	58	288	19	20	10	22	8	12.1
35 TO 44 YEARS	1 273	60	17	124	122	107	145	146	400	45	32	22	35	20	11.4
45 TO 54 YEARS	1 184	117	61	182	171	63	99	83	224	25	27	7	26	27	9.8
55 TO 64 YEARS	838	164	47	180	145	81	57	32	91	5	7	2	12	14	8.1
65 TO 74 YEARS	471	149	51	97	62	27	17	19	24	7	7	4	11	3	6.8
75 YEARS AND OVER	337	142	30	64	45	5	9	7	12	2	8	1	2	-	5.7
21 YEARS AND OVER	6 206	675	246	724	641	469	573	474	1 654	194	188	91	194	82	10.6

PERCENT DISTRIBUTION

AGE, RACE, AND SEX	TOTAL POPULA-TION	0 TO 4 YEARS	5 YEARS	6 AND 7 YEARS	8 YEARS	1 YEAR	2 YEARS	3 YEARS	4 YEARS	1 YEAR	2 YEARS	3 YEARS	4 YEARS	5 YEARS OR MORE	
TOTAL, 14 YEARS AND OVER	100.0	10.7	3.1	12.1	12.3	9.3	10.2	8.7	23.3	3.0	2.8	1.0	3.4	1.1	(X)
14 AND 15 YEARS	100.0	2.0	2.9	35.3	40.6	17.0	2.1	0.1	-	-	-	-	-	-	(X)
16 AND 17 YEARS	100.0	0.6	0.1	6.2	14.9	25.0	34.3	16.2	2.4	0.1	0.1	-	-	-	(X)
18 AND 19 YEARS	100.0	1.1	0.2	3.8	4.9	9.6	13.5	25.8	33.9	6.5	0.7	0.4	-	-	(X)
20 AND 21 YEARS	100.0	0.7	-	3.1	4.1	6.0	10.3	8.3	43.5	13.0	6.3	4.5	0.3	-	(X)
22 TO 24 YEARS	100.0	2.3	0.5	3.8	3.8	6.9	8.9	10.8	41.6	8.2	6.8	2.6	5.6	0.1	(X)
25 YEARS AND OVER	100.0	15.1	4.2	12.5	11.2	7.5	8.6	7.2	23.4	2.2	2.8	0.9	2.0	1.6	(X)
25 TO 29 YEARS	100.0	2.5	0.4	4.2	5.6	8.6	13.1	9.5	39.0	3.6	5.2	1.0	3.3	1.2	(X)
30 TO 34 YEARS	100.0	3.8	1.2	8.6	8.6	11.4	10.4	10.4	37.6	3.1	3.8	0.9	3.2	2.0	(X)
35 TO 44 YEARS	100.0	7.1	2.3	10.4	10.9	7.8	10.0	9.9	29.4	2.7	2.4	1.4	1.8	2.0	(X)
45 TO 54 YEARS	100.0	12.4	4.8	15.2	15.2	8.2	8.0	7.1	19.8	1.9	2.0	0.7	1.8	1.9	(X)
55 TO 64 YEARS	100.0	23.7	7.9	19.6	15.1	6.3	7.2	3.5	10.6	1.1	0.9	0.5	1.9	0.8	(X)
65 TO 74 YEARS	100.0	40.1	9.0	18.4	13.3	4.0	2.7	2.4	4.7	1.3	0.8	0.5	2.1	0.8	(X)
75 YEARS AND OVER	100.0	53.8	8.9	13.0	11.4	1.1	2.5	1.6	4.4	0.5	1.8	0.2	0.4	0.6	(X)
21 YEARS AND OVER	100.0	13.5	3.7	11.4	10.2	7.3	8.7	7.5	25.7	2.9	3.3	1.3	3.0	1.4	(X)
MALE, 14 YEARS AND OVER	100.0	13.0	3.0	12.6	12.1	9.2	9.6	8.4	21.9	2.8	3.0	0.8	2.3	1.2	(X)
14 AND 15 YEARS	100.0	2.6	4.0	40.9	35.8	15.2	1.5	-	-	-	-	-	-	-	(X)
16 AND 17 YEARS	100.0	1.1	0.3	7.6	18.4	26.8	31.3	12.3	2.3	-	-	0.3	-	-	(X)
18 AND 19 YEARS	100.0	1.2	-	5.1	5.2	10.4	12.9	25.6	32.1	6.0	0.9	3.0	0.5	-	(X)
20 AND 21 YEARS	100.0	1.1	-	4.3	2.4	4.6	13.2	11.3	37.6	14.8	6.9	2.8	8.9	-	(X)
22 TO 24 YEARS	100.0	2.3	0.7	5.0	3.9	6.0	7.6	12.2	41.4	4.9	7.9	0.7	2.8	1.7	(X)
25 YEARS AND OVER	100.0	16.6	3.9	12.1	11.1	7.3	7.9	6.7	32.2	2.0	3.0	0.7	2.8	1.4	(X)
25 TO 29 YEARS	100.0	3.5	0.3	5.6	6.4	8.8	11.7	8.2	38.8	3.4	4.8	0.2	5.2	1.2	(X)
30 TO 34 YEARS	100.0	4.0	1.0	12.5	3.8	12.8	10.1	12.3	30.0	3.3	4.0	0.2	3.3	1.2	(X)
35 TO 44 YEARS	100.0	10.0	3.4	11.3	12.4	7.1	8.8	8.1	27.0	1.8	3.3	1.0	3.7	2.5	(X)
45 TO 54 YEARS	100.0	14.9	4.2	14.3	15.5	8.3	7.3	6.8	20.1	1.5	3.4	0.9	1.4	1.5	(X)
55 TO 64 YEARS	100.0	26.7	7.7	16.9	12.2	5.0	7.8	3.2	10.4	1.6	0.9	0.9	2.6	2.2	(X)
65 TO 74 YEARS	100.0	51.1	6.7	15.7	13.6	1.7	1.5	1.7	4.2	1.0	-	-	1.8	1.0	(X)
75 YEARS AND OVER	100.0	70.1	5.1	4.8	8.6	0.5	2.1	1.0	5.3	0.5	0.7	-	-	1.4	(X)
21 YEARS AND OVER	100.0	16.5	3.5	11.1	10.1	7.0	8.2	7.4	24.5	2.7	3.6	1.0	3.0	1.5	(X)
FEMALE, 14 YEARS AND OVER	100.0	8.7	3.2	11.6	12.3	4.8	10.8	9.0	24.6	3.2	2.6	1.2	2.4	1.0	(X)
14 AND 15 YEARS	100.0	1.5	1.7	29.7	45.4	18.8	2.8	0.2	-	-	-	-	-	-	(X)
16 AND 17 YEARS	100.0	0.2	-	4.8	11.6	23.3	37.2	20.0	2.4	0.2	0.2	-	-	-	(X)
18 AND 19 YEARS	100.0	1.1	0.3	1.9	4.6	8.7	13.9	23.9	35.7	6.9	0.5	0.4	-	-	(X)
20 AND 21 YEARS	100.0	0.3	-	2.0	5.6	7.3	7.7	5.7	48.5	11.4	5.8	5.8	-	-	(X)
22 TO 24 YEARS	100.0	2.3	0.3	2.8	3.7	7.6	9.8	9.5	41.6	7.4	5.9	2.5	6.3	0.2	(X)
25 YEARS AND OVER	100.0	17.1	4.5	12.9	11.3	7.6	9.2	7.7	24.4	2.4	2.6	1.0	6.1	1.5	(X)
25 TO 29 YEARS	100.0	1.5	0.4	3.0	4.9	7.2	14.5	10.7	39.1	3.8	5.6	1.3	3.3	1.2	(X)
30 TO 34 YEARS	100.0	2.8	0.6	5.4	5.2	10.2	10.7	8.8	44.0	3.0	3.0	1.5	2.8	1.6	(X)
35 TO 44 YEARS	100.0	4.7	1.3	9.7	9.6	8.4	11.4	11.4	31.4	3.5	2.5	1.7	2.2	2.4	(X)
45 TO 54 YEARS	100.0	10.3	5.3	15.9	15.0	8.3	8.6	7.3	19.6	2.2	2.4	0.4	1.4	1.7	(X)
55 TO 64 YEARS	100.0	19.5	8.0	21.5	17.3	7.3	6.8	3.8	10.9	0.6	0.9	0.6	2.3	0.6	(X)
65 TO 74 YEARS	100.0	31.5	10.8	20.5	13.1	5.8	3.6	2.9	5.0	1.6	1.4	0.6	0.6	-	(X)
75 YEARS AND OVER	100.0	42.2	11.7	18.8	13.4	1.6	2.8	2.1	3.7	0.5	2.2	0.3	0.6	-	(X)
21 YEARS AND OVER	100.0	10.9	4.0	11.7	10.3	7.6	6.2	7.6	26.7	3.1	3.0	1.5	3.1	1.3	(X)

