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ABSTRACT

This report describes the development of an experimental program of job reading training designed to provide a level of functional literacy appropriate to minimal job task reading requirements in six major career clusters. Program effectiveness for both general and job reading training is described in data based on the reading performance of some 3,000 adult students at six Army Training Centers at which the program was implemented. Reading Training performance was measured by both a standardized test of general reading comprehension and an experimental measure of the job reading task skills required to learn and to perform a job. This research also investigated the feasibility of three alternative systems for providing job reading training concurrently with other components of job training, rather than as preparatory training. Major findings indicate that: (1) a substantial portion of job trainees are deficient in job reading skills; (2) six weeks of focused job reading training improved job reading skills to the seventh grade reading level (a gain of two reading grade level years specific to job reading skills); and (3) programs of integrated job reading and job skills training are feasible. (Author/MKM)

Final Report

HumRRO-FR-WD(CA)-75-7

HumRRO

A Program of Army Functional Job Reading Training: Development, Implementation, And Delivery Systems

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Approved for public release; distribution unlimited.

June 1975

Prepared for

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test of general reading comprehension and an experimental measure of the job reading task skills required to learn and to perform a job.

This research also investigated the feasibility of 3 alternative delivery systems for providing job reading training concurrently with other components of job training, rather than as prior, front-loaded, preparatory training.

Major findings indicate that: 1) a substantial portion of job trainees are deficient in job reading skills; 2) 6 weeks of focused job reading training improved job reading skills to the seventh grade reading level (a gain of 2 reading grade level years); and 3) programs of integrated job reading and job skills training are feasible.

SUMMARY AND CONCLUSIONS

Military Problem

Though the Army has continuously faced the need for capable, literate personnel, the educational system of the United States has not produced a large enough supply of literate adults to meet the manpower demands of both civilian and military employers. For this reason, it has been necessary for the Army, and the other Armed Services, to provide literacy training programs for many personnel. Although previous research established the functional reading tasks necessary to learn and to perform basic Army jobs, there has been no job reading training program available to improve the specific skills needed to use Army job manuals to perform the actual reading tasks required by the job.

Research Problem

The primary purpose of Work Unit FLIT was to develop and evaluate an experimental program of job reading training designed to provide a level of functional literacy appropriate to minimal job task reading requirements in the major clusters of common, high-density, Army MOSs. This training was to be accomplished within a six weeks period. This purpose was extended to include the implementation of the experimental program at all ATCs, the determination of the effectiveness of the operational program, and the assessment of the feasibility of offering integrated job reading and job skills training in AIT, as an alternative to the implemented program which requires 6 weeks of full time reading training interspersed between BCT and AIT.

Method

The job reading training program was developed in two curriculum strands: Strand I to provide training in the application of existing general reading skills to job-specific Army job reading tasks, Strand II to improve basic reading skills and job knowledge through instruction using simplified Army job reading materials.

1) These programs were developed through task-analytic determination of training objectives derived from AIT and job performance requirements. Iterative cycles of materials development, try-out, and revision were carried out at the experimental FLIT school.

2) Each module of these programs was evaluated by a module-specific proficiency test. Overall program effectiveness was assessed by a USAFI measure of general reading comprehension and by the Job Reading Task Test developed for the program. All evaluation was conducted by pre- and post-training testing.

3) The job reading training program, designated as AITPT, was implemented at all ATCs by a program of site visits, master sets of instructional materials, staff workshops, and follow-up visits. Evaluation of the 6 operational programs was conducted by monitoring the full student performance data generated by the programs.

Information on the feasibility of integrating job reading and job skills training in AIT was obtained by developing, operating, and evaluating 3 experimental programs to examine the Extended Training Day, the Integrated Training Day, and the Learning Center delivery systems for integrated training.

Results

Research on the screening of Army input for the job reading training program indicated that:

1) Seventeen percent of the Mental Category III personnel and 43% of the Category IV personnel showed reading comprehension scores below the 6th grade level as measured by the USAFI Intermediate Achievement Test in the Reception Station.

2) When retested on an alternate form of this test 4 weeks later in BCT, approximately half of these same personnel again scored below the 6th grade level.

The development of a job reading training program provided the following results:

1) The production of a modular, self-paced, mastery-based job reading task training program (Strand I). Training is conducted in 6 modules, each addressed to one of the six fundamental job reading tasks identified as common and essential to MOS training and performance. Job-specific training is provided in the Army manuals used in the student's own MOS by means of parallel sets of instructional materials developed for each of the 6 basic MOS career clusters.

2) Evaluation of the experimental Strand I program at the developmental FLIT school indicated that:

a) On the average, students were 19 years old, had completed eleven years of formal schooling, over half had a high school diploma or GED Certificate, and one-third had a primary language other than English.

b) Most of the students (80% - 93%) needed training on most of the job reading tasks, as shown by their inability to pass the pre-training module proficiency tests.

c) Module effectiveness, in terms of the percentage of students trained to mastery; ranged from 33% to 83%.

3) The development of a teacher-oriented program designed both to improve basic reading skills by language instruction and to provide basic job knowledge in the student's MOS field (Strand II). All instruction in decoding print to speech, in basic grammar and syntax, and in conceptualizing and structuring the meaning of a passage, was keyed to simplified reading passages presenting basic job vocabulary and job concepts. All reading passages and instructional materials were prepared in 6 parallel sets to permit job-specific training in each of the 6 basic MOS career clusters.

4) Evaluation of the Strand II curriculum indicated that it was effective in increasing oral reading ability of job vocabulary and speed and accuracy of reading job passages. Reading comprehension, as measured by a cloze test, increased by 25% for the training passages and the increase in comprehension on the pre-training measure for successive passages suggests that comprehension was generalized to new material.

5) The production of a Job Reading Task Test (JRTT) measuring performance on Army job reading tasks using Army manuals. The test was developed in 3 alternate forms and was standardized and normed on the general Army recruit population. By requiring the student to use the information in the reading passages of the test to construct his fill-in answers, this test virtually eliminates the problem of spurious scores resulting from guessing on multiple-choice items.

6) Evaluation of the overall effectiveness of the stabilized experimental job reading program showed the following results:

a) Average job reading skills, as measured by the JRTT, increased from Reading Grade Level (RGL) 5.2 before training to RGL 7.3 for a gain of 2.1 RGL years.

b) Forty-seven percent of the students made gains of more than 2 RGL years and 77% of the students showed RGL gains in excess of 1 year.

c) The percentage of students reaching the course objective of RGL 7.0 increased from 10% before training to 54% after training.

d) Gains in general reading comprehension, as measured by the USAFI Test, were one-fourth to one-third as large as the gains in job reading skills.

e) In a study of the retention of newly-learned job reading skills, FLIT graduates showed a net gain of 1.9 RGL years on the JRTT in the period between their entry into the FLIT program and retesting seven weeks after they had completed job reading training.

The job reading training program was implemented and evaluated, as the operational Advanced Individual Training Preparatory Training program (AITPT), at all Army Training Centers. Monitoring of student performance data submitted by the operational job reading training schools produced the following results:

1) There were regional differences, of no great size, among the various AITPTs in terms of the educational level, ethnic composition and non-native-English-speaking characteristics of their student input.

2) Despite some differences in the absolute level of JRTT scores, the AITPTs showed high uniformity in their average gain of 2.3 RGL years on the JRTT to bring their end-of-course RGL to 7.6.

3) The number of students reaching the course objective of RGL 7.0 on the JRTT was 14% before training and 59% after training.

Research on the feasibility of integrating job reading training and job skills training in AIT produced the following results:

1) More than one-quarter of the students in the Motor Transport Operator, Wheeled Vehicle Mechanic, and Supplyman Courses entered AIT with general reading comprehension scores below the 6th grade level.

2) The Extended Training Day approach to integrating job reading and job skills training in AIT produced an average RGL gain of 2.2 years in job reading skill and advanced 44% of the students to the 7th grade reading level objective.

3) The Integrated Training Day approach to integrating job reading and job skills training in AIT produced an average RGL gain of 1.7 years in job reading skills and advanced 37% of the students to the 7th grade reading level objective.

4) The major problem encountered in both the Extended and Integrated Training Day studies was the limitation in the number of training days on which reading training could be conducted. Regardless of mastery, students were accelerated through the modules of the job reading training program, the duration of which was set by the length of the AIT course.

5) A study was conducted of the feasibility of delivering voluntary job reading training by means of an existing central post learning center. To date, during the eleven week start-up period for which this training has been offered, student attendance has been minimal.

Conclusions

On the basis of these results it was concluded that:

1. There is a substantial proportion of current Army input whose literacy skills are inadequate to meet the reading requirements of MOS training and job performance. For these personnel, training to improve job reading skills is required to allow them to qualify for and perform the entry level duties of an Army job.

2. The FLIT job reading training program is generally effective in producing a level of job reading skills sufficient to meet the reading demands of AIT and initial duty assignment. The effectiveness of this self-paced, mastery-based training program could be enhanced by establishing, as its individualized objective, the reading level requirement established for each student's job field.

3. The FLIT job reading program is fully implementable in Army Training Center settings and retains its effectiveness when it is embedded in a wide variety of local training contexts.

4. The FLIT job reading training program is readily transportable to programs providing integrated job reading training and job skills training in AIT settings. Such integrated programs provide an important alternative to the AITPT program of 6 weeks of full time reading training interjected in the standard training sequence between BCT and AIT.

PREFACE

This report summarizes work performed by Work Unit FLIT of the Human Resources Research Organization for the U.S. Army continental Army Command and, subsequently, the U.S. Army Training and Doctrine Command, under contract with and under the technical supervision of the U.S. Army Research Institute for the Behavioral and Social Sciences. This report presents information on the development, implementation, and evaluation of an experimental program of job reading training and on alternative delivery systems for this training. Related research is discussed in reports from HumRRO Work Units REALISTIC and READNEED.

The research was conducted at the HumRRO Western Division, Presidio of Monterey, California, where Dr. Howard H. McFann is Director.

Dr. A. J. Drucker was the Contract Officer's Technical Representative for this project and Dr. Otto I. Kahn was the Alternate Contract Officer's Technical Representative.

Military support was provided by the U.S. Army Training Center Human Research Unit, Presidio of Monterey, COL Ullrich Hermann, Chief. Project Officer was MAJ Aloysius Greenhouse, FLIT Project Officer at the Fort Ord DPT.

The research was conducted by Dr. Thomas G. Sticht as Principal Investigator, Dr. John S. Caylor, Dr. Richard P. Kern, Mr. Robert Hauke, Mr. Lynn C. Fox, and Mr. Kent Huff, with assistance by Ms. Wendy McGuire, Ms. Diana Welty Zapf, Mrs. Nina McGiveran, and Mr. Lawrence J. Beck. This report was prepared jointly by this staff.

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CHAPTER 1

INTRODUCTION

Rapid technological advances place a premium upon fundamental information processing skills, especially language and literacy skills. If a technologically based organization, such as the Modern Army, is to survive and function effectively and efficiently, it must have personnel whose literacy skills match the literacy requirements of the jobs within the organization.

Though the Army has continuously faced the need for capable, literate personnel, the educational system of the United States has not produced a large enough supply of literate adults to meet the manpower demands of both civilian and military employers. For this reason, it has been necessary for the Army, and the other Armed Services, to provide literacy training programs for many personnel.

Army Literacy Training: The '40s and '50s

The major precursor to present literacy training programs was the large scale training of functional illiterates in the Armed Forces during World War II. Figures reported by Goldberg[1] in his extensive review of Army training of illiterates in World War II indicate that, subsequent to June 1, 1943, some 302,838 men received literacy training. Of these, 254,272 were graduated because of successful attainment of required standards, which were designated as literacy skills as possessed by the completion of the fourth grade of school (i.e., grade level 5.0).

Such successful performance during World War II is frequently cited by reading experts[2] as an example of an approach for upgrading the literacy skills of adults to render them better, more competent, job performers. However, the evaluation of the effects of literacy training on job proficiency was almost non-existent, and such evaluation as was attempted was fraught with methodological difficulties. One attempt at an assessment of the effects of

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[1] S. Goldberg. *Army Training of Illiterates in World War II*, Columbia University, New York, 1951.

[2] Helen H. Robinson, "Training Illiterates in the Army," in *Basic Education for the Disadvantaged Adult: Theory and Practice*, F. W. Lanning and W. A. Many (eds.), Houghton-Mifflin, Boston, 1966.

literacy training upon job proficiency was made by Hagen and Thorndike.[3] In this research the records of 1,026 illiterates who entered the Navy during 1944 and who received literacy training at Camp Perry were compared with those of 1,021 literate men who entered at the same time and from the same parts of the country. The records of 999 marginal aptitude men were also studied to give a comparison with men comparable to illiterates but who did not receive literacy training.

Unfortunately, several methodological limitations restrict the conclusions of this study. For one thing, the literate group contained no enlistees. For another, the marginal group was superior to the illiterate group in literacy, general intellectual ability, and education level. The marginal group also differed in age and background, and in many cases records were incomplete and inconsistent. Thus, the illiterates who received literacy training were not initially comparable to the marginal aptitude men. But at any rate, relative to the literate and marginal aptitude groups, the illiterates who received literacy training were subsequently characterized by fewer promotions, lower proficiency ratings, more disciplinary actions, more lost time due to misconduct, fewer honorable discharges, and more VD than the controls. Thus, in this case, literacy training did not result in producing men comparable in job proficiency to marginal aptitude men who did not receive such training, nor to normal aptitude men.

During the 1950s, the Armed Services had additional opportunities to conduct literacy training, and to evaluate the effectiveness of this training on job proficiency. One significant study is that reported by Goffard.[4] In this study, men who scored below the 5.0 grade level of reading on a standardized reading achievement test were given special literacy training. They were graduated from training upon achievement of reading at the 4.9 level. When compared with comparable control groups, i.e., marginally literate men who did not receive special training, the experimental group did slightly better on performance and knowledge tests given at the end of basic training. Differences were not considered of any practical significance, however, being less than five percent in any case.