- REPRESENTS ZERO OR ROUNDS TO ZERO.   X NOT APPLICABLE.

YEARS OF SCHOOL COMPLETED BY PERSONS 25 YEARS OLD AND OVER, BY AGE AND ETHNIC ORIGIN: NOVEMBER 1969

(Numbers in thousands. Civilian noninstitutional population)

Age and ethnic origin	Total	Elementary school Less than 8 years	Elementary school 8 years	High school 1 to 3 years	High school 4 years	College 1 to 3 years	College 4 years or more	Median years of school completed
Total, 25 years old and over......	106,284	14,694	14,244	18,685	35,984	10,970	11,707	12.2
English......................................	11,999	1,259	1,437	2,086	4,024	1,468	1,726	12.3
German......................................	12,825	1,203	2,308	2,030	4,766	1,270	1,349	12.2
Irish.......................................	8,630	1,036	1,193	1,625	3,046	853	877	12.2
Italian.....................................	4,683	938	701	904	1,498	313	329	11.3
Polish......................................	2,769	426	445	489	971	193	245	12.0
Russian.....................................	1,584	150	168	172	534	198	363	12.6
Spanish:								
Central or South American.............	273	48	34	44	80	36	31	12.1
Cuban....................................	320	59	59	35	88	38	41	12.1
Mexican..................................	1,909	868	250	326	344	91	31	8.3
Puerto Rican.............................	549	248	72	107	90	18	13	8.4
Other Spanish............................	766	123	79	163	248	86	66	12.1
All other...................................	49,286	6,624	5,908	8,756	16,736	5,527	5,735	12.2
Not reported[1].............................	10,692	1,814	1,589	1,949	3,560	879	902	12.0
25 to 34 years old..................	23,884	1,064	1,150	4,151	10,387	3,511	3,621	12.5
English......................................	2,301	100	105	357	946	386	405	12.6
German......................................	2,848	46	117	421	1,351	416	498	12.6
Irish.......................................	1,670	44	61	314	754	268	232	12.6
Italian.....................................	902	48	30	147	455	115	107	12.5
Polish......................................	503	7	15	53	271	76	82	12.7
Russian.....................................	209	1	1	8	52	37	110	16+
Spanish:								
Central or South American.............	125	11	15	21	44	19	18	12.4
Cuban....................................	109	12	14	13	38	19	15	12.4
Mexican..................................	565	131	68	138	182	36	10	10.8
Puerto Rican.............................	214	68	19	69	45	9	4	9.9
Other Spanish............................	226	16	8	50	92	38	21	12.4
All other...................................	11,625	419	512	2,036	5,037	1,810	1,817	12.6
Not reported[1].............................	2,595	161	186	524	1,127	283	304	12.4
35 years old and over..............	82,400	13,630	13,094	14,534	25,597	7,459	8,086	12.0
English......................................	9,698	1,159	1,332	1,729	3,077	1,080	1,321	12.2
German......................................	9,977	1,057	2,191	1,609	3,414	854	851	12.0
Irish.......................................	6,960	992	1,132	1,311	2,292	587	646	12.0
Italian.....................................	3,780	890	671	757	1,043	198	222	10.3
Polish......................................	2,266	420	430	436	700	117	163	10.9
Russian.....................................	1,375	148	166	164	482	161	253	12.4
Spanish:								
Central or South American.............	147	37	18	23	37	17	15	11.4
Cuban....................................	211	47	46	22	52	19	26	10.7
Mexican..................................	1,343	737	182	187	161	55	21	7.2
Puerto Rican.............................	335	179	54	39	45	9	10	7.4
Other Spanish............................	540	107	71	113	156	48	45	11.4
All other...................................	37,661	6,205	5,396	6,720	11,705	3,717	3,918	12.0
Not reported[1].............................	8,106	1,653	1,404	1,424	2,433	596	598	11.1
PERCENT DISTRIBUTION								
Total, 25 years old and over......	100.0	13.8	13.4	17.6	33.9	10.3	11.0	(X)
English......................................	100.0	10.5	12.0	17.4	33.5	12.2	14.4	(X)
German......................................	100.0	8.6	18.0	15.8	37.2	9.9	10.5	(X)
Irish.......................................	100.0	12.0	13.8	18.8	35.3	9.9	10.2	(X)
Italian.....................................	100.0	20.0	15.0	19.3	32.0	8.7	7.0	(X)
Polish......................................	100.0	15.4	16.1	17.7	35.1	7.0	8.8	(X)
Russian.....................................	100.0	9.4	10.6	10.9	33.7	12.5	22.9	(X)
Spanish:								
Central or South American.............	100.0	17.6	12.3	16.2	29.4	13.3	11.2	(X)
Cuban....................................	100.0	18.4	18.8	11.0	27.5	11.8	12.7	(X)
Mexican..................................	100.0	45.5	13.1	17.1	18.0	4.8	1.6	(X)
Puerto Rican.............................	100.0	45.1	13.2	19.8	16.4	3.3	2.4	(X)
Other Spanish............................	100.0	16.1	10.3	21.3	32.4	11.2	8.7	(X)
All other...................................	100.0	13.4	12.0	17.8	34.0	11.2	11.6	(X)
Not reported[1].............................	100.0	17.0	14.9	18.2	33.3	8.2	8.4	(X)

[1] Includes persons who reported that they did not know their ethnic origin.