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[3] Elizabeth P. Hagen and R. L. Thorndike. *A Study of W. W. II Navy Careers of Illiterates Sent Through Literacy Training*, Research Report, Classification and Survey Research Branch, Bureau of Naval Personnel, Washington, 1953.

[4] S. James Goffard. *An Experimental Evaluation of a Basic Education Program in the Army*, HumRRO Technical Report 28, April 1956.

Additional studies to evaluate the effects of literacy training on job proficiency in the Armed Services are reviewed in the book "Marginal Man and Military Service".[5] The upshot of these studies is that, at the end of the '50s, little benefit to job proficiency has been demonstrated to result from the provision of training in basic literacy skills.

Army Literacy Training in the '60s

In 1966, during Project 100,000, existing mental aptitude standards for acceptance into the Services were reduced. This downward revision of standards created a substantial influx of marginally literate men into the Services, particularly the Army, once again creating a demand for remedial literacy training to render these men sufficiently literate to qualify for job training.

In response to this demand, literacy training programs were initiated in the Army, Navy, and Air Force. These programs were established independently of one another, with each Service establishing its own policies, procedures, and practices, with the exception that all Services used the United States Armed Forces Institute (USAFI) Achievement Tests (Achievement Tests III, Abbreviated Edition, Form A; or USAFI Intermediate Achievement Tests, Form D) to identify men in need of remedial training in literacy skills.

In the Army, a man qualified for up to six weeks of Army Preparatory Training -- APT (literacy training) if he scored below a school grade equivalency level of 5.0. The goal of the APT School, then, was to upgrade the man's literacy level until it was at or above the grade 5.0 level, a goal comparable to that established during World War II.

To determine the effects of the Army Preparatory Training program on job proficiency, Fisher studied records of some 9,000 men who had completed APT.[6] Those whose terminal reading score reached the

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[5] Department of the Army. *Marginal Man and Military Service, A Review*, Washington, December 1965.

[6] A. H. Fisher, Jr. *Army "New Standards" Personnel: Effects of Remedial Literacy Training on Performance in Military Service*, (HumRRO Technical Report 71-7), Technical Report MD-TR-71-13, Manpower Development Program Office, Air Force Human Resources Laboratory, Air Force Systems Command, 1971.

fifth grade level were labeled "successful". Analyses were done to determine whether successful or unsuccessful literacy trainees differed significantly in a variety of indices of military performance (achievement of higher pay grades; eligibility for reenlistment; assignment to more technical jobs; military behavior ratings; military performance ratings; etc.). Results showed that, while successful trainees were slightly more likely to achieve a higher pay grade and to be judged eligible for reenlistment, successful and non-successful trainees did not differ on most indices of military status and performance.

A Systematic R&D Program for Literacy Training

Though expediency dictated the establishment of the operational APT literacy training program in the late '60s, to contend with the less literate personnel being inducted under Project 100,000, manpower planners in the Department of Defense, Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs) and the Deputy Chief of Staff for Personnel, Department of the Army, were aware of the limitations of previous literacy programs for impacting upon job proficiency. Consequently, these agencies entered into dialogue with the Human Resources Research Organization (HumRRO) concerning the need for literacy research and training requirements in the Armed Services. The result of these discussions has been a series of research projects by HumRRO, the first initiated in 1968, to (1) study and develop methodologies for determining functional literacy levels of military jobs within the Army; (2) determine functional literacy levels for four major military occupational specialties (MOS) into which large numbers of marginally literate men are apt to be assigned; and (3) develop a prototype literacy training program designed to provide a level of functional literacy appropriate to present minimal MOS reading requirements.

The first two of these objectives were accomplished in HumRRO Work Units REALISTIC (1968-1970) and READNEED (1970-1971). This research is described in detail in Sticht.[7] Very briefly, the results of these projects indicated that: (a) as determined by a variety of methods, the reading demands of Army jobs, even the less complex ones, far exceed the reading abilities of many personnel;

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[7] T. G. Sticht (ed.). *Reading for Working: A Functional Literacy Anthology*, HumRRO, 1975.

(b) there is a positive relation between reading ability and job proficiency; (c) the goal of Army Preparatory Training, to produce grade 5.0 reading ability; is far short of the reading demands of jobs; and (d) even if somewhat higher enlistment standards than those in effect in Project 100,000 were established, there would be a need for remedial literacy training -- whether the objective is fifth grade ability or the more realistic minimal level of grade 7.0 established in the REALISTIC and READNEED efforts.

HumRRO Work Unit FLIT (Functional LITeracy)

In view of the foregoing findings, HumRRO, working under contract with the Department of Army, initiated research and development activities to: (1) produce an experimental Army literacy training program designed to provide a level of functional literacy appropriate to minimal MOS reading requirements; (2) to implement and evaluate the implementation of an operational version of the experimental program at all Army training centers providing remedial reading training (Army Preparatory Training); and (3) to study the feasibility of delivering remedial reading training in formats which are not as disruptive of the training "pipeline" as the typical add-on programs which keep men out of the regular training sequence for various periods of time -- six weeks in the case of the APT program.

This program of research and development was conducted as HumRRO Work Unit FLIT (an acronym for functional literacy) and followed the schedule of major units of activities presented in Figure 1.

The Unit 1 activities included the continuous planning activities for the conduct of the R&D effort, a continuous review of extant reading materials produced by the commercial press, and continuous review of the basic scientific literature on reading and related topics. These activities were conducted so that promising innovations for reading training might be detected and evaluated for their inclusion in the FLIT program, and to provide as firm a scientific basis for the program as the state of knowledge would permit.

The Unit 2 activities constituted the major activities of the effort, and resulted in the development and Army wide implementation of that part of the experimental program called Strand I: Applied Job Reading Task Performance Training. These activities and their resulting products are discussed in Chapters 2, 4, and 5.

The Unit 3 activities for the research, development, and implementation of Strand II: Basic Job Reading Skills Training, were

initiated at a very low level of effort in fiscal year 1973; they were disrupted in fiscal year 1974, during a period in which the Army reexamined its literacy problems and programs, and were initiated again at a higher level of effort in fiscal year 1975. For these reasons, and because these activities are concerned with the teaching of more basic level skills than those of Strand I, they have provided the greatest challenge to the FLIT staff. Chapters 3, 4, and 5 describe the nature of the Unit 3 activities and the Strand II program developed and implemented thereby.

Chapter 6 describes the Unit 4 activities to evaluate the feasibility of providing job-related reading training in non-traditional ways. In traditional reading training, such as provided in World War II, and during the Korean and Viet Nam conflicts, personnel are sent to special training programs for various periods of times. There they are given general literacy training until they achieve a goal such as 4th or 5th grade reading ability, or until the training period is over, at which time they are sent back into the Army's regular training sequence.

Chapter 6 reports research studies to (1) integrate job reading training and job skills training by providing reading training as an add-on to the daily schedule, with personnel attending the literacy school after duty hours; (2) integrate job reading training and job skills training by providing reading training during the regularly scheduled training day; and (3) provide reading training at a Learning Center where personnel may attend after or during duty hours, depending on the arrangements they make with their commanding officers.

Chapter 7 presents a summary, conclusions, and recommendations for future literacy research and development.

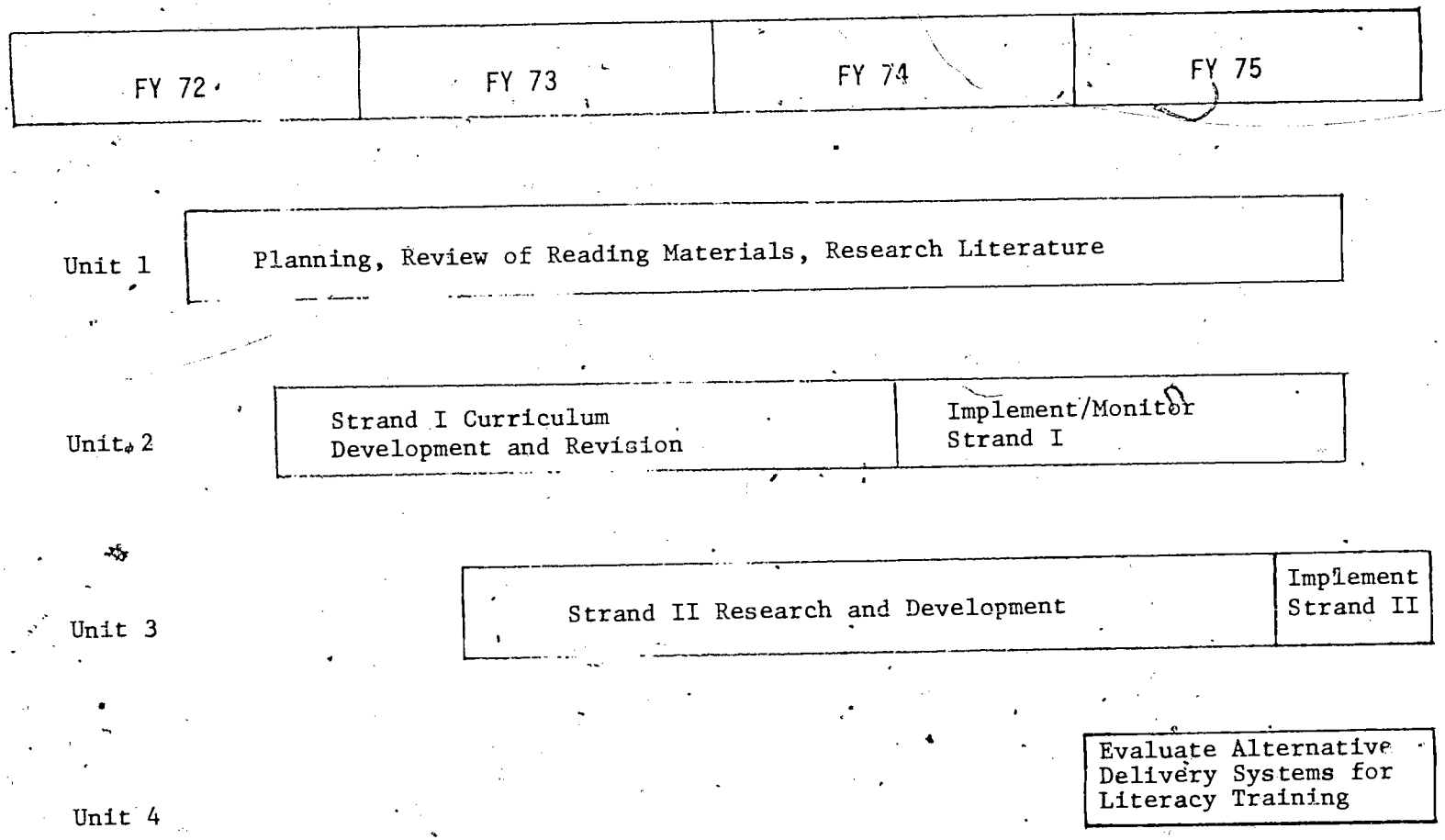

Figure 1. Work Unit FLIT: Research and Developmental Schedule.

CHAPTER 2

DEVELOPMENT OF THE FLIT PROGRAM
STRAND I: APPLIED JOB READING PERFORMANCE TASK TRAINING

As mentioned earlier, previous research[8] had indicated that the 5th grade level of reading aimed at by the Army's literacy program of the late '60s was not adequate. By a number of different approaches, it was concluded that, though different Army jobs have different demands for literacy skills, in no case was it likely that reading skills of less than a grade 7.0 level would suffice to render the person an average job performer (all other factors than reading skill being considered equal).

For this reason, it was suggested that Army Preparatory Training (APT remedial literacy training) should be targeted to produce 7th grade, not 5th grade reading skills.

This suggestion was later agreed to by the Army when it entered into contract with HumRRO to develop a new literacy training program to replace the various programs being conducted as APT. There was, however, the important provision that the HumRRO program could take no longer than the 6 weeks being allotted for APT to produce 5th grade level reading skills -- nor could costs exceed those of APT.

Within these constraints then, HumRRO agreed to conduct research and development to produce a literacy training program which would not attempt to teach personnel to read at the 7th grade level in general reading, but which would, rather, teach students to perform job reading tasks with the skill of a person having 7th grade level general reading skills. This important distinction was drawn because it was the conclusion of the FLIT staff (following visits to all Army Preparatory Training programs; examination of such research literature as was available; discussions with reading consultants; and an examination of the job reading tasks students would face following the reading program) that, while it was not feasible to try to produce as much as 2 to 3 years of improvement in general literacy skills in 6 weeks, it would be feasible to provide marginally literate personnel with drill and practice

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[8] Sticht, *ibid.*

in the types of reading tasks they would encounter in Advanced Individual Training (AIT) and later on the job. Furthermore, it would be feasible to develop Job Reading Task Tests (JRTT); to scale these tests in terms of general reading grade level scores; to determine how well students reading at the general reading level of 7.0 performed on the JRTT, and to establish that level of performance on the JRTT as the criterion level of performance for the HumRRO reading program -- which would then be oriented to teaching the performance of job reading tasks.

With these considerations in mind, the objective of the proposed HumRRO Work Unit FLIT was to develop an experimental Army literacy training program designed to provide a level of functional literacy appropriate to present minimal MOS reading requirements.

In this case, minimal MOS reading requirements was interpreted as ability to read and comprehend job reading materials with the skill and facility of a person having seventh grade general reading ability. It should be noted that this objective does not say that the person will have 7th grade general reading ability. Rather, it says that the person will perform on job reading task tests like a person does who has general 7th grade level ability.