YEARS OF SCHOOL COMPLETED BY PERSONS 25 YEARS OLD AND OVER. BY AGE AND ETHNIC ORIGIN: NOVEMBER 1969--Continued

(Numbers in thousands. Civilian noninstitutional population)

Age and ethnic origin	Total	Elementary school		High school		College		Median years of school completed
		Less than 8 years	8 years	1 to 3 years	4 years	1 to 3 years	4 years or more	
PERCENT DISTRIBUTION--Continued								
25 to 34 years old...................	100.0	4.5	4.8	17.4	43.5	14.7	15.2	(X)
English......................................	100.0	4.3	4.6	15.5	41.2	16.9	17.6	(X)
German......................................	100.0	1.6	4.1	14.8	47.4	14.6	17.5	(X)
Irish..	100.0	2.6	3.7	18.8	45.1	15.9	13.9	(X)
Italian......................................	100.0	5.3	3.3	16.3	50.4	12.7	11.9	(X)
Polish.......................................	100.0	1.4	3.0	10.5	53.9	15.1	16.3	(X)
Russian......................................	100.0	0.5	0.5	3.8	24.9	17.7	52.6	(X)
Spanish:								
Central or South American.............	100.0	8.6	12.0	16.8	35.2	15.2	12.8	(X)
Cuban.................................	100.0	11.0	12.8	11.9	33.0	17.4	13.8	(X)
Mexican...............................	100.0	23.2	12.0	24.4	32.2	6.4	1.8	(X)
Puerto Rican..........................	100.0	31.6	8.9	32.2	21.0	4.2	1.9	(X)
Other Spanish.........................	100.0	7.1	3.5	22.1	40.7	16.8	9.3	(X)
All other...................................	100.0	3.6	4.4	17.5	43.3	15.6	15.6	(X)
Not reported[1].............................	100.0	6.2	7.2	20.3	43.6	10.9	11.8	(X)
35 years old and over...............	100.0	16.5	15.9	17.6	31.1	9.1	9.8	(X)
English......................................	100.0	12.0	13.7	17.8	31.7	11.1	13.6	(X)
German......................................	100.0	10.6	22.0	16.1	34.2	8.6	8.5	(X)
Irish..	100.0	14.3	16.3	18.8	32.9	8.4	9.3	(X)
Italian......................................	100.0	23.5	17.8	20.0	27.6	5.2	5.9	(X)
Polish.......................................	100.0	18.5	19.0	19.2	30.9	5.2	7.2	(X)
Russian......................................	100.0	10.8	12.1	11.9	35.1	11.7	18.4	(X)
Spanish:								
Central or South American.............	100.0	25.2	12.2	15.6	25.2	11.6	10.2	(X)
Cuban.................................	100.0	22.3	21.8	10.4	24.6	9.0	12.3	(X)
Mexican...............................	100.0	54.9	13.6	13.9	12.0	4.1	1.6	(X)
Puerto Rican..........................	100.0	53.4	16.1	11.6	13.4	2.7	3.0	(X)
Other Spanish.........................	100.0	19.8	13.1	20.9	28.9	8.9	8.3	(X)
All other...................................	100.0	16.5	14.5	17.8	31.1	9.9	10.4	(X)
Not reported[1].............................	100.0	20.4	17.3	17.6	30.0	7.4	7.4	(X)

[1]Includes persons who reported that they did not know their ethnic origin.

YEARS OF SCHOOL COMPLETED BY PERSONS 25 YEARS OLD AND OVER, BY AGE, RACE, AND SEX, FOR THE UNITED STATES, BY REGIONS: MARCH 1970

(Numbers in thousands)

REGION, AGE, RACE, AND SEX	TOTAL POPULA- TION	ELEMENTARY SCHOOL			HIGH SCHOOL		COLLEGE			MEDIAN SCHOOL YEARS COMPLETED
		0 TO 8 YEARS	5 TO 7 YEARS	8 YEARS	1 TO 3 YEARS	4 YEARS	1 TO 3 YEARS	4 YEARS	5 YEARS OR MORE	
ALL RACES—MALE										
TOTAL, 25 YEARS AND OVER	51 784	3 031	4 884	7 041	8 356	13 571	5 500	4 653	3 268	12.2
NORTHEAST	12 031	503	1 077	1 836	2 140	4 167	1 213	1 083	812	12.2
NORTH CENTRAL	15 640	469	1 123	2 597	2 433	4 757	1 392	1 031	849	12.1
SOUTH	15 525	1 663	2 150	1 701	2 547	3 921	1 510	1 143	269	11.6
WEST	8 708	395	833	907	1 215	2 726	1 466	806	739	12.5
25 TO 44 YEARS	23 075	564	1 249	1 667	3 749	8 738	3 165	2 379	1 967	12.5
NORTHEAST	5 499	65	231	344	831	2 217	696	608	477	12.6
NORTH CENTRAL	6 599	75	237	562	1 092	2 727	763	600	543	12.5
SOUTH	7 155	342	668	546	1 249	2 301	843	697	489	12.3
WEST	4 222	82	113	195	556	1 490	852	878	459	12.6
45 TO 64 YEARS	19 945	1 079	2 124	3 133	3 550	3 794	1 948	1 277	1 041	12.0
NORTHEAST	5 206	150	488	885	1 001	1 660	813	369	262	12.1
NORTH CENTRAL	5 630	134	627	1 155	1 062	1 761	516	335	240	12.0
SOUTH	5 853	674	977	720	997	1 352	501	326	307	10.7
WEST	3 236	122	292	399	491	1 020	518	247	231	12.4
65 YEARS AND OVER	8 364	1 388	1 511	2 241	1 097	1 043	487	397	260	8.6
NORTHEAST	2 125	289	358	609	208	290	118	105	73	8.7
NORTH CENTRAL	2 412	260	450	880	279	369	112	86	66	8.6
SOUTH	2 517	649	504	435	321	268	166	120	73	8.2
WEST	1 310	191	186	317	169	216	96	86	48	8.9
ALL RACES—FEMALE										
TOTAL, 25 YEARS AND OVER	57 527	2 716	5 041	7 556	10 327	21 563	5 584	3 348	1 350	12.1
NORTHEAST	14 716	622	1 170	2 170	2 532	5 808	1 161	833	319	12.1
NORTH CENTRAL	15 999	463	1 025	2 670	2 772	6 334	1 549	831	354	12.2
SOUTH	17 324	1 307	2 305	1 828	3 379	5 590	1 893	1 041	341	11.9
WEST	9 486	323	540	888	1 644	3 731	1 381	641	343	12.4
25 TO 44 YEARS	24 911	385	966	1 303	8 761	11 520	2 849	1 524	708	12.4
NORTHEAST	6 032	85	203	334	1 054	3 082	506	472	171	12.4
NORTH CENTRAL	6 698	51	134	423	1 251	3 438	791	421	189	12.6
SOUTH	7 353	186	468	465	1 700	3 040	753	534	161	12.3
WEST	4 327	61	140	166	727	1 959	710	376	187	12.5
45 TO 64 YEARS	21 766	894	2 094	3 217	3 992	7 966	1 971	1 040	524	12.1
NORTHEAST	5 719	157	472	945	1 032	2 267	427	285	115	12.1
NORTH CENTRAL	6 062	120	378	1 163	1 111	2 360	534	283	111	12.1
SOUTH	6 582	506	1 074	760	1 230	1 989	507	342	175	11.3
WEST	3 403	111	170	330	619	1 370	905	178	122	12.3
65 YEARS AND OVER	11 350	1 438	1 980	2 944	1 574	2 037	764	426	166	9.8
NORTHEAST	2 965	381	895	866	416	959	138	76	33	9.7
NORTH CENTRAL	3 238	292	513	1 085	410	534	228	125	54	8.8
SOUTH	3 380	614	743	603	450	561	234	140	45	8.6
WEST	1 758	151	230	389	298	401	168	66	34	10.1
WHITE—MALE										
TOTAL, 25 YEARS AND OVER	46 606	2 102	4 094	6 478	7 289	14 410	5 259	3 846	3 124	12.2
NORTHEAST	11 914	435	945	1 705	1 943	3 904	1 127	1 042	798	12.3
NORTH CENTRAL	13 616	372	992	2 476	2 250	4 498	1 336	991	812	12.2
SOUTH	13 031	977	1 683	1 453	2 104	3 508	1 418	1 078	810	12.1
WEST	8 042	318	455	845	1 103	2 500	1 378	738	704	12.5
25 TO 44 YEARS	20 672	401	958	1 452	3 074	7 939	2 951	2 224	1 868	12.6
NORTHEAST	4 990	35	193	312	725	2 040	624	572	466	12.6
NORTH CENTRAL	6 026	50	200	519	905	2 536	726	573	518	12.5
SOUTH	5 981	217	469	843	936	2 005	804	654	849	12.5
WEST	3 576	79	96	178	508	1 358	797	425	835	12.8
45 TO 64 YEARS	18 072	706	1 741	2 877	3 190	5 473	1 849	1 229	1 006	12.1
NORTHEAST	4 874	121	432	796	932	1 577	391	369	260	12.1
NORTH CENTRAL	5 297	111	359	1 103	963	1 699	497	333	331	12.1
SOUTH	4 954	378	767	605	462	1 251	472	305	293	11.5
WEST	2 947	96	183	373	832	946	489	227	221	12.4
65 YEARS AND OVER	7 662	995	1 395	2 166	1 026	998	459	390	251	8.7
NORTHEAST	2 054	259	339	593	285	286	112	105	71	8.7
NORTH CENTRAL	2 293	211	432	853	272	363	112	89	64	8.6
SOUTH	2 116	342	447	404	306	252	142	115	69	8.6
WEST	1 199	184	176	296	162	197	92	86	48	9.8

YEARS OF SCHOOL COMPLETED BY PERSONS 25 YEARS OLD AND OVER, BY TYPE OF RESIDENCE, AGE, RACE, AND SEX, FOR THE UNITED STATES: MARCH 19__ Continued