Job Related versus General Reading Training

Our reason for restricting the objective of the FLIT program as given above was that it did not seem feasible to attempt to take a young adult reading, say, at the 4th grade level, and provide, in 6 weeks, the equivalent of 3 or 4 years of schooling. This seemed even further unlikely since students were selected for Army literacy training not only on the basis of low reading scores, but also on the basis of their Armed Forces Qualification Test (AFQT) score. All such students were at that time taken from Mental Category IV, with aptitude scores in the 10-30th percentile range. Hence the literacy schools are contending with students who are not only poor readers -- they are also of lower aptitude as measured by other tests (the AFQT; listening tests; language tests and the like). Such students are generally much lower than their age peers in oral language skills as well as written language skills. Hence simple reading training aimed at "cracking the code" would not suffice to unlock a reservoir of pent-up linguistic and conceptualizing capability waiting to be brought to bear on the newly accessible printed page.

Examination of Army literacy training data disclosed that most of the students entered the APT programs reading with 4th grade

level reading skills. Hence they already possessed most decoding ("sounding-out") capabilities -- though admittedly not as finely honed as those of the typical high school senior! The most prominent problems of the Army's literacy students appeared to be those concerned with comprehending what was read, not the decoding of print into its corresponding spoken form. Furthermore, much of the problem appeared to center around the students' lack of practice is performing certain comprehension tasks, and lack of inclination to "try hard".

Because the Army's remedial reading students seemed to possess a fair amount of reading decoding skills, and because a major problem appeared to be one of lack of practice in applying such skills as they did have to the solving of difficult reading tasks, the ELIT staff decided that the most directly useful type of reading training that could be given in the brief time allotted would be that which provided extensive practice in the use of the job reading materials the soldiers would encounter in their job training and performance situations.

This decision to focus upon job reading materials carried with it a considerable divergence from traditional reading training. Typically, the acquisition of reading skills has been considered as a developmental process in which the beginning reader focuses initially on decoding words and short sentences. The words are selected by various criteria: high frequency in various materials such as textbooks, magazines, basal reading series, or a variety of other sources; patterns of corresponding sounds in spoken form and others. The simple words and simple sentences are progressively increased in numbers and complexity in a series of readers which, for children, may extend from kindergarten (pre-primer) through the 6th, 7th, or 8th grades. Beyond the 6th grade level reading training per se is not usually provided in the regular classroom; rather, students with difficulties are treated in special reading classes. In adult basic education, reading training above the 6-8th grade levels is generally conducted under the heading of General Educational Development (GED) and typically has as its goal the successful passing of the high school equivalency test. This "reading" instruction is clearly different from the earlier instruction in that interest must focus on the content of what is being read to understand certain content areas (social studies, language, citizenship, arithmetic) and on the emphasis of not just comprehension skills, but skills for studying and learning of material so that higher academic training could be pursued if desired.

In a completely developmental reading program then, materials exist which cover a wide range of complexity from simple 1st grade

level readers which emphasize decoding skills, through the 6th grade readers, and on to the standard high school textbooks. The ordinary child then has 12 years to work his or her way through this continuum.

As it turns out, the majority of reading materials found in Army job and training programs are of 11th or 12th grade difficulty or above. On the other hand, the Army's literacy school (APT) students read below the 5th grade level, and, unlike the students in the public schools, they did not have 7 years to acquire 12th grade reading skills -- they had only 6 weeks (and some left in 3 weeks if they reached the 5th grade level of reading).

Our problem then in deciding to provide students with direct training in performing job reading tasks was that we had no developmental reading series which would lead gradually to the levels of skill needed to perform the job reading tasks. Furthermore, even if we had had such materials, the 6 week time limit would not permit the students to work their way through an extensive developmental series (theoretically, such a series would contain the thousands of pages, and numerous exercises students encounter in textbooks and class assignments in grades K through 12).

In view of these problems, we decided that, since the large majority of students who enter the Army's literacy schools have at least some reading skills -- most falling between 4-6th grade level in the program as we subsequently designed it -- we would (1) provide opportunity to use whatever minimal reading skills students possessed to practice and drill in performing important job reading tasks (see below) found in their career fields; and (2) provide direct instruction in reading and comprehending specially prepared materials written at the 7-9th grade levels of difficulty which would introduce the major concepts students would encounter in their career fields at the entry level.

Distinctions Between Strands I and II

Pursuit of the first goal led to the development of what we have called Strand I: Applied Job Reading Task Performance Training. In curriculum development a "strand" of instruction is an articulated sequence of learning activities having a set of common terminal objectives. In Strand I, then, we produced a set of activities, called modules, having the general objective of improving skill in performing job reading tasks. Essentially, this Strand calls for students to "sink or swim" with whatever literacy skills they have. Though the Strand I modules have been designed to have

easier tasks first, the materials have not been simplified nor specially altered in any way -- they are the manuals, forms, tables of contents, etc., found in the students' career areas. Because Strand I does provide much practice and drill in applying reading skills to the performance of job reading tasks, we have called the Strand I program Applied Job Reading Task Performance Training.

Pursuit of the second goal stated above, i.e., to provide direct instruction in reading and comprehending specially prepared job-related reading materials, led to the development of what we have called Strand II: Basic Job Reading Skills Training. The major differences between the Strand I and Strand II programs are (1) whereas Strand I provides extensive practice and drill in performing various reading tasks found in job training programs and on the job, the Strand II program contains specially prepared material written at a lower level of difficulty than typical job reading materials, and requires students to complete exercises to improve basic skills of word recognition and sentence and paragraph comprehension -- tasks not explicitly performed in jobs or job training programs; and (2) the Strand I material emphasizes the performance of actual job reading tasks, such as looking up information in a manual; it does not directly attempt to teach basic job vocabulary and concepts, rather, such learning is incidental to the performance of the job reading tasks. In Strand II however, there is direct instruction to increase job knowledge.

The distinctions between these two Strands of the FLIT job-related reading curriculum will be better understood after reading the descriptions of each Strand. The development and description of Strand I will occupy the remainder of this chapter. Chapter 3 describes the development and nature of the Strand II program.

Development and Description of FLIT Strand I

The development of the FLIT Strand I program involved three major categories of activities: (1) becoming familiar with adult literacy programs, methods, and materials by means of site visits, materials review, review of professional literature in the field of reading, and formal and informal consulting with adult literacy experts; (2) the identification of job reading tasks to be included within the program, the derivation of instructional activities, and the development of formative and summative assessment procedures; and (3) design, tryout, revision, and evaluation of instructional activities and materials in an operational, experimental literacy training school.

Familiarization with adult literacy programs, methods, and materials: Because the FLIT R&D program was conducted to revise

the Army's then ongoing APT schools, site visits were made to APTs at Forts-Dix, Jackson, Polk, Lewis, and Ord. These visits were supplemented by visits to the Air Force literacy school at Lackland AFB and the Gary Job Corps Center at San Marcos, Texas, in order to identify exemplary practices for possible inclusion in the FLIT program. These visits revealed that the various Army Preparatory Programs varied widely in their offerings; some were using materials produced by the United States Armed Forces Institute (USAFI), one was using an expensive multimedia program which approximated the K-8 developmental program found in the basal reading series. In none of the programs was there evidence of any serious attempts to teach Army-related reading, though some of the programs introduced small numbers of Army related words (judged by teachers) for sight recognition training.

The Air Force and Job Corps were both using a Job Corps program which consisted of graded general reading materials brought together into modules, with a management system for placement and quality control (pre- and post-module tests) provided as an "overlay" for the graded reading materials. Students worked their way through the program at their own rate, working as individuals. In the Air Force program, some students with very low reading skills were given some group and individual training in phonics and other word analysis skills, though not much promise was held for those students who entered the program reading below the 4th grade level.

Development of Reading Tasks, Instructional Activities, and Assessment Procedures

Identification of Job Reading Tasks: The necessary first step toward the development of a job reading program was the identification of the job reading tasks to be taught in the program. Much of the initial development in this area was conducted in previous research projects[9] which produced a scheme for classifying the various types of job reading tasks.

In this research, a job reading task was defined as a task in which a person obtains (or attempts to obtain) information about a job by reading from a manual, book, form, or other job-related printed material. Job-related printed material is, by definition, material which presents information about the various tasks comprising a job. Hence a job reading task involves a piece of reading matter which presents some job information and a reader who attempts to use the reading matter to obtain the job information.

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[9] Sticht, *ibid.*, Ch. 3.

The types of job reading materials used and the job reading tasks performed on the materials were identified by means of a structured on-the-job interview. Each man was asked to cite five instances in which he had used printed materials in his work in the last month or so. He was also asked to locate the printed material, show the interviewer the exact page and section he had used, and tell what kind of information he had been seeking.

With this information, it was possible to subsequently obtain copies of the printed materials cited as being used on the job by the men in the three MOSs of Supply Specialist, 76Y; Repairman, 63C; Cook, 94B. With these materials in hand, a classification scheme was devised by which each page or section of reading materials cited in each MOS could be classified in terms of the type of information it displayed. This type of information is referred to as the content type of printed material. The classification system used for categorizing the various materials is given in Table 1.

In addition to identifying job reading materials, the interview provided data about the nature of the information a man had been seeking when he used the material -- in other words, the kinds of questions men working on the job addressed to the job reading materials.

From the classification scheme for determining the general content-type categories of job reading tasks, we operationalized these categories into six specific job reading tasks. These tasks then became the base from which the Strand I materials were developed.

These tasks are:

1) Using a Table of Contents to gain information about the general content of the manual and the location of various content areas in the manual.

2) Using an Index to gain information about specific content and its location in the manual.

3) Using Tables and Graphs to gain specific information displayed in tabular or graphic form.

4) Using the Body of the Manual to gain descriptive or theoretical information from the prose sections of the manual.

5) Following Procedural Directions to gain information from a

Table 1. Definition of Content-Type Categories

1. Tables of Content and Indexes:
   Content designating the location of information within a publication.

2. Standards and Specifications:
   Content setting forth specific rules or tolerances to which task procedures or the completed product must conform.

3. Identification and Physical Description:
   Content attempting to symbolically represent an object via an identifying code (stock number, nomenclature) and/or by itemizing its distinguishing physical attributes.

4. Procedural Directions:
   Content which presents a step-by-step description of how to carry out a specific job activity. Essential elements are equipment/materials/ingredients to be used, and how they are to be used, with presentation organized in a sequential step-wise fashion.

5. Procedural Check Points:
   Content which presents a key word or highly summarized version of what should be done in carrying out a task rather than how it should be done. This content differs from the content classified under Procedural Directions in that it assumes the user knows how to carry out the steps once reminded that the step exists and/or reminded of the decision factors which determine whether the step is required.

6. Functional Description:
   Content which presents an operating (cause and effect, dependency relationships) description of some existing physical system or subsystem, or an existing administrative system or subsystem.

step-by-step description of how to carry out a specific job related activity.

6) Using detailed, specific instructions in a manual to gain information about the type of information required in an MOS-Specific Form and the procedure for completing the form.

Identification of MOSs for Program Development: Before the development of job related reading material could begin, it was first necessary to identify the MOSs for which the material was to be developed. Selection of these MOSs was conducted on the basis of:

1) MOSs which had a concentration of Category IV personnel and would thus be most likely to have the greatest number of personnel with low reading abilities.

2) The AIT/CST courses[10] in operation at Fort Ord into which the FLIT graduates would be admitted after completion of the school.

Through this process, five MOS job areas (clusters) were selected (Cooks, Mechanic, Communication, Clerk/Supply, Combat). The sixth cluster (Medic) was added after the school began operation because of Medic MOS input to the school. Individuals entering the school were grouped into the MOS training cluster which was most appropriate and relevant to their MOS.

Initially, all eligible personnel from any MOS were admitted to the school with the exception of personnel in the following categories: (1) training date commitment, (b) MED-REP Program, (c) Buddy Team, (d) personnel classified as 1-A-0, (e) Unit of Choice assignment, and (f) TRAPP assignment.

The admission restriction for personnel in these categories has been removed with the publication of TRADOC Cir. 621-1, 10 January 1975. However, this publication also restricted the number and type of MOSs eligible for admission to the FLIT job reading program. This restriction limited the number of MOSs to a total of 18, which are grouped into the following MOS clusters in the program as shown in Table 2. This restriction has served to eliminate a substantial portion of men who would have been otherwise eligible for FLIT Job Reading Training.

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[10] AIT/CST is Advanced Individual Training/Combat Support Training. This is the designation for Army job training in non-combat jobs. This training occurs after Basic Combat Training (BCT).

Table 2. MOSs Eligible for Admission to FLIT Job Reading Training

Combat Cluster

11B Light Weapons Infantryman
11C Infantry Indirect Fire Crewman
11D Armor Reconnaissance Specialist
11E Armor Crewman
11H Infantry Direct Fire Crewman
12B Combat Engineer
13B Field Artillery Crewman
95B Military Policeman
95C Correctional Specialist

Clerk/Supply Cluster

71B Clerk-Typist
76Y Armorer/Unit Supply Specialist

Medic Cluster

91B Medical Specialist

Communications Cluster

36K Tactical Wire Operations Specialist
72B Communications Center Specialist
72C Telephone Switchboard Operator

Mechanic Cluster

63B Wheel Vehicle Mechanic
64C Motor Transport Operator

Cook Cluster

94B Food Service Specialist

Identification of Job Reading Materials: At this stage in the developmental process, the specific job reading tasks had been identified and the job clusters had been selected. The next step was to identify the job reading materials (manuals, forms) to be used for program development in each of the six MOS clusters.

The data from the interviews conducted in the previous research provided an initial list of job reading materials for three MOSs (Supply Specialist, Vehicle Repairman, Cook). This.

list needed to be expanded and other lists needed to he formed to accomodate the 18 MOSs in the program.