AREA, AGE, RACE, AND SEX	TOTAL POPULA-TION (THOUSANDS)	TOTAL	ELEMENTARY SCHOOL 0 TO 4 YEARS	5 TO 7 YEARS	8 YEARS	HIGH SCHOOL 1 TO 3 YEARS	4 YEARS	COLLEGE 1 TO 3 YEARS	4 YEARS	5 YEARS OR MORE	MEDIAN SCHOOL YEARS COMPLETED
NEGRO											
BOTH SEXES											
TOTAL, 25 YEARS OLD AND OVER	10 089	100.0	15.1	16.7	11.2	23.5	23.4	5.8	2.9	1.6	9.9
METROPOLITAN AREAS	7 278	100.0	10.3	18.4	11.3	25.1	26.6	7.3	3.1	1.8	10.7
IN CENTRAL CITIES	5 753	100.0	9.8	18.2	11.7	25.4	26.5	7.0	3.3	1.7	10.7
OUTSIDE CENTRAL CITIES	1 525	100.0	12.2	15.2	10.0	24.2	27.0	6.8	2.2	2.4	10.6
NONMETROPOLITAN AREAS	2 811	100.0	27.4	22.7	10.8	18.6	14.9	2.3	2.4	1.0	8.0
NONFARM	2 493	100.0	26.0	22.3	10.8	19.3	15.8	2.4	2.4	1.1	8.2
FARM	318	100.0	37.9	26.3	10.3	13.8	8.1	1.3	1.7	0.5	6.9
25 TO 44 YEARS OLD	4 998	100.0	4.9	9.7	7.8	29.8	34.2	8.0	4.1	1.6	11.8
METROPOLITAN AREAS	3 805	100.0	2.7	7.8	7.5	29.9	36.8	9.6	4.0	1.8	12.1
IN CENTRAL CITIES	2 935	100.0	2.8	7.3	7.5	29.3	37.2	10.0	4.1	1.7	12.1
OUTSIDE CENTRAL CITIES	869	100.0	2.5	8.3	7.5	31.7	35.2	8.1	3.9	2.3	11.9
NONMETROPOLITAN AREAS	1 193	100.0	11.7	15.7	8.9	29.3	25.9	3.9	4.9	0.4	10.4
NONFARM	1 076	100.0	11.3	14.3	8.7	30.3	26.8	3.1	4.6	1.0	10.5
FARM	117	100.0	15.2	28.5	10.4	22.2	17.5	1.7	4.7	-	8.6
45 YEARS OLD AND OVER	5 091	100.0	25.1	23.6	14.4	17.0	12.8	3.8	1.7	1.6	8.1
METROPOLITAN AREAS	3 473	100.0	18.6	21.6	15.5	20.0	15.6	4.7	2.1	1.6	8.6
IN CENTRAL CITIES	2 818	100.0	17.1	21.3	16.1	21.3	15.8	4.6	2.5	1.7	8.7
OUTSIDE CENTRAL CITIES	656	100.0	25.1	23.1	13.2	19.2	16.1	5.1	0.7	2.6	8.1
NONMETROPOLITAN AREAS	1 617	100.0	38.9	27.9	12.1	10.6	6.8	1.7	0.9	1.1	6.2
NONFARM	1 416	100.0	37.2	28.3	12.4	10.8	7.4	1.8	1.0	1.1	6.4
FARM	201	100.0	51.1	25.1	10.2	8.9	2.7	1.1	-	0.8	4.9
MALE											
TOTAL, 25 YEARS OLD AND OVER	4 619	100.0	18.6	16.0	11.1	21.9	22.2	5.7	2.8	1.7	9.4
METROPOLITAN AREAS	3 341	100.0	12.3	18.7	11.9	23.7	25.4	6.8	3.1	2.1	10.4
IN CENTRAL CITIES	2 595	100.0	11.7	14.5	17.6	23.6	25.6	6.8	3.2	2.0	10.9
OUTSIDE CENTRAL CITIES	746	100.0	14.4	15.6	9.5	24.2	24.6	7.1	2.4	2.1	10.3
NONMETROPOLITAN AREAS	1 278	100.0	35.1	19.2	6.9	17.2	13.9	2.6	2.2	0.9	7.3
NONFARM	1 126	100.0	33.2	18.3	8.9	17.6	15.0	2.7	8.3	1.0	7.6
FARM	153	100.0	49.5	18.8	9.5	14.3	5.5	1.3	1.1	-	5.1
25 TO 44 YEARS OLD	2 319	100.0	6.6	11.9	8.6	28.1	31.3	7.5	4.1	1.9	11.9
METROPOLITAN AREAS	1 750	100.0	3.6	10.1	8.8	28.9	33.7	8.8	4.0	2.2	11.9
IN CENTRAL CITIES	1 328	100.0	3.8	9.4	9.2	27.6	34.7	8.9	4.2	2.1	12.0
OUTSIDE CENTRAL CITIES	431	100.0	2.8	12.1	7.5	33.0	30.7	8.4	3.9	2.2	11.5
NONMETROPOLITAN AREAS	567	100.0	16.3	17.7	8.0	25.6	23.7	3.5	4.3	0.9	9.9
NONFARM	507	100.0	15.7	16.3	8.0	26.0	25.1	3.5	4.4	1.0	10.2
FARM	54	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
45 YEARS OLD AND OVER	2 300	100.0	30.7	20.1	13.6	15.6	13.0	3.8	1.6	1.6	7.9
METROPOLITAN AREAS	1 585	100.0	22.0	19.9	15.3	17.9	16.1	4.7	2.1	1.9	8.6
IN CENTRAL CITIES	1 269	100.0	19.9	19.7	16.0	19.4	16.1	4.6	2.4	1.9	8.6
OUTSIDE CENTRAL CITIES	315	100.0	30.3	20.5	12.6	12.2	16.3	5.3	0.9	2.0	7.9
NONMETROPOLITAN AREAS	717	100.0	49.9	20.4	9.7	10.6	6.2	1.8	0.6	0.8	5.0
NONFARM	618	100.0	47.5	21.7	9.6	10.7	6.7	2.1	0.6	7.0	5.2
FARM	99	100.0	64.6	12.2	10.5	10.0	2.9	-	-	-	3.5
FEMALE											
TOTAL, 25 YEARS OLD AND OVER	5 470	100.0	12.1	17.3	11.3	24.5	24.8	6.0	2.9	1.5	10.1
METROPOLITAN AREAS	3 937	100.0	8.6	14.1	10.9	26.3	27.7	7.6	3.1	1.6	10.9
IN CENTRAL CITIES	3 158	100.0	8.3	13.9	11.0	26.9	27.3	7.9	3.3	1.4	10.9
OUTSIDE CENTRAL CITIES	779	100.0	10.1	14.9	10.5	24.1	29.3	6.5	2.1	2.7	10.8
NONMETROPOLITAN AREAS	1 533	100.0	20.9	25.6	12.3	19.8	15.8	2.0	2.5	1.1	8.5
NONFARM	1 367	100.0	20.2	24.7	12.4	20.6	16.4	2.1	2.5	1.1	8.4
FARM	166	100.0	27.5	33.3	11.0	13.3	10.5	1.4	2.3	0.9	7.0
25 TO 44 YEARS OLD	2 679	100.0	3.3	7.7	7.2	31.2	36.7	8.5	4.1	1.4	12.0
METROPOLITAN AREAS	2 047	100.0	2.0	5.8	6.4	30.7	39.4	10.3	3.9	1.3	12.1
IN CENTRAL CITIES	1 609	100.0	1.9	5.6	6.1	30.7	39.3	11.0	4.0	1.3	12.1
OUTSIDE CENTRAL CITIES	438	100.0	2.2	6.6	7.7	30.4	39.6	7.7	3.5	2.4	12.1
NONMETROPOLITAN AREAS	632	100.0	7.7	13.9	9.7	33.0	27.8	2.6	4.3	1.0	10.7
NONFARM	569	100.0	7.5	12.5	9.4	34.2	28.5	2.8	4.3	1.0	10.8
FARM	63	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
45 YEARS OLD AND OVER	2 790	100.0	20.5	26.6	15.2	18.1	12.4	3.7	1.8	1.6	8.2
METROPOLITAN AREAS	1 890	100.0	15.9	23.1	15.7	21.6	15.1	4.7	2.1	1.5	8.7
IN CENTRAL CITIES	1 549	100.0	14.9	22.4	16.1	22.9	14.9	4.7	2.5	1.5	8.8
OUTSIDE CENTRAL CITIES	341	100.0	20.3	25.6	13.8	16.0	16.0	4.9	0.4	3.1	8.3
NONMETROPOLITAN AREAS	900	100.0	30.2	33.9	14.1	10.6	10.9	7.3	1.6	1.1	6.8
NONFARM	798	100.0	29.2	33.4	14.6	10.9	7.9	1.5	1.2	1.2	6.9
FARM	103	100.0	38.2	37.5	10.2	7.9	2.5	2.2	-	1.5	5.7

- REPRESENTS ZERO OR ROUNDS TO ZERO.   B BASE LESS THAN 75,000.

YEARS OF SCHOOL COMPLETED BY PERSONS 25 YEARS OLD AND OVER, BY TYPE OF RESIDENCE, AGE, RACE, AND SEX, FOR THE UNITED STATES: MARCH 1970

AREA, AGE, RACE, AND SEX	TOTAL POPULA-TION (THOUSANDS)	TOTAL	ELEMENTARY SCHOOL 0 TO 4 YEARS	5 TO 7 YEARS	8 YEARS	HIGH SCHOOL 1 TO 3 YEARS	4 YEARS	COLLEGE 1 TO 3 YEARS	4 YEARS	5 YEARS OR MORE	MEDIAN SCHOOL YEARS COMPLETED
ALL RACES											
BOTH SEXES											
TOTAL, 25 YEARS OLD AND OVER	109 310	100.0	5.3	9.1	13.4	17.1	34.0	10.2	6.8	4.3	12.2
METROPOLITAN AREAS	71 127	100.0	4.3	7.6	11.7	17.2	35.3	11.4	7.7	4.9	12.3
IN CENTRAL CITIES	32 832	100.0	5.7	9.3	13.3	18.4	32.0	10.3	6.5	4.5	12.1
OUTSIDE CENTRAL CITIES	38 295	100.0	3.1	6.2	10.2	16.2	38.0	12.3	8.7	5.3	12.4
METROPOLITAN AREAS OF 3,000,000 OR MORE	20 218	100.0	4.4	7.1	12.3	17.2	34.7	11.6	7.1	5.3	12.3
IN CENTRAL CITIES	10 389	100.0	6.1	9.1	15.0	18.7	31.5	9.9	5.5	4.8	12.0
OUTSIDE CENTRAL CITIES	9 829	100.0	2.6	5.0	9.5	15.8	38.7	13.8	8.9	5.8	12.4
METROPOLITAN AREAS OF 1,000,000 TO 3,000,000	18 688	100.0	3.4	7.0	11.2	16.3	35.9	11.9	8.6	5.3	12.3
IN CENTRAL CITIES	6 697	100.0	5.3	9.4	13.9	18.5	31.2	10.3	7.2	4.7	12.1
OUTSIDE CENTRAL CITIES	11 991	100.0	2.3	5.4	10.2	15.0	38.4	12.9	9.7	5.9	12.4
METROPOLITAN AREAS OF 250,000 TO 1,000,000	22 224	100.0	4.4	8.1	11.3	18.1	35.1	11.2	7.9	4.5	12.2
IN CENTRAL CITIES	10 271	100.0	5.1	8.9	11.9	19.5	32.8	11.0	6.7	4.2	12.1
OUTSIDE CENTRAL CITIES	11 953	100.0	3.7	7.5	10.7	17.0	37.1	11.3	8.0	4.7	12.3
METROPOLITAN AREAS OF LESS THAN 250,000	9 997	100.0	5.5	6.9	12.1	16.6	35.5	10.0	7.3	4.2	12.2
IN CENTRAL CITIES	5 475	100.0	6.4	9.6	13.5	15.5	33.6	9.9	7.1	4.3	12.1
OUTSIDE CENTRAL CITIES	4 522	100.0	4.4	8.0	10.5	17.9	37.8	10.0	7.5	3.8	12.2
NONMETROPOLITAN AREAS	38 183	100.0	7.1	11.8	16.5	16.9	31.6	8.1	5.1	3.1	11.6
NONFARM	33 333	100.0	7.0	11.4	15.4	17.2	31.8	8.4	5.4	3.3	11.8
FARM	4 850	100.0	7.5	14.0	23.6	14.9	30.0	5.6	2.9	1.4	10.0
25 TO 44 YEARS OLD	47 886	100.0	2.0	4.6	6.8	17.2	42.3	12.6	8.8	5.6	12.5
METROPOLITAN AREAS	32 036	100.0	1.5	3.8	5.1	17.5	42.0	13.9	9.8	6.3	12.5
IN CENTRAL CITIES	13 216	100.0	2.2	5.2	6.4	19.4	38.6	13.1	8.7	6.2	12.4
OUTSIDE CENTRAL CITIES	18 820	100.0	1.1	2.7	4.3	16.1	44.3	14.5	10.5	6.4	12.6
NONMETROPOLITAN AREAS	15 849	100.0	2.9	6.4	8.9	18.4	42.8	9.8	6.7	4.1	12.3
NONFARM	14 224	100.0	2.8	6.2	8.4	18.6	42.4	10.2	7.0	4.3	12.3
FARM	1 625	100.0	3.5	7.8	12.9	16.4	47.0	6.6	4.1	1.7	12.2
45 YEARS OLD AND OVER	61 425	100.0	7.8	12.6	18.8	16.6	27.5	8.4	5.2	3.2	11.0
METROPOLITAN AREAS	39 091	100.0	6.5	10.8	17.0	16.9	29.7	9.3	5.9	3.8	11.8
IN CENTRAL CITIES	19 61	100.0	8.0	12.0	18.0	17.7	27.5	8.8	5.0	3.4	11.0
OUTSIDE CENTRAL CITIES	19 479	100.0	5.0	9.7	16.0	16.2	32.0	10.1	6.9	4.1	12.1
NONMETROPOLITAN AREAS	22 334	100.0	10.1	15.6	21.8	15.9	23.6	6.8	3.9	2.3	9.5
NONFARM	19 109	100.0	10.1	15.3	20.6	16.2	23.9	7.1	8.2	2.5	9.7
FARM	3 225	100.0	9.6	17.1	29.0	14.2	21.4	5.1	2.4	1.2	8.8
MALE											
TOTAL, 25 YEARS OLD AND OVER	51 784	100.0	5.5	9.3	13.4	15.1	30.3	10.0	7.8	6.3	12.2