To accomplish this task, visits were made to all AIT/CST courses at Fort Ord to collect all available job reading materials used in training. MOS Study Guides, Army Subject Schedules, and other training materials were also identified through visits to the MOS Library.

A list was then prepared for each MOS cluster describing all sources of job reading information collected. This list was used in an interview conducted with AIT/CST instructors, course chiefs, and content experts to validate and refine the final selection of job reading materials. The interviews asked the instructors to rate the job reading materials on the list by:

(a) most important in school -- least important in the school

(b) most important on the job -- least important on the job

(c) frequency of use in the school and on the job (used daily, several times a week, once a week, less than once a week)

The interview data produced the list of manuals and forms shown in Table 3. These sources then formed the core job reading materials utilized to teach the six previously described job reading tasks (Table of Contents, Index, Tables & Graphs, Body of the Manual, Procedural Directions, MOS Specific Forms).

Selection of Instructional Principles: The final step to be performed before the student instructional materials were developed was to select the instructional principles to be used in the program. These principles defined the parameters within which the job reading instruction would take place. Some of these principles were determined by the initial concept of a "job related" program, others were determined by the developmental constraints placed on the program, and some were selected based on our review of current military and civilian adult literacy programs. All of the instructional principles, however, had been used with success in a wide variety of educational and training situations.

The six instructional principles selected are:

1. Individualized instruction: This permits students to progress through the program at their own rate using materials oriented toward their jobs.

Table 3. Manuals and Forms Selected for Job Reading Training

Manuals

Clerical Cluster

AR 210-130
AR 380-5
AR 680-1
AR 700-84
AR 710-1
AR 710-2
AR 725-50
AR 735-5
AR 735-11
CTA 50-901
DA Pam 310-1
DA Pam 310-7
TM 9-1005-213-25
TM 9-1005-249-34
TM 10-255
TM 38-750
SB 700-50

Cook Cluster

AR 30-1
TM 10-281
TM 10-405
TM 10-410
TM 10-411
TM 10-412
TM 10-415
TM 10-419

Combat Cluster

FM 5-20
FM 5-25
FM 7-11
FM 21-6
FM 21-26
FM 23-5
FM 23-9
FM 23-11
FM 23-12
FM 23-16
FM 23-23
FM 23-71
FM 23-90
TM 9-1340-214-12
TM 9-1345-200

Mechanic Cluster

TM 9-243
TM 9-2320-209-10
TM 9-2320-209-20
TM 9-2320-218-10
TM 9-2320-218-20
TM 9-4910-402-12
TM 9-2320-244-10
TM 9-2320-244-20
TM 9-8000
TM 9-8024
TM 21-305

Communication Cluster

FM 24-18
FM 24-20
TM 11-296
TM 11-381
TM 11-661
TM 11-681
TM 11-2134
TM 11-5805-201-12
TM 11-5805-262-12
TM 11-5820-398-12
TM 11-5820-401-10
TM 11-5820-520-12

Medic Cluster

FM 8-35
FM 21-10
FM 21-11
TM 8-220
TM 8-225
TM 8-230
TM 8-231
TM 8-260
TM 8-295

Forms

DA Form 1, Morning Report
DD Form 200, Report of Survey
DA Form 2400, Equipment Utilization Record
DA Form 2402, Exchange Tag
DA Form 2404, Equipment Inspection and Maintenance Worksheet
DA Form 2407, Maintenance Request
DA Form 2408-1, Equipment Daily or Monthly Log
DA Form 2408-7, Equipment Transfer Report
DA Form 2408-8, Equipment Acceptance and Registration Record
DA Form 2765-1, Request for Issue or Turn-In
DA Form 3034, Cook's Worksheet
DA Form 3327, Personal Clothing Record - Enlisted Men

2. Performance-oriented instruction: This training permits students to perform the kinds of reading tasks they will encounter in job training and out on the job; thus, there is a direct transfer of skills learned in the literacy school to the job training school and the job.

3. Functional instruction: Through the use of actual job reading material, the student sees the purpose for the reading training in concrete terms of job proficiency, not as general educational development, at which he has failed many times in the past.

4. Student-assisted instruction: Students are used in the more routine records management activities in the classroom. Periodically a student may tutor another student on a skill which he, himself, has previously learned. These activities cut down the teacher's administrative paper-correcting load, and help the student "stamp-in" more deeply some of the skills he has just learned.

5. Programmed instruction: The program is composed of six separate modules of linearly sequenced job reading skills (Table of Contents, Index, Tables & Graphs, Body of the Manual, Procedural Directions, MOS Specific Forms). Each module has a branching loop for remedial instruction.

6. Quality control monitoring of performance: Each module has its own set of proficiency tests. These are used to assure that the student has developed a mastery of the reading task before proceeding to the next module. Each proficiency test (or pro-test as they are generally referred to) is made up of four sections, each with its own set of five questions. To satisfactorily master the task, the dual criteria of 90% or more correct, in 20 minutes or less, must be met. (The proficiency tests are described in the section -- Assessment Instruments -- of this chapter.)

Summary: At this point in the development of the FLIT Job Reading Program the following steps had been accomplished.

1. The six job reading tasks to be taught had been specified.
2. The 6 MOS job clusters had been defined.
3. The job reading materials for each of the 6 MOS clusters had been selected.
4. The instructional principles for the job reading program had been selected.

The next section of this chapter will describe the design and development of the instructional materials and the assessment and evaluation materials used in the FLIT Job Reading Program.

Instructional Materials

Developmental Procedures: Worksheets for all six modules were developed following two major guidelines:

1. Ask questions which will guide the student's attention first to the structure of the job reading materials, then to the content.

2. Arrange the exercises on the worksheet so that they go from simple to complex.

To facilitate the writing of the worksheet materials, prototype worksheets, using the above guidelines, were initially developed for each module; with each worksheet, except those in the forms module, containing 10 items. Sets of worksheets from the same manual within a module followed the same guidelines as the individual worksheets, i.e., structure to content, simple to complex. All the worksheets were designed so that the student is required to complete the worksheet by filling in the missing information.

Table of Contents (TOC) Worksheets. For the TOC modules, a set of worksheets was developed for each manual used in the module. The first worksheet was designed to teach the student that a table of contents has certain structural features. To do this, the worksheet initially asks the following series of questions:

1. How many chapters are in this manual? _____

2. How many sections are there in Chapter 2? _____

3. How many paragraphs are there in Section II of Chapter 4? _____

These three questions, starting with the largest unit in the manual and then stepping down to the smallest, force the student to construct some type of structure for the manual in order to answer the questions. This structure is then reinforced by additional questions which cause the student to repeat the above activities:

4. What is the title of Chapter 8? _____

5. What is the title of Chapter 7, Section I? _____

6. What is the title of Chapter 4, Section II, Paragraph 1? ____

7. What is the title of Chapter 9, Section VIII, Paragraph 5? ____

If the manual has an appendix or an index, the last few questions on the worksheet focus the student's attention to these sections by asking:

8. How many appendixes are there in this manual? _____

9. What is the title of Appendix C? _____

10. On what page does the Index begin? _____

Notice that the above questions, in asking for information about the largest unit, were also asking the simplest question about the unit; and as the questions stepped down to the smaller units, the questions became more complex.

By having the student complete the above ten questions, the worksheet directed his attention to the different parts of the manual; and thus helped him to realize that the manual is comprised of larger units under which other information is subsumed.

Worksheet #2 requires the student to deal with the content of the same manual by locating specific information within the TOC. Figure 2 below illustrates this prototype worksheet for the Medic TOC Module.

The student is required to actually look up each item and to write down the paragraph and page numbers to which he would turn in the manual for that specific information. The worksheet questions are also designed so that the initial items are easier to find (simple), and get progressively more difficult as the student moves down the sheet. Thus, by completing this set of worksheets, the student is taught to attend to the structure and content of a table of contents. At least two worksheets were written for each manual used in the Table of Contents Module.

Index (I) Module. On the prototype Index worksheet, which is similar in design and format to TOC Worksheet #2, (Figure 2), the student must find the paragraph and page number for ten different items or topics. The worksheet begins with simple items stated verbatim from the index:

Adjustments: Belt, fan (simple, verbatim).

NAME _____ WORKSHEET #2

TABLE OF CONTENTS EXERCISE

TM 8-230 (NOV 70)
ARMY MEDICAL DEPARTMENT HANDBOOK OF BASIC NURSING

PROVIDE THE PARAGRAPH AND PAGE NUMBERS THAT CONTAIN INFORMATION ON THE FOLLOWING ITEMS:

	ITEM	PARAGRAPH	PAGE
1.	ADMINISTRATION OF DRUGS	_____	____
2.	THE CIRCULATORY SYSTEM	_____	____
3.	BURNS	_____	____
	.		
	.		
	.		
	.		
	.		
9.	THE SKELETAL SYSTEM	_____	____
10.	THE NERVOUS SYSTEM	_____	____

Figure 2. Prototype of Table of Contents Worksheet #2.

As the student develops his indexing skills and his awareness of the alphabetical structure of the index, the items become more complex by the use of slight paraphrasing or word reversing:

Fan belt adjustment (complex, word reversal).

This task is further complicated by the structure of the index itself, which frequently lists an item across the primary, secondary, and tertiary levels. For example, the item "fan belt adjustment", when looked up in the index below, requires the student to work down to the third level of the index listing in order to answer the question. This is a particularly complex task while locating "accelerator pedal" is a much simpler task.

INDEX

All of these variables are combined, according to the two guidelines mentioned earlier, to develop the student's awareness of the structure and content of the index. A minimum of 2 or 3 worksheets are written for each manual used in the module so as to provide intensive reinforcement of t is activity.

Tables & Graphs (T&G) Module. The worksheets used in this module again followed the guidelines of: simple to complex, and structure to content. Typical worksheet questions are:

How much does a cup of vinegar weigh? _____

What is the FSN for a bracket assembly? _____

If the sag is 10-18 degrees, what is the number of oscillations for 10 seconds? _____

According to Table 1, what does the code AGTD mean? _____

NAME_____ WORKSHEET #1

BODY OF THE MANUAL

TM 8-230 (NOV 70)
ARMY MEDICAL DEPARTMENT HANDBOOK OF BASIC NURSING

1. WHAT IS THE TITLE OF CHAPTER 1, PARAGRAPH 1-2? _____

6. WHAT IS THE TITLE OF CHAPTER 4, PARAGRAPH 4-47, TOPIC c? _____

10. WHAT IS THE TITLE OF CHAPTER 5, PARAGRAPH 5-48, TOPIC e(1)? ____

Figure 3. Prototype of Body of the Manual Worksheet #1.

As can be seen from the above questions, there was no one prototype worksheet for the T&G module because of the variety in types of tables and graphs presented in the manuals. Therefore, worksheet questions were tailored to each table or graph so as to focus the student's attention first to the structural components of the table and then to its content. The number of worksheets written for a manual varied according to the need to represent the variety of tables and graphs used in the MOS materials.

Body of the Manual (BOM) Worksheets. Generally, four prototype worksheets were developed for this module. Worksheet #1 introduces the structure of the BOM by starting with the largest unit in the manual and then gradually stepping down question by question to the smallest section subsumed in the manual. This is illustrated in the questions shown in Figure 3.

Worksheet #2 calls for the student to identify missing words and then to transcribe them verbatim into the empty blanks. (See Figure 4 below, for sample questions.) In order to do this task, the student must first locate the appropriate section of the manual (attention to structure) and then identify the proper sentences for transcribing the desired information (attention to content).

USING PARAGRAPH 2-22 ON PAGE 2-19, COMPLETE THE FOLLOWING SENTENCE: MUSCLES HAVE THE _____ TO CONTRACT, AND _____ IS THIS _____ OF MUSCLE CONTRACTION THAT _____ BODY MOVEMENTS.

USING PARAGRAPH 5-16, TOPIC b, COMPLETE THE FOLLOWING SENTENCE: IF THE _____ IS UNABLE TO MOVE _____, HE MUST BE _____ AND REPOSITIONED AT _____ EVERY 2 _____ DAY AND NIGHT.

Figure 4. Sample Questions from Medic BOM Worksheet #2.

Worksheet #3 (see Figure 5) focuses attention on the content of the manual by requiring the student to answer specific questions from the continuous prose sections of the manual. Again, the student must locate the appropriate section of the manual before he is able to answer the questions.

NAME _____ WORKSHEET #3

BODY OF THE MANUAL

TM 8-230 (NOV 70)
ARMY MEDICAL DEPARTMENT HANDBOOK OF BASIC NURSING

1. ACCORDING TO PARAGRAPH 9-24, ON PAGE 9-16, WHO IS THE NURSING CARE PLAN DEVELOPED BY? _____

4. ACCORDING TO PARAGRAPH 6-2, TOPIC a, ON PAGE 6-1, WHAT IS A MEDICAL TREATMENT FACILITY OPERATED BY TABLE OF DISTRIBUTION AND ALLOWANCE (TDA) UNITS CALLED? _____

10. ACCORDING TO PARAGRAPH 2-34, TOPIC a, WHERE DOES THE HEART GET ITS BLOOD SUPPLY? _____

Figure 5. Prototype of BOM Worksheet #3.

Worksheet #4 (see Figure 6) introduces the student to the task of extracting information from illustrations and figures. Thus, the student is gradually exposed to the entire structure and content of the body of the manual.

NAME _____ WORKSHEET #4

BODY OF THE MANUAL

TM 8-230 (NOV 70)
ARMY MEDICAL DEPARTMENT HANDBOOK OF BASIC NURSING

1. ACCORDING TO FIGURE 2-29 ON PAGE 2-46, HOW MANY PARTS OF THE BRAIN ARE LISTED? _____

5. ACCORDING TO FIGURE 5-83 ON PAGE 5-182, WHAT KIND OF PULSE DOES A MAN IN SHOCK HAVE? _____

10. ACCORDING TO FIGURE 9-11 ON PAGE 9-17, WHAT BED DID INEZ DAYE STAY IN WHEN SHE WAS IN THE HOSPITAL? _____

Figure 6. Prototype of BOM Worksheet #4.