METROPOLITAN AREAS	33 518	100.0	4.4	7.9	11.6	16.5	31.0	12.3	9.2	7.2	12.3
IN CENTRAL CITIES	15 678	100.0	5.7	9.4	13.2	17.7	28.6	11.1	7.7	6.6	12.1
OUTSIDE CENTRAL CITIES	18 440	100.0	3.2	6.6	10.2	15.4	32.9	13.3	10.5	7.8	12.4
NONMETROPOLITAN AREAS	18 266	100.0	8.6	12.5	17.3	15.5	28.4	7.9	5.3	4.4	11.3
NONFARM	15 771	100.0	8.4	11.7	16.0	15.9	28.6	8.5	5.8	5.0	11.6
FARM	2 494	100.0	9.6	15.9	25.6	13.4	27.1	4.5	2.0	1.9	9.0
25 TO 44 YEARS OLD	23 475	100.0	2.4	5.3	7.1	16.0	37.2	13.5	10.1	8.4	12.5
METROPOLITAN AREAS	15 628	100.0	1.6	4.3	5.5	16.0	36.7	15.0	11.6	9.3	12.6
IN CENTRAL CITIES	6 603	100.0	2.3	5.8	6.7	17.7	34.5	13.9	10.2	8.8	12.5
OUTSIDE CENTRAL CITIES	9 224	100.0	1.2	3.2	4.6	14.8	38.3	15.5	12.5	9.5	12.7
NONMETROPOLITAN AREAS	7 847	100.0	4.0	7.4	10.3	16.0	38.1	10.4	7.3	6.6	12.3
NONFARM	7 049	100.0	3.8	7.1	9.7	16.2	37.5	10.8	7.8	7.0	12.4
FARM	798	100.0	5.1	9.8	15.7	14.1	44.0	6.3	2.6	2.6	12.1
45 YEARS OLD AND OVER	28 309	100.0	8.7	12.8	19.0	15.3	24.1	8.5	5.9	4.6	10.7
METROPOLITAN AREAS	17 890	100.0	6.8	11.0	16.9	16.9	25.9	9.9	7.2	5.8	11.7
IN CENTRAL CITIES	8 675	100.0	8.3	12.0	17.9	17.8	24.3	9.1	5.8	4.9	11.0
OUTSIDE CENTRAL CITIES	9 216	100.0	5.3	10.1	15.8	16.0	27.5	10.8	8.5	6.0	12.1
NONMETROPOLITAN AREAS	10 419	100.0	12.1	16.0	22.6	15.2	21.1	6.1	3.7	3.1	9.0
NONFARM	8 722	100.0	12.2	15.4	21.2	15.4	21.5	6.6	4.1	3.4	9.2
FARM	1 696	100.0	11.7	18.8	30.3	13.1	19.1	3.7	1.7	1.5	8.6
FEMALE											
TOTAL, 25 YEARS OLD AND OVER	57 527	100.0	4.7	8.8	13.1	18.0	37.3	9.7	5.8	2.4	12.1
METROPOLITAN AREAS	37 609	100.0	4.2	7.4	11.8	17.8	39.1	10.5	6.3	2.8	12.2
IN CENTRAL CITIES	17 754	100.0	5.6	9.2	13.5	18.9	34.4	9.6	5.5	2.5	12.1
OUTSIDE CENTRAL CITIES	19 855	100.0	2.9	5.9	10.3	16.9	42.9	11.3	7.0	2.9	12.3
NONMETROPOLITAN AREAS	19 918	100.0	5.7	11.3	15.7	18.2	34.4	8.2	4.9	1.6	11.9
NONFARM	17 565	100.0	5.7	11.2	14.9	18.4	34.6	8.3	5.1	1.7	12.0
FARM	2 356	100.0	5.5	11.9	21.5	16.5	35.1	6.6	3.9	0.9	11.0
25 TO 44 YEARS OLD	24 411	100.0	1.6	4.0	5.7	19.5	47.2	11.7	7.5	2.9	12.4
METROPOLITAN AREAS	16 409	100.0	1.5	3.3	4.8	18.9	47.1	12.9	8.1	3.5	12.5
IN CENTRAL CITIES	6 813	100.0	2.2	4.7	6.1	21.0	42.8	12.3	7.3	3.7	12.4
OUTSIDE CENTRAL CITIES	9 596	100.0	0.9	2.3	3.9	17.4	50.1	13.2	8.7	3.4	12.5
NONMETROPOLITAN AREAS	8 002	100.0	1.8	5.4	7.5	20.8	47.4	9.2	6.2	1.6	12.3
NONFARM	7 175	100.0	1.8	5.5	7.2	21.0	47.2	9.5	6.3	1.7	12.3
FARM	827	100.0	1.9	6.0	10.2	18.6	50.0	6.9	5.5	0.9	12.3
45 YEARS OLD AND OVER	33 116	100.0	7.0	12.3	18.6	16.8	30.3	8.3	4.6	2.1	11.2
METROPOLITAN AREAS	21 200	100.0	6.3	10.7	17.2	17.0	32.9	8.7	4.9	2.2	11.8
IN CENTRAL CITIES	10 941	100.0	7.8	12.0	18.1	17.6	30.0	8.0	4.3	2.5	11.1
OUTSIDE CENTRAL CITIES	10 259	100.0	4.8	9.3	16.2	16.4	36.0	9.5	5.4	1.3	12.1
NONMETROPOLITAN AREAS	11 915	100.0	8.3	14.2	21.2	16.5	25.7	7.4	4.2	1.1	10.0
NONFARM	10 387	100.0	8.4	15.2	20.2	16.6	26.0	7.5	4.2	1.8	10.1
FARM	1 528	100.0	7.2	15.2	27.6	15.4	24.0	6.7	3.1	0.8	9.0