Procedural Directions (PD) Module. In developing the PD worksheets, a passage describing a step-by-step process for doing some activity was broken down into ten basic steps. These steps were presented on a worksheet in random order. The student's task was to put the steps in the correct sequence, according to the manual, by numbering them from 1 to 10. The first worksheet which the

student completed used steps lifted verbatim from the passage. Each succeeding worksheet became more and more paraphrased in statement, as the student developed more skill. The major purpose of these exercises was to teach the student the structure of following directions, in that there is always a fixed sequence in which these certain activities must be accomplished, while still being able to extract the information (content) being read.

Forms (F) Module. For the forms module, a set of seven prototype worksheets was developed for use with each form taught in the module. Worksheet #1 introduces the structure of the form by having the students locate specific parts on the form and make some prescribed indication that he has found the item. Typical worksheet questions are:

a. Find the DA form number and put a circle around it.

b. Find the technical manual (TM) which is to be used with this form and put a circle around the TM number.

c. Put an (X) in block number 12 which is titled COST.

d. Print the following Julian date in the block which asks for this information, 6202.

Worksheet #2 focuses the student's attention on the structure and content of the sections in the manual describing the purpose, use, preparation, and disposition of the form, thus tying in the use of a manual as a reference for use in filling out a form. This worksheet requires the student to answer questions such as:

a. What is the title of paragraph 4-9, on page 4-13? _____

b. The preparation section of this manual provides a block-by-block guide for filling out DA Form 2408-8. On what pages are the following block instructions found?

Block 5 Page _____

Block 19 Page _____

c. Write down the instruction given in Block 9. _____

Worksheet #3 begins the process of introducing the student to the content of the form by requiring him to transcribe information from a filled-out example in the manual to a blank form.

Worksheet #4 continues this process by providing the student with a small chunk of labelled information which he is required to fill in on a blank form according to the instructions in the manual. Figure 7 shows the prototype for this worksheet.

Worksheets #5 to #7 provide the student with increasing amounts of information, in paragraph form, which he is required to fill in on a blank form according to the instructions in the manual. By the time the student has completed all seven worksheets, he should be able to completely fill out a blank form using only the instructions, the form itself, and the paragraph of information. From the above description, note that the early worksheets concentrated on providing the student with a structural awareness of the form which the later worksheets utilized to teach the student how to fill in the form's content.

Audio Worksheet. For four of the modules, TOC, I, T&G, and BOM, audio worksheets were developed. This involved selecting ten of the twenty worksheets for a module, and recording them on a cassette tape. The student was required to listen to the question, look up the answer, and then write it down. Although these worksheets were included in the Strand I implementation package, they have since been removed from the program, mainly due to insufficient time to use the tapes without severely penalizing the student's progress through the rest of the program.

Administrative and Classroom Records

This section describes the administrative and classroom record forms which are used to plan and to plot student progress and to record his achievement at each state of training.

Class Data Roster: Master record of entry and exit USAFI and JRTT scores for each student which is maintained by the administrator.

Job Reading Records: The record contains a list of the worksheets and manuals used in that specific MOS module. It provides a date and percent correct record of the student's performance on each of the worksheets which he completes. The student receives the record upon entry into the module.

Student Control Card: This card provides a record of the student's proficiency test performance by module. From the Figure 8, note that the card provides information on the time, date, percent correct, and assignment for a student at a given point in the program. This record serves as a quick reference for the instructor when having to decide what to do with a student, or when checking a student's progress.

NAME _____ WORKSHEET #4

DA FORM 2408-8

USING THE INSTRUCTIONS CONTAINED IN THE PREPARATION SECTION OF THE TM MATERIAL, AND THE EXAMPLE ON PAGE 4-59, PUT THE FOLLOWING INFORMATION INTO THE CORRECT BLOCKS ON A BLANK DA FORM 2408-8.

	INFORMATION
ORGANIZATION WHICH ACCEPTS THE EQUIPMENT:	1st ARMY HEADQUARTERS
LOCATION OF ORGANIZATION:	FT. DIX, NEW JERSEY
UNIT IDENTIFICATION CODE:	W4LPOA
SERIAL NUMBER OF THE EQUIPMENT:	2616
NOUN NOMENCLATURE OF THE EQUIPMENT:	HELICOPTER
MODEL DESIGNATOR OF THE EQUIPMENT:	AH-56A

Figure 7. Prototype of Form Worksheet #4.

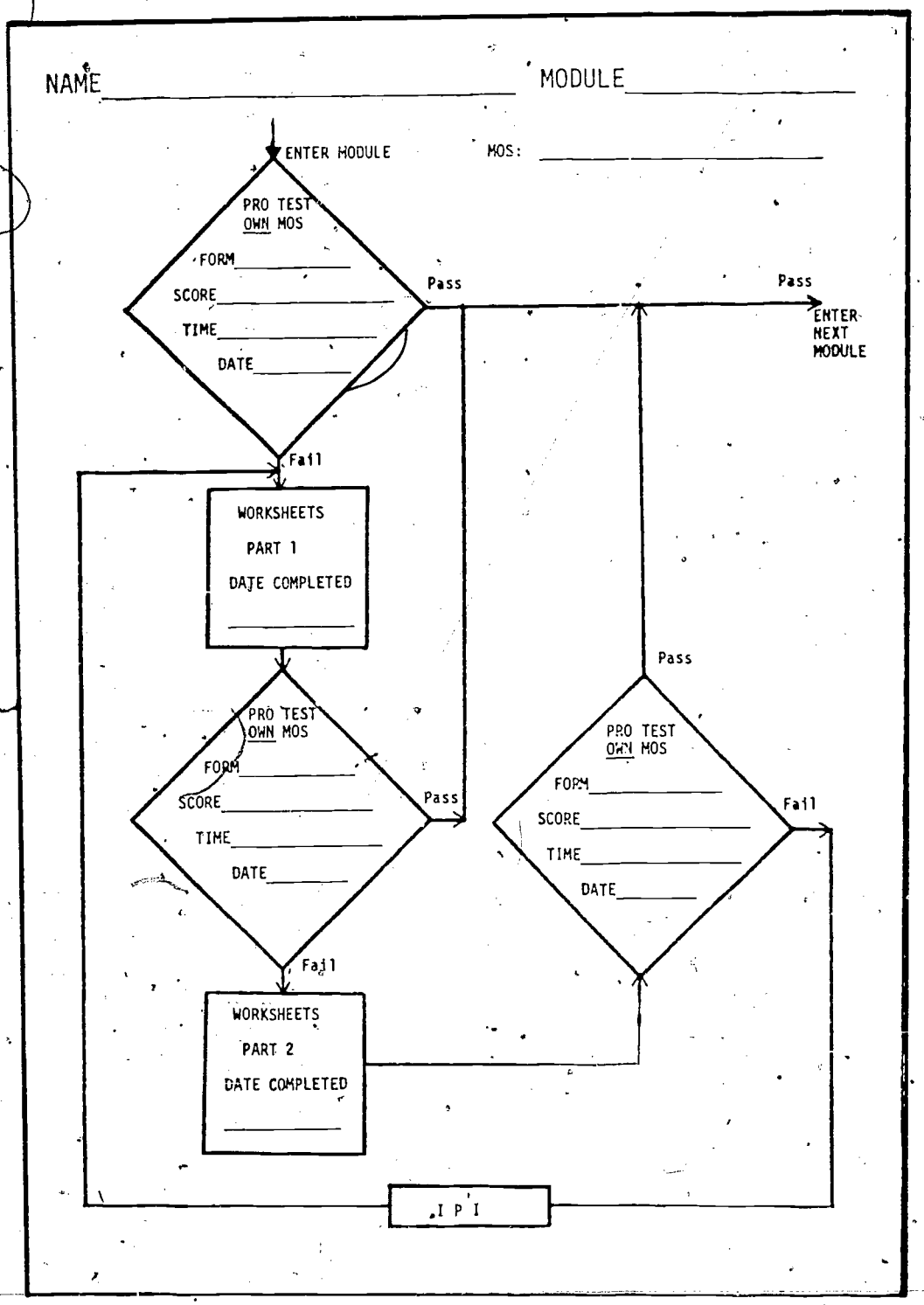

Figure 8. Student Control Card.

Assessment Instruments

Two types of assessment instruments were developed for use in the Strand I program:

a. In-training module mastery tests (proficiency tests);

b. Overall Strand I performance tests (Job Reading Task Tests).

Module Proficiency Tests: In order to permit quality control monitoring of student performance during the Strand I training, proficiency tests were developed for each of the modules of instruction. These are used to assure that the student has developed mastery of that reading task before proceeding to the next module. The test has no time limit per se; however, to satisfactorily master the task, the dual criteria of 90% or more correct, in 20 minutes or less, must be met.

The prototype proficiency test (or pro-test as they are generally referred to) is made up of four sections, each with its own text materials and set of five questions. (See Figure 9 for an example of a typical TOC pro-test.) The text which the student must read to answer the questions is a sample of job reading materials taken directly from the manual. The questions are similar in type and content to the ones encountered in the worksheets. A separate answer sheet is provided. The student's task is to read the questions on the right side of the test booklet, look the answers up in the 2 to 5 pages of text provided on the left side of the test booklet, and write the answer on the separate answer sheet. When the student has answered the five questions in one section, he turns to the next section of the test booklet and continues working. Since the student may have to take more than one test within a module before demonstrating mastery, three different but equivalent forms of the test have been developed for each module.

There are two exceptions to the above:

1. The PD pro-tests, because of the nature of the skill being measured, are limited to two sections per test; and

2. The Forms module does not have an overall pro-test per se. Instead, each form has its own set of 3 alternate tests which are composed of one section each. The instructions for completing the form are on the left side of the test booklet and the information to be filled in on the blank form is on the right side of the booklet.

Otherwise, the proficiency tests are standard across the various modules except for the MOS-related content.

21 October 1968

ARMY REGULATION
No. 40-4

C 1, AR 40-4
*AR 40-4

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 14 July 1967

MEDICAL SERVICE
ARMY MEDICAL DEPARTMENT FACILITIES
Effective 1 July 1967

*This regulation supersedes AR 40-4, 15 May 1964; including C 1, 15 February 1965; C 2, 10 August 1966 and C 3, 1 May 1967.

PRINTED PROFICIENCY TEST — FORM B, PART 3

MEDIC - TABLE OF CONTENTS

AR 40-4, ARMY MEDICAL DEPARTMENT FACILITIES, (JUL.67)

INSTRUCTIONS

1. READ THE QUESTIONS BELOW.
2. FIND THE ANSWERS ON THE LEFT SIDE OF THE BOOKLET.
3. WRITE YOUR ANSWERS ON THE SEPARATE ANSWER SHEET.

QUESTIONS

LIST THE PARAGRAPH AND PAGE NUMBERS FOR EACH OF THE FOLLOWING TOPICS:

11. LABORATORY OFFICERS
12. DEPARTMENT OF DENTISTRY
13. AMBULANCE TRAINS POLICIES
14. PERSONNEL DIVISION
15. SPECIAL MEDICAL RESEARCH

Figure 9. A Sample of a Section of the Medic Table of Contents Proficiency Test.

Table 4 below summarizes the materials contained in the finalized package of the Strand I program.

Table 4. Material Components of the Strand I Program

Materials	Quantity
Worksheets: 20 per module for TOC, I, T&G, BOM and PD, for 6 MOS clusters.	600
Forms worksheets across MOSs	77
Proficiency Test: 3 per module for TOC, I, T&G, BOM and PD, for 6 MOS clusters	90
3 per form for 12 DA forms	36
Class Data Roster	1
Job Reading Records: 1 per module for TOC, I, T&G, BOM, PD and Forms, for 6 MOS clusters	36
Student Control Card	1
Job Reading Task Test (JRTT), 3 forms	3
JRTT Manual	1
JRTT Test Administrator's Manual	1
Army Manuals (FMs, TMs, and ARs)	72
DA Forms	12

Job Reading Task Test: The function of the Job Reading Task Test (JRTT) is to provide an overall measure of the ability to perform the basic types of reading tasks encountered in learning and doing various high-density Army jobs. In contrast to the module-specific assessment function of the FLIT module proficiency tests, the JRTT serves to evaluate the effectiveness of the entire FLIT job reading training program.

The JRTT requires the examinee to read portions of actual job reading materials and to obtain the kinds of information that job incumbents most often seek from their manuals. The test was designed to determine the basic job reading skill level of adults

whose general reading comprehension level ranges from fourth grade through high school.

The JRTT is a group test which requires 1 hour for administration. It consists of 4 parts: Locating Information through Use of an Index, Extracting Information from Tables, Extracting Information from Narrative Prose, and Following Procedural Directions in Filling Out Forms. All responses are of the short answer, fill-in type which substantially eliminates the problem of chance success. Norming and validation of the JRTT were conducted on a sample of 750 young adult Army recruits who were tested, prior to their job training, on both the JRTT and on a standardized test of general reading comprehension. Norm tables permit interpretation of JRTT raw scores in terms of their reading grade level (RGL) and percentile equivalents for the adult norming sample.

The JRTT was developed to meet the following design criteria:

1. The test content is sampled directly from the domain of empirically determined job reading tasks.

2. There is no requirement for specific job knowledge.

3. Free, constructed responses are used rather than a fixed-alternative, multiple-choice answer format.

4. Getting the correct answer depends totally upon using the information contained in the test passages and not on guessing or prior knowledge.

5. The standardization and norming is based on adults.

The JRTT was prepared in 3 alternate forms, each of which assessed performance of the 4 major tasks using job reading materials sampled from the 6 MOS clusters in which FLIT job reading training is provided. Figure 10 shows the task and MOS-cluster content of the 3 forms of the revised JRTT.

Job Reading Task Test				
Form	Part 1 Index	Part 2 Tables & Graphs	Part 3 Body of Manual	Part 4 DA Forms
A	Combat	Clerk	Medic	Mechanic
B	Communi- cations	Mechanic	Combat	Clerk
C	Medic	Cook	Combat	Clerk

Figure 10. Task and MOS-Cluster Content of the JRTT.

All 4 parts of the JRTT are presented in a single booklet and in a uniform general format: directions and questions are presented on a right hand page; printed job manual material containing the information necessary to answer the questions is presented on the left hand page(s); and the brief, free-response answer is written on a separate answer sheet.

The printed job information passages used in the JRTT were drawn from the same body of job manuals as that from which the Strand I training materials were selected. Although some test passages and some training passages were both drawn from the same manuals, those passages used in the JRTT were drawn from sections of the manual which are nowhere contained in the training curriculum. The JRTT is then a measure of the generalized ability to perform basic job reading tasks, in their naturally-ocurring complexity, using actual job reading materials, and without the requirement for specific job knowledge.

Description of JRTT Reading Tasks:

Part 1: Locating Information Through Use of Index. The examinee is presented with a multiple-page index of a job manual and required to list the page number on which information about each of 10 specified topics is contained. Topic designations range from simple, single-line entries through inverted word order and second order subordination.

Part 2: Extracting Information from Tables. The examinee is required to obtain and list answers to 10 factual questions from information presented in tabular form, such as the Federal Stock Catalog, a recipe card, and a table of vehicle specifications.

Part 3: Extracting Information from Narrative Prose. The examinee is required to obtain and list answers to 10 factual

questions from information presented as structural or functional descriptions of job equipment and procedures.

Part 4: Following Procedural Directions. In this task the examinee is provided with detailed procedural directions for filling out a standard administrative form. He is required to complete the form by the selection of appropriate entries from a body of narrative information provided.

JRTT Standardization:[11] Each of the 3 forms of the JRTT was standardized on a separate sample of 250 unselected recruits entering the Army at Fort Ord in the Spring of 1973. Each subject was administered a randomly chosen form of the JRTT and of the Reading Comprehension Subtest of the USAFI Intermediate Achievement Test.

JRTT Norms: The reading grade level equivalent of JRTT raw scores was established from the plotted relationship between USAFI reading grade levels and the median JRTT raw scores of subjects reading at each USAFI reading grade level. Although the USAFI RGL equivalents are expressed in terms of the grade placement of children in the public school system, the norming procedure for the JRTT is based on the general reading comprehension and job reading task performance of adults.

The reading grade level norms of the JRTT were derived to permit interpreting performance on this test in a common metric which could be compared directly with similar measures of the readability of printed job materials, reading performance of adults on other reading tests, such as the USAFI, and the reading level requirements of Army jobs. The meaning of expressing an adult's performance on the JRTT as being at RGL 6.0 is that that adult performs as well on the JRTT as does the average adult whose USAFI general reading comprehension is at reading grade level 6.0.

Reliability: The standardization data indicate that the JRTT possesses satisfactory internal consistency and homogeniety for its intended uses. The degree of commonality among the 4 parts of the JRTT is indicated by a median intercorrelation between JRTT part scores of .63 with a range from .60 to .71 over the 18 intercorrelations obtained from the 3 alternate forms of the test.

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[11] More extensive and detailed information on administration and standardization of the JRTT is contained in the Job Reading Task Test Manual, a component of the AITPT materials package.

Kuder-Richardson reliability coefficients (KR Formula 21) of .94, .93, and .94 were obtained for Forms A, B, and C of the JRTT. The combined parallel-form, test-retest reliability of all forms of the JRTT is stable at about .68 in the restricted range sample of FLIT students assessed before and after training with alternate forms of the JRTT.

Validity: The primary basis for evaluating the validity of the JRTT is that of content validity. On this basis the test is prima facie, a valid measure of job reading skills, precisely because the test is comprised of empirically determined job reading tasks. In the absence of a fully enumerated or a conceptual specification of the domain of job reading tasks, the representativeness of these sets of job reading tasks must remain a matter of procedure and judgment. The empirical and judgmental bases for the development of the JRTT are set forth in the publications of HumRRO Work Units REALISTIC, READNEED, and elsewhere in this chapter.

Standardization data showing the empirical validity of the JRTT for the criterion of the reading comprehension subtest of the USAFI Intermediate Achievement Test are presented below. Table 5 presents the validity coefficients of each part of the JRTT and of the JRTT total score for the USAFI general reading comprehension criterion. Since the relationships are not fully linear, the validity coefficient measure of the linear component of this regression represents an underestimate of the true relationship of job reading to general reading.

Table 5. Concurrent Validity Coefficients of JRTT Part and Total Scores for USAFI RGL Criterion

Form	N	JRTT				
		Part 1	Part 2	Part 3	Part 4	Total
A	249	.55	.64	.62	.55	.69
B	238	.56	.60	.71	.70	.76
C	258	.59	.66	.74	.74	.79

Operation of the Selection and Training System

This section presents an overview of the operation of the FLIT Strand I system. First, the multi-stage system by which marginal readers are identified, verified, and assigned to FLIT training is described. Following this is a description of the operation of the Strand I training program.

Selection of FLIT Students:

The major steps in this screening and selection procedure are as follows: (See Figure 11.)

1. Personnel in Mental Categories III and IV, as established by the Armed Forces Qualification Test, are screened for general reading ability as part of their Reception Station processing. Level of general reading ability is measured by the Reading Comprehension Subtest of the United States Armed Forces Institute Intermediate Achievement Test (USAFI), a reprinting of the Metropolitan Achievement Test, Intermediate Battery. Personnel scoring below the sixth grade reading level at this testing are tagged as candidates for FLIT training and enter Basic Combat Training (BCT) as do all other new accessions. Because the course objective is seventh grade level of job reading proficiency, we have set the screening cut-off at the 6.1 grade level, roughly one year below the target goal of 7.0. This difference has been introduced to reduce the number of people who might erroneously be sent to FLIT because of fluctuating test scores or for whom the training need was not major.

2. Midway through their BCT training, an alternate form of the USAFI test is administered to those trainees previously tagged for FLIT training in the Reception Station reading screening. FLIT candidates who reach the 6th grade reading level on this retesting are removed from further consideration for FLIT training; those who again score below 6th grade reading level on this second screening retain their designation for FLIT training. All continue in BCT, in the course of which they receive assignment to the MOS in which they will be trained.

3. Upon completion of BCT, FLIT candidates are further screened to establish that their MOS training assignment is in one of the MOS fields authorized for FLIT training in TRADOC Training Circular 621-1. Candidates whose MOS training is to be in an MOS field eligible for job reading training are then assigned to FLIT for 6 weeks of job reading training before going on to AIT/CST job training. Candidates whose MOS training is to be in an MOS field not eligible for FLIT are removed from designation for job reading training and proceed directly to AIT/CST.

Strand I Training

An overview of the FLIT Strand I training program is shown in Figure 12.

First Day Inprocessing: Inprocessing into the school includes: an orientation to the program; completion of a background questionnaire; and administration of an alternate form of the USAFI general reading test as well as the FLIT Job Reading Task Test (JRTT). If a

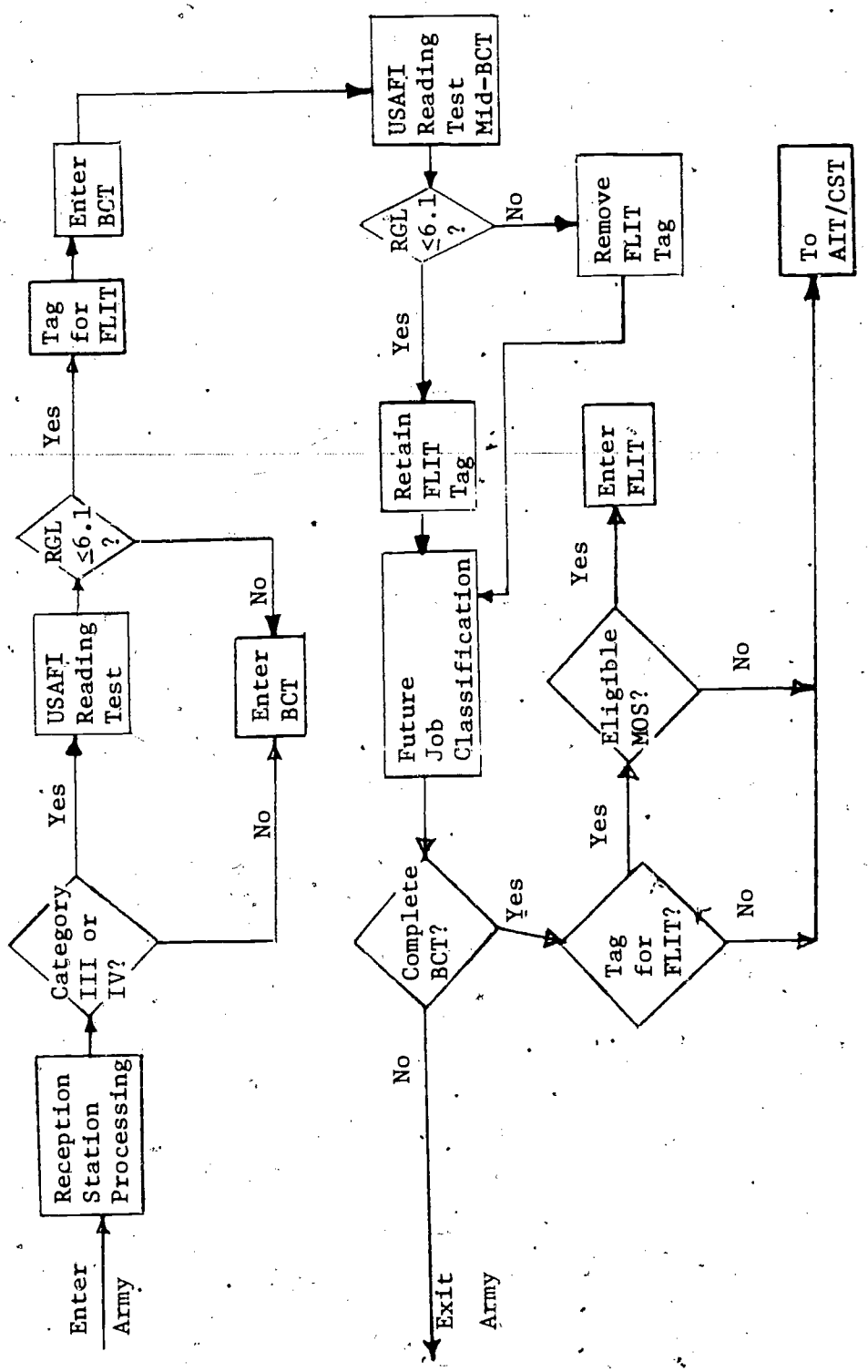


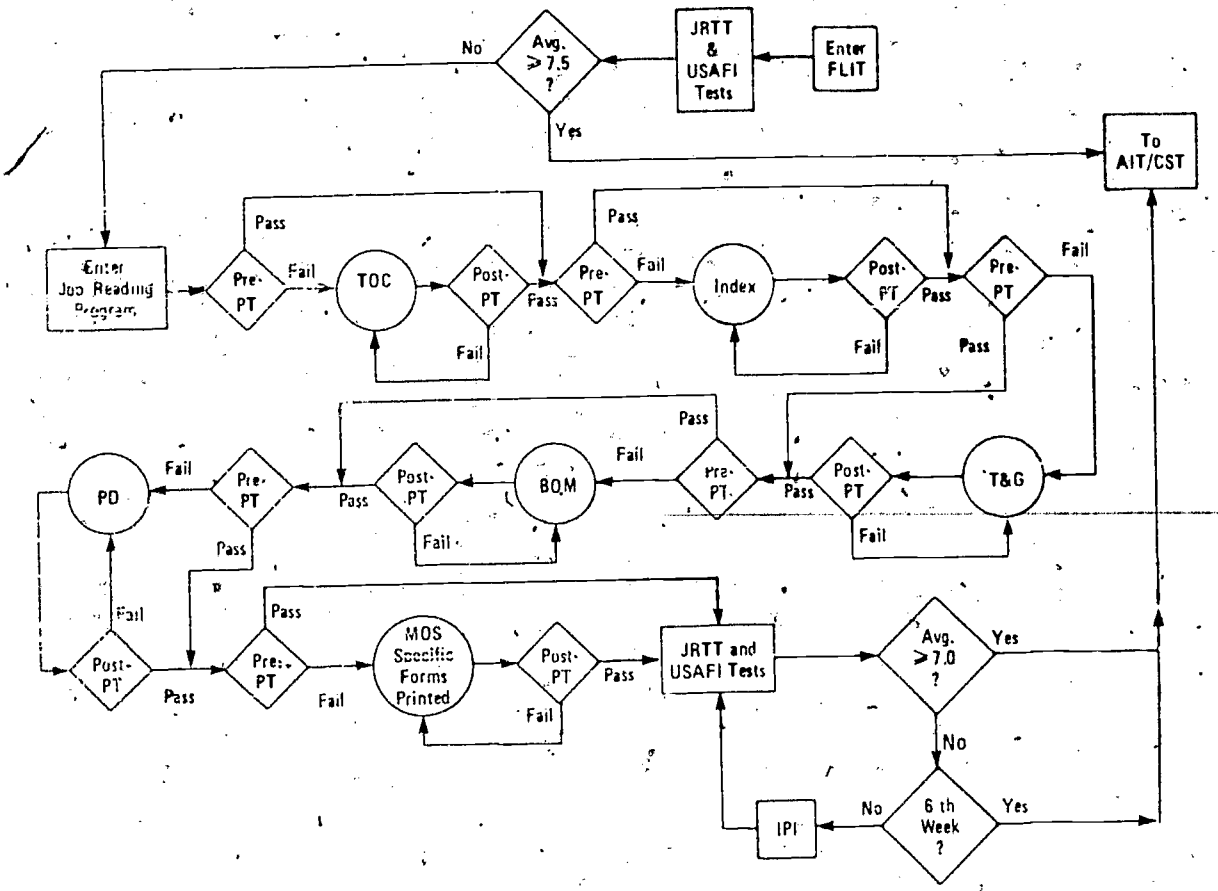
Figure 11. Screening and Selection Procedure for FLIT.

student reaches RGL 7.5 or above on both tests, he is released from FLIT and sent directly to his job training school. Otherwise, he enters the job reading program.