YEARS OF SCHOOL COMPLETED BY PERSONS 25 YEARS OLD AND OVER, BY TYPE OF RESIDENCE, AGE, RACE, AND SEX, FOR THE UNITED STATES: MARCH 1970—Continued

AREA, AGE, RACE, AND SEX	TOTAL POPULA- TION (THOUSANDS)	TOTAL	YEARS OF SCHOOL COMPLETED								MEDIAN SCHOOL YEARS COMPLETED
			ELEMENTARY SCHOOL			HIGH SCHOOL		COLLEGE			
			0 TO 4 YEARS	5 TO 7 YEARS	8 YEARS	1 TO 3 YEARS	4 YEARS	1 TO 3 YEARS	4 YEARS	5 YEARS OR MORE	
WHITE											
BOTH SEXES											
TOTAL, 25 YEARS OLD AND OVER	98 112	100.0	8.2	8.3	13.6	16.5	35.2	10.7	7.1	4.5	12.2
METROPOLITAN AREAS	62 982	100.0	3.5	6.8	11.8	16.4	36.4	11.8	8.1	5.2	12.3
IN CENTRAL CITIES	26 599	100.0	4.7	8.2	13.8	17.0	33.4	10.9	7.0	5.0	12.2
OUTSIDE CENTRAL CITIES	36 383	100.0	2.6	5.8	10.3	15.9	38.5	12.5	8.9	5.3	12.4
NONMETROPOLITAN AREAS	35 130	100.0	5.4	10.9	16.9	16.8	33.0	8.5	5.3	3.2	12.0
NONFARM	30 624	100.0	5.4	10.5	15.6	17.1	33.2	8.9	5.6	3.4	12.0
FARM	4 506	100.0	5.4	13.1	24.6	15.0	31.6	5.9	3.0	1.5	10.8
25 TO 44 YEARS OLD	42 279	100.0	1.6	4.0	6.2	16.5	43.4	13.1	9.2	5.9	12.5
METROPOLITAN AREAS	27 768	100.0	1.4	3.2	4.8	15.9	42.9	14.5	10.5	6.8	12.6
IN CENTRAL CITIES	10 042	100.0	2.1	4.6	6.1	16.7	39.6	13.9	9.7	7.3	12.5
OUTSIDE CENTRAL CITIES	17 725	100.0	1.0	2.6	4.1	15.5	44.8	14.8	10.9	6.5	12.6
NONMETROPOLITAN AREAS	14 512	100.0	2.1	5.6	8.8	17.5	43.8	10.3	6.9	4.3	12.4
NONFARM	13 016	100.0	2.1	5.5	8.3	17.7	43.8	10.7	7.2	4.5	12.4
FARM	1 495	100.0	2.6	6.1	13.1	16.0	49.5	7.0	3.9	1.9	12.2
45 YEARS OLD AND OVER	55 833	100.0	6.1	11.5	19.2	16.5	28.9	8.8	5.5	3.4	11.8
METROPOLITAN AREAS	35 214	100.0	5.2	9.7	17.2	16.7	31.2	9.8	6.3	3.9	12.0
IN CENTRAL CITIES	16 557	100.0	6.2	10.4	18.5	17.1	29.6	9.1	5.4	3.7	11.6
OUTSIDE CENTRAL CITIES	18 658	100.0	4.2	9.1	16.2	16.3	32.6	10.5	7.1	4.2	12.1
NONMETROPOLITAN AREAS	20 619	100.0	7.7	14.6	22.6	16.3	24.9	7.2	4.3	2.4	9.9
NONFARM	17 608	100.0	7.4	14.2	21.3	16.6	25.3	7.6	4.5	2.6	10.2
FARM	3 011	100.0	6.7	16.5	30.3	16.5	22.7	5.8	2.5	1.5	8.9
MALE											
TOTAL, 25 YEARS OLD AND OVER	46 606	100.0	4.5	8.8	13.9	15.6	30.9	11.3	8.3	6.7	12.2
METROPOLITAN AREAS	29 723	100.0	3.4	7.1	11.6	15.8	31.7	12.4	9.8	7.8	12.5
IN CENTRAL CITIES	12 235	100.0	4.4	8.3	13.4	16.7	29.4	12.1	8.3	7.4	12.2
OUTSIDE CENTRAL CITIES	17 488	100.0	2.6	6.3	10.3	15.1	33.3	13.5	10.8	8.0	12.5
NONMETROPOLITAN AREAS	16 883	100.0	6.5	11.8	18.0	15.4	29.5	8.4	5.5	4.8	11.7
NONFARM	14 553	100.0	6.4	11.2	16.6	15.8	29.7	9.0	6.1	5.3	12.0
FARM	2 330	100.0	7.0	15.7	26.6	13.2	28.4	4.7	2.1	2.0	9.1
25 TO 44 YEARS OLD	20 872	100.0	1.9	4.6	7.0	14.7	38.0	14.1	10.7	9.0	12.6
METROPOLITAN AREAS	13 654	100.0	1.8	3.5	5.1	14.4	37.3	15.6	12.5	10.1	12.7
IN CENTRAL CITIES	4 960	100.0	1.9	4.8	6.2	15.3	34.8	16.2	11.5	10.4	12.6
OUTSIDE CENTRAL CITIES	8 694	100.0	1.1	2.8	4.5	14.0	38.8	16.7	12.9	9.9	12.7
NONMETROPOLITAN AREAS	7 219	100.0	2.4	6.6	10.4	15.3	39.4	11.0	7.5	6.9	12.4
NONFARM	6 483	100.0	2.8	6.5	9.8	15.5	38.5	11.3	8.1	7.3	12.4
FARM	735	100.0	3.9	8.0	16.3	13.4	46.5	6.5	2.5	2.8	16.2
45 YEARS OLD AND OVER	25 734	100.0	6.6	12.2	19.5	16.4	25.1	9.0	6.3	4.9	11.1
METROPOLITAN AREAS	16 069	100.0	5.1	10.1	17.1	16.9	26.9	10.5	7.7	5.8	12.0
IN CENTRAL CITIES	7 275	100.0	6.2	10.6	18.3	17.7	25.6	9.8	6.4	5.8	11.5
OUTSIDE CENTRAL CITIES	8 794	100.0	4.1	9.7	16.0	16.2	27.9	11.0	8.8	6.2	12.1
NONMETROPOLITAN AREAS	9 664	100.0	9.2	15.6	23.6	15.6	22.2	6.5	4.0	3.3	9.3
NONFARM	8 069	100.0	9.3	14.9	22.1	16.0	22.6	7.0	4.8	3.6	9.7
FARM	1 595	100.0	8.4	19.3	31.6	13.2	20.1	3.9	1.9	1.0	8.7
FEMALE											
TOTAL, 25 YEARS OLD AND OVER	51 506	100.0	3.9	7.8	13.4	17.3	39.0	10.1	6.1	2.5	12.2
METROPOLITAN AREAS	33 259	100.0	3.6	6.6	11.9	16.9	40.5	10.9	6.6	2.9	12.3
IN CENTRAL CITIES	14 364	100.0	4.8	8.2	14.1	17.2	36.8	10.0	5.0	3.0	12.2
OUTSIDE CENTRAL CITIES	18 895	100.0	2.7	5.5	10.3	16.7	43.4	11.5	7.2	2.8	12.3
NONMETROPOLITAN AREAS	18 247	100.0	4.4	10.0	15.9	18.1	36.2	8.6	5.1	1.7	12.1
NONFARM	16 071	100.0	4.5	10.0	15.0	18.2	36.3	8.8	5.3	1.8	12.1
FARM	2 176	100.0	3.5	10.2	22.3	16.9	35.0	7.2	4.0	0.9	11.5
25 TO 44 YEARS OLD	21 407	100.0	1.4	3.8	5.5	18.2	48.7	12.0	7.8	3.0	12.6
METROPOLITAN AREAS	14 114	100.0	1.4	2.8	4.6	17.4	48.4	13.2	8.7	3.6	12.5
IN CENTRAL CITIES	5 082	100.0	2.2	4.3	6.0	18.1	44.3	13.5	8.2	4.3	12.8
OUTSIDE CENTRAL CITIES	9 032	100.0	0.9	2.0	3.8	16.9	50.7	13.6	8.9	3.2	12.5
NONMETROPOLITAN AREAS	7 293	100.0	1.3	4.6	7.2	19.6	49.4	9.7	6.3	1.7	12.3
NONFARM	6 533	100.0	1.4	4.6	6.9	19.9	49.1	10.0	6.4	1.8	12.4
FARM	760	100.0	1.2	4.3	9.9	18.8	52.4	7.5	5.2	1.0	12.3
45 YEARS OLD AND OVER	30 099	100.0	5.7	11.0	18.9	16.7	32.1	8.7	4.8	2.1	11.6
METROPOLITAN AREAS	19 145	100.0	5.2	9.4	17.4	16.5	34.6	9.1	5.1	2.4	12.0
IN CENTRAL CITIES	9 281	100.0	6.3	10.3	18.6	16.7	32.7	8.6	4.6	2.3	11.5
OUTSIDE CENTRAL CITIES	9 864	100.0	4.3	8.6	16.3	16.4	36.7	9.7	5.6	2.4	12.1
NONMETROPOLITAN AREAS	10 954	100.0	6.4	13.6	21.7	17.1	27.3	7.4	4.4	1.8	10.6
NONFARM	9 538	100.0	6.7	13.7	20.6	17.1	27.6	8.1	4.5	1.8	10.8
FARM	1 416	100.0	4.8	13.4	28.9	16.0	25.7	7.1	3.3	0.8	9.5

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This bibliography includes citations for all materials reviewed
for the project as well as documents used for background information
by the individual authors of each chapter. The citations include, when
appropriate, a designation of the sections of this report for which
they were reviewed. "Task 1" refers to the first problem posed to the
project by the U. S. Office of Education, that of the determination of
the extent and distribution of the national "reading problem." This is
reviewed in Chapter Three; "Task 2" to the determination of the fre-
quency of use and distribution of instructional methods and materials
reviewed in Chapter Four; "Task 3" to the description of the nature and
extent of current practice in teacher training in the field of reading
reviewed in Chapter Five.

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