Job Reading Task Training -- Overall Training Flow: At this point the student is assigned to job reading training in whichever one of the 6 MOS clusters is most appropriate for the MOS in which he will subsequently be trained in AIT. All his job reading training in Strand I is then conducted using job reading materials selected from and specific to the job reading materials of his own MOS cluster.

As shown in Figure 12, the Strand I training consists of a series of 6 instructional modules (TOC, Index, T&G, BOM, PD, and DA Forms). On entering the first module (TOC), the student is given a brief introduction to the module and is administered a proficiency test for that module. Students meeting the dual mastery standards on the pre-training proficiency test (90% accuracy in not more than 20 minutes) are advanced to the next module. Students who do not pass the pre-training proficiency test undergo instruction in the module, then take another form of the proficiency test and, on reaching mastery standards, advance to the next module. This procedure is standard for the first five modules, and essentially so for the final module which differs only in the nature of the DA Form's Proficiency Test. Upon completing training in all six modules, the student is administered alternate forms of the JRTT and USAFI and, depending on whether his average scores on both these tests reach 7th grade reading level, is assigned to AIT or recycled for individually prescribed instruction (IPI) until he can attain the 7th grade reading level or until he has been in FLIT for 6 weeks, whichever comes first.

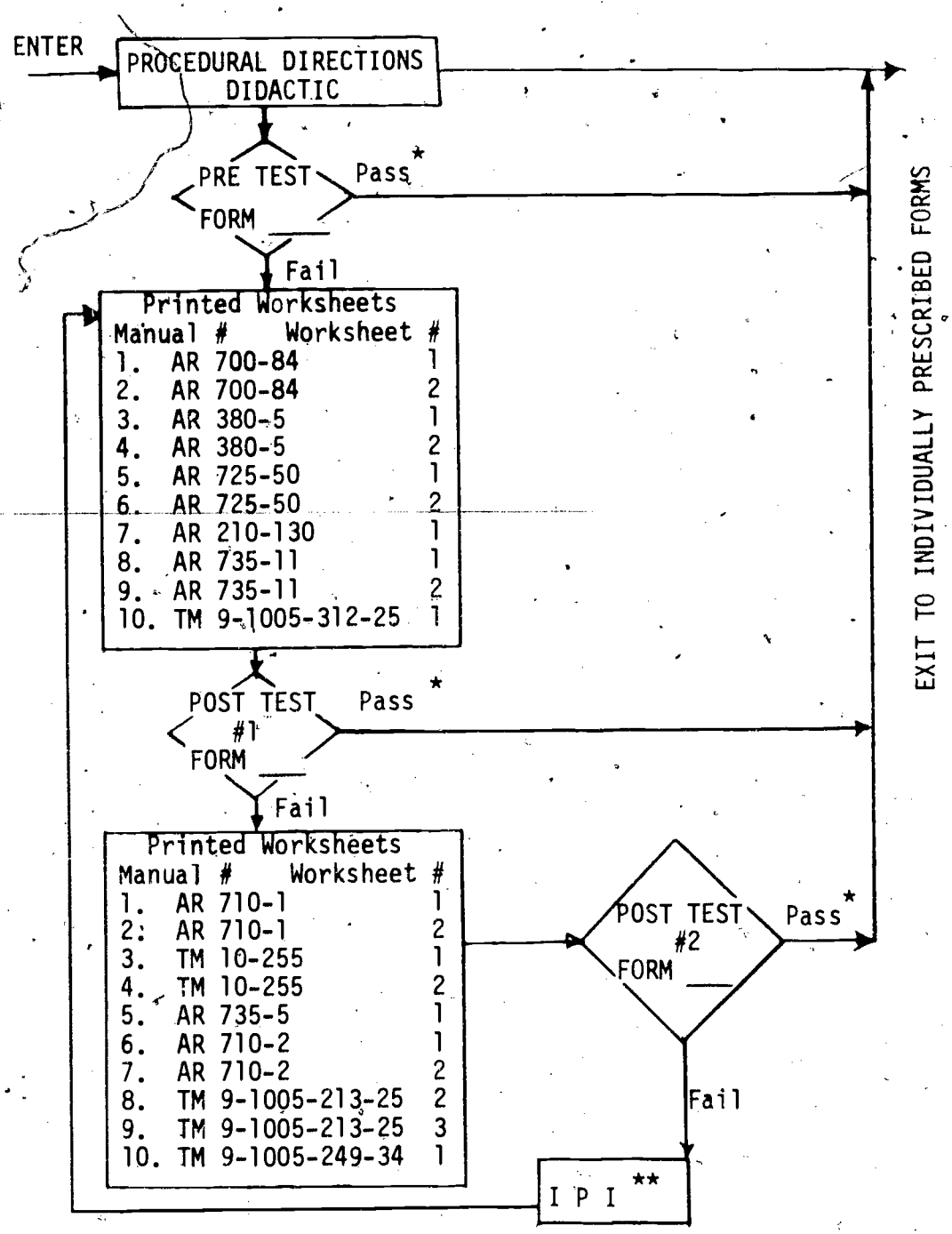
FLIT training is limited, by directive, to a maximum of 6 weeks, by which time all trainees are transferred to their preestablished AIT training assignment, regardless of the amount of job reading training which they have completed and regardless of the level of job reading which they have attained. In this self-paced program the amount of training time is determined, ideally, by how long it takes the student to master the task of each module. Because of the 6 weeks limit on the duration of FLIT training, and because the Strand I modules are not strictly hierarchical, students who were falling behind the module-a-week progress needed to complete all training modules in the available time were advanced to succeeding modules without regard to mastery attainment in order to insure at least a minimum of training on all 6 job reading tasks.



Legend:

JRTT = Job Reading Task Test
USAFI = United States Armed Forces Institute, Reading Comprehension Test
PT = Proficiency Test
TOC = Table of Contents
T&G = Table and Graphs
BOM = Body of Manual (Extracting Information)
PD = Procedural Directions
IPI = Individually Prescribed Instruction

Figure 12. Strand I Job Reading Task Training.



*Pass Criteria: 90% or more correct in 20 min. or less.

**Individually Prescribed Instruction.

Figure 13. Clerical Procedural Directions Module.

Individual Module Training Flow: The step-by-step procedures by which the job reading task instruction in all Strand I modules is conducted is illustrated in Figure 13 which shows the specific steps involved in the proficiency assessment and reading instruction for the Procedural Directions Module in the Clerical job cluster. These steps consist of:

1. Brief didactic instruction on the Procedural Directions task and administration of a randomly chosen form of the proficiency test for the Clerical Procedural Directions Task.

2. Students meeting both the accuracy and time criteria on the proficiency test advance to the DA Forms Module. Students failing the proficiency test are assigned the first block of 10 worksheets. This block of worksheets provides systematic, structured training in the procedural directions job reading tasks embodied in selections from the AR and TM job reading materials listed.

3. After completing and correcting the first block of 10 worksheets, students are administered an alternate form of the Clerical Procedural Directions Proficiency Test. Those who pass this proficiency test then enter the DA Forms Module of instruction. Those who fail this second proficiency test repeat this training and assessment cycle with a new block of 10 worksheets and another alternate form of the module proficiency test.

4. In the case of those who fail the third proficiency test, individually prescribed instruction is followed by recycling through the entire module until the proficiency test can be passed or until time requirements oblige the instructor to advance the student to the next module in order to provide some training in each of the 6 modules within the 6 weeks time limit.

Tryout, Revision, and Evaluation of Instructional Activities and Materials in an Operational, Experimental Literacy Training School

The three years we have spent in the operation of the FLIT Job Reading Training Program have given us an excellent opportunity to view "first hand" the results of our developmental work. From the beginning, the developers have been involved in every operational and administrative detail of the program. As developers we have served as instructors, administrators, worksheet writers, and test administrators. These on-site experiences have led to the incorporation of numerous revisions to the original program; revisions that might not have been made without the actual experience of daily contact with the students.

Some of the operational problems were solved much more easily than others. The problems of how the materials should be packaged, distributed, and scored, the size of the classrooms, and the teacher-student ratio were typical problems encountered and solved during the first year of operation. Other problems, however, took much longer to solve. Some of these are built into the specialized program and consequently must be considered a daily occurrence. This section of the chapter will describe a few of the most persistent problems encountered n operating the Strand I program and the changes or recommendations made to solve them.

Instructional Materials Problems: A major problem encountered with the instructional materials stems from our initial design decision to use actual job reading material and to develop the instructional materials (worksheets) from the job reading material (manuals, forms). The problem is created by the numerous changes and revisions made to the manuals. When a revised manual is received in the school to replace worn out manuals or to increase the stock, it means that every worksheet that was written for that manual must also be revised by the school personnel. This, at times, creates a tremendous extra workload for the staff. Also, most teachers do not have allocated time in their schedules for this work.

No solution is possible if the program is going to use, as its source reading material, current publications which are continually revised. However, much as has been done with the JRTT, it might be possible to build a collection of selected portions of job reading materials which would be published as a separate book of reading passages for job reading training. Although in time this material would become out of date with regard to some specific content, it would continue to represent the format and structure of Army publications, as well as the basic concepts and terminology of the job clusters.

In integrated job reading training and AIT (Ch. 6) the problem is reduced for the teaching staff which needs to deal with the revision of manuals only in its own single job cluster, not in all 6 clusters as is the case in AITPT.

A second instructional materials problem was the incorporation of audio worksheets into the program. The major problem was the acquisition of enough tape recorders to supply the need of the school. Associated with this was the problem of acquiring blank tapes and high quality tape duplication services. The audio worksheets also posed a classroom operational problem, because they were used by only a single student at a time.

The solution to this problem was to drop the audio worksheet component from the program.

Operational Problems: The major operational problem focused on the design requirement of mastery level criteria for each of the six modules. Many students were able to achieve these mastery criteria in the two to three early modules but experienced great difficulty with the later, more difficult modules. Consequently, the mastery level criteria did not allow all of the students to be exposed to all six modules.

The solution to this problem was to "relax" the mastery level criteria for the more difficult modules. This was done to ensure that the student had some exposure and experience in all the job reading tasks regardless of his achievement level. This procedure is typically done during the last two weeks of the student's six-week program.

Administrative Problems: An initial administrative problem was the "MOS Switch". This occurred when a student was assigned to the school with a predetermined MOS, was given job reading training in his MOS, and then upon graduation from the FLIT school, had his MOS changed! For a time this procedure created a morale problem in the school, particularly when the number affected by this was about 50% of the school population. This problem arose from initially taking these students out of the established Army administrative "pipeline".

The solution to this problem was eventually solved over a period of time, New procedures were established and the problem greatly diminished.

A second administrative problem arose in the case of that small number of students who had no effective grasp of English, spoken or written, at any useful instructional level. About one-third of the students at the Fort Ord FLIT school did not speak English as their Primary Language (Table 10). For the great majority of these students, this posed no major bar to their instruction in the Strand I training. In fact, many of the foreign-born students who had studied English as a second language, formally, in school, but had not used English much outside the classroom, showed greater comprehension of printed than of spoken English.

A small number of students arrived at the FLIT school with essentially no prior exposure to either spoken or printed English, other than that encountered in their prior 8 weeks in the Army. These men could not read English at all, as shown by their

repeated failures on reading comprehension tests, but neither could they understand simple spoken English any better. For these few men the FLIT school could accomplish little.

No solution to this problem has been found. Such students with essentially no competence in either spoken or written English first need fundamental training in English to acquire the vocabulary, grammar, and syntax of the language. Following that, training and skill practice in decoding simple printed English to speech would be required to equip them with that fourth or fifth grade reading ability in English which the preponderance of FLIT students bring to the school and for which Strand I is designed to produce effective training.

Summary: This chapter has described: 1) the background and situational context for the development of Strand I; 2) the rationale for the program and the development of the operational instruments by which Strand I training is accomplished and assessed; 3) the operational flow of the Strand I training program; and 4) the problems observed by the program developers in their long-term continuing interactive responsibilities for both developing the Strand I program and operating it in the experimental FLIT school.

In parallel fashion, Chapter 3 will describe the development of Strand II of the FLIT Job Reading Training Program.

CHAPTER 3

DEVELOPMENT OF THE FLIT JOB READING PROGRAM STRAND II: BASIC JOB READING SKILLS TRAINING

This chapter presents the development effort designated as Strand II. The development for this program was conducted in two phases: the first to design simplified job reading passages, and second to design the instructional materials to accompany the simplified job reading materials. The second phase of development was conducted in two cycles. In Cycle 1 instructional modules for three of the six MOS clusters were developed and tried out in the experimental FLIT school. In Cycle 2 new materials were developed and tried out for all 6 MOS career clusters.

Phase One Development

As stated in Chapter 2, the primary goal of Strand II was to provide direct instruction in reading and comprehending specially prepared job-related reading materials. These materials required students to complete exercises to improve the basic reading skills of word recognition and sentence and paragraph comprehension. Also, the Strand II program would provide direct instruction to increase job knowledge.

The conceptual and developmental framework for these various basic reading skills was grouped into three components: (1) Word recognition; (2) Languaging; and (3) Conceptualizing.

1) Word Recognition: This component deals with the acquisition of job vocabulary words and "general" vocabulary words used in Army training literature. Its primary focus is on the many job technical words and "jargon" used in the six MOS job clusters for which the Strand II material was written.

2) Languaging: The languaging component deals with the students' ability to focus on individual words, individual words in relation to the total sentence, and on the total sentence and the relationship of its parts to each other. The "rules" of grammar, syntactical structure, and semantics are taught within the framework of job-related reading instruction.

3) Conceptualizing: This component deals with the development of increased reading comprehension skills and direct instruction to increase job knowledge. Job concepts are presented to the students along with various conceptualizing strategies or schemes useful in the process of "comprehending" the concepts and thus increase the individual's knowledge base in a job area.

The core instructional package developed to teach these three components was a series of training modules for each of the six MOS clusters taught in Strand I. Each module was based on central and important MOS specific job concepts and vocabulary. This was done to ensure that the developed materials would have high job validity, and would provide the student with job concepts and vocabulary that could be directly applied in AIT; that is, they would provide a conceptual base from which the student could build his job knowledge about his MOS.

Development of the Job Reading Modules: The development of the core job reading modules focused on (a) the identification of job vocabulary lists, (b) selection of job concepts suitable for a job reading passage, (c) development of job reading objectives based on the job concepts presented in each passage.

a. Identification of Vocabulary. To identify MOS-specific vocabulary, thirty-five 130- to 180-word passages were selected, for each job cluster, from the job reading materials listed in Table 3 and on which the Strand I curriculum was based. From a random starting point in the first chapter of the first manual, pages were selected by a sampling ratio calculated to yield a total of thirty-five passages from the entire body of job reading material for that MOS cluster. Each passage was selected to begin with the first paragraph commencing on the designated page or on the next occurring page on which a new paragraph appeared. All passages were at least 130 words long and were extended to consist of complete sentences and, wherever feasible, complete paragraphs.

Using the computerized technique of Butz,[12] each word in the sample was then compared to an expanded Dale word list of most common words. If a word was not found on the Dale list, it was considered a job-specific word. The computer then printed out for each cluster the common and job-specific words and the frequency of occurrence for each word in the sample. This analysis provided a list of those words specific to an MOS cluster that the student would encounter most frequently in job materials.

b. Selection of Job Concepts. To identify basic concepts, primary sources of major content information for each MOS in the job cluster were obtained. These sources included MOS study guides,

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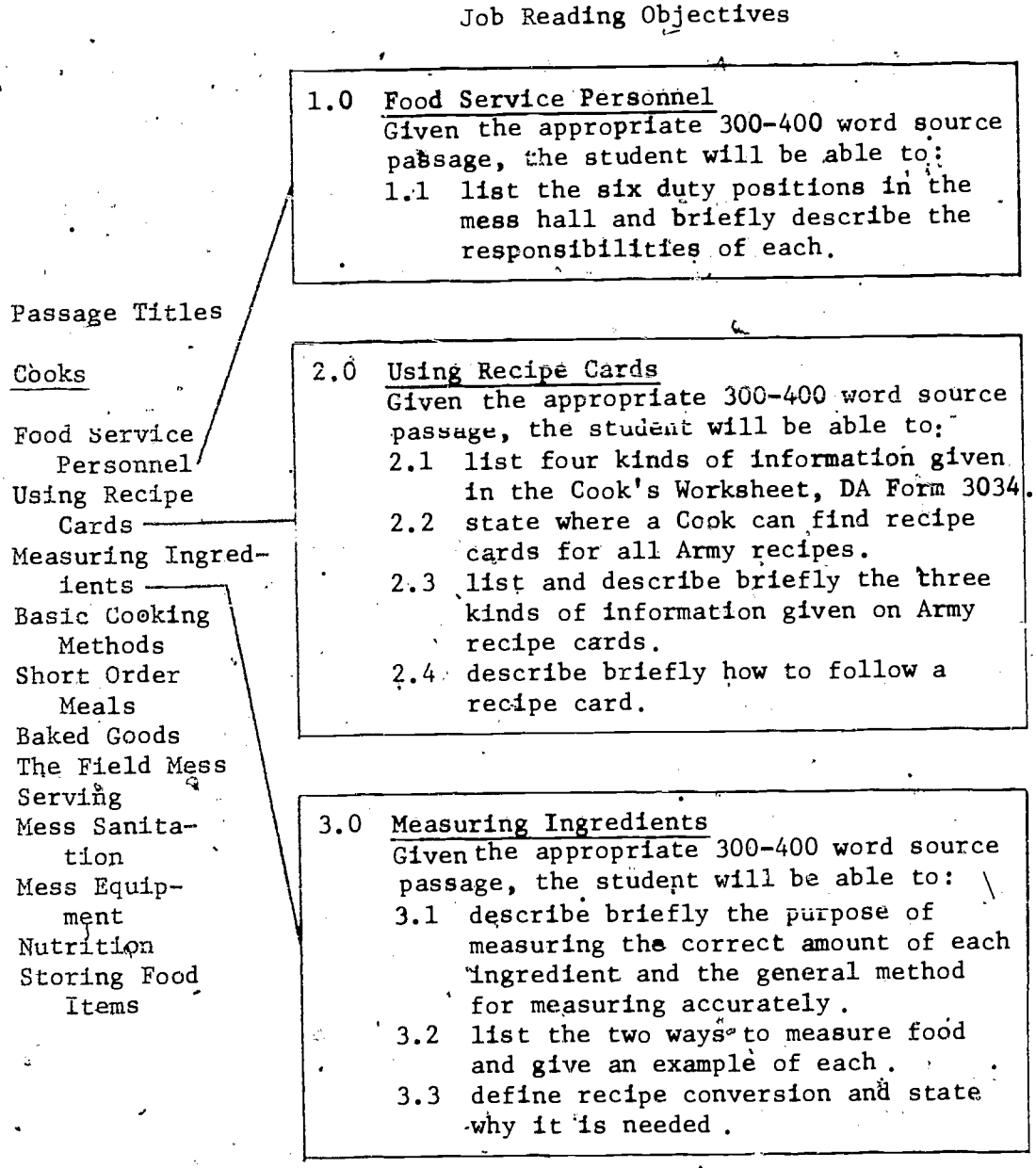
[12] R. J. Butz. *Vocational Reading Power Project*, paper presented at the National Reading Conference, New Orleans, 1972.

Table 6. Sample Job Reading Objectives



Army Subject Schedules and AIT training materials. Sources were surveyed and a list of major topic areas for a cluster was prepared. From the list of major content areas, selection was made of twelve topics, each suitable for the development of a 300-400 word narrative passage. Primary emphasis was on the selection of job cluster topics suitable for reading training. Detailed descriptions and explanations of job procedures were considered the function of AIT school and therefore not included. Preliminary outlines were prepared for the topic areas showing tentative content. These topic outlines were then validated and revised through interviews with MOS content experts. Specific concepts were suggested by MOS instructors and a list of major content areas and specific concepts within each area was prepared. These specific concepts were then sequenced for order of presentation within a passage and an outline prepared from which a narrative passage was drafted. MOS instructors were then consulted to validate the contents of the reading passage and to revise it where necessary. It was these reading passages that formed the core of the Strand II materials.

c. Job Reading Objectives. The job reading objectives were developed from the previously developed job concepts. For each of the twelve major content areas in each job cluster, the selected concepts were initially a mixed group of superordinate and subordinate concepts. Later the subordinate concepts were organized under superordinate concepts. These superordinate concepts formed the basis for the reading objectives. The reading objectives reflect what is "important and relevant" for the MOSs in a job cluster because the specific concepts themselves were selected on the basis of importance and relevance.

The following example shows the job reading objectives developed for the first three Cook MOS job reading passages. Similar objectives were developed for all the 72 job reading passages which were the source material for direct instruction to increase job knowledge, word recognition, and sentence and paragraph comprehension (see Table 6).

The Job Reading Passages: With the job concepts and job vocabulary defined, a set of twelve reading passages was written for each MOS cluster. Each passage was approximately 300-400 words long and written at the 7th to 9th reading grade level as measured by the FORCAST formula.[13] This contrasts with the actual job materials in Strand I, which are mostly written at the 11th, 12th, and

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[13] Sticht, *op. cit.*

higher levels. The twelve simplified passages presented specific job-related information for each cluster and provided the source of information from which the packet worksheets were developed. Passages were written with an attempt to control their readability and concept density.

The following is a complete list of the titles of all 72 reading passages which formed the core of the Strand II program and for which all other instructional material was developed (see Table 7).

Phase Two Development

Part I: The First Cycle of Development:

Initial Instructional Materials and Curriculum Design. For each of three MOS clusters, twelve training modules were developed following the Strand II goals previously discussed. The primary design consideration and emphasis was to provide the student with a great amount of repetition and practice using MOS-related materials. The following is a brief description of the structure of the initial Strand II instructional materials as they relate to the three basic reading skill components of Strand II mentioned earlier.

Word Recognition. Many of the job words in the Strand II materials were already in the man's speaking vocabulary. However, many of the students did not recognize all of these words in the written form. For practice in developing rapid sight recognition of vocabulary words that the student would be dealing with in the instructional modules, a list of 30-35 words was prepared for each module. Approximately a third of the words on the list came from the computer analysis of the most frequently occurring words in that MOS cluster discussed before. The remaining words for a given list were selected from the reading passage for that module. These words represented difficult content words found in that reading passage. The student was provided drill in word sight recognition until he reached a minimum criterion of pronounciation of one word per second. The goal was to provide a great amount of repetition and practice beyond accuracy to achieve automaticity of sight recognition of job words. It was assumed that if, in the poor reader, the focus of attention is required for recognition of the printed symbols, then he will be unable to comprehend the message adequately. Thus, the Strand II reading training materials emphasis was on practice beyond simple accuracy in word recognition. This was done so that recognition could occur without the services of focal attention, freeing more of the capacity of focal attention to processing meaning.

Table 7. Titles of Strand II Reading Passages

CLERICAL CLUSTER
Clerical Duties
Supplyman Duties
Handling Supplies
Publications
Indexes to Army Publications
How Publications are Organized
Updating Army Publications
Military Correspondence
Routine Orders
The Army Functional File System
Classified Information
The Unit Mailclerk

COOKS CLUSTER
Food Service Personnel
Using Recipe Cards
Measuring Ingredients
Basic Cooking Methods
Short Order Meals
Baked Goods
The Field Mess
Serving
Mess Sanitation
Mess Equipment
Nutrition
Storing Food Items

COMBAT CLUSTER
Individual and Direct Fire Weapons
Mortars and Artillery
Tanks and Other Armor
Tactics
Patrolling
Combat Engineers
Land Mines and Explosives
Communications
Defense Against CBR Attack
First Aid
Field Sanitation
Survival, Evasion, and Escape

COMMUNICATION CLUSTER
What Communication Is
Communication in the Army
Field Wire and Telephone Circuits
Communication by Telephone
The Radioman in the Field
Communication by Radio
Telephone Switchboards
Radio Nets
The Message Center
Other Army Communication Equipment
Security in Communications
Messages: The Whole Point of Communication

MECHANIC CLUSTER
Preventive Maintenance
Driving Conditions
Types of Vehicles
Vehicle Recovery
Loading Trucks and Trailers
Emergencies
The Engine
Cooling Systems
Lubrication Systems
The Electrical System
The Power Train
The Chassis

MEDIC CLUSTER
Emergency Medical Care
Bandaging
Splinting
First Aid in the Field
Transportation of the Sick & Wounded
Prevention of Disease & Military Sanitation
Drugs
Methods of Sterilization
Measurement of Vital Signs
Injections
Oxygen Therapy
Anatomy & Physiology

Languaging. The languaging component focused upon the student's ability to deal with individual words, individual words in relationship to the total sentence, and the total sentence and the relationship of its parts to each other. To accomplish this purpose, a series of worksheets based upon the reading passage was developed for each training module in an MOS. The exercises were designed to give repeated practice at gaining information at the individual word and sentence level. The following presents a short description and samples of each major type of exercise that dealt with the languaging component of Strand II.

Exercise 1. Given a passage from which words had been deleted, the student was required to replace the missing words, using a list of the words which had been deleted. In choosing the words, the student was required to select words that fitted both syntactically and semantically. The deleted words were content words from the reading passage. A portion of this type of worksheet is shown below as an example.

DIRECTIONS: Fill in the blanks in the following passage using the list of words below. Use each word once.

post	system	issues	out of date	Army's
up to date	rescind	delete	cancel	
change	publications	supercede	four	
old	new	intended	suspend	
information	decides	paragraph	existing	

As you have learned, Army _____ are a good place for you to look when you need to know something. They contain much of the _____ you need to do your job. This information, though, gets _____ because the Army is constantly changing. To keep publications useful to you, the Army has a _____ to keep them _____ . . . .

Exercise 2. The student was required to determine the inappropriate word between pairs of words inserted into the reading passage. Thus the student was given training at selecting the proper word while reading the passage again. A sample is shown below.

DIRECTIONS: There are two words inside each parenthesis ( ). One of the words is wrong. It is your job to cross out the wrong word.

As you have (learn, learned) Army publications are a good

place for you to (look, looking) when you need to know something. They contain much of the information you need to do your job. This (information, informing), though, gets out of (date, dated) because the Army is constantly (changing, change). To keep publications useful to you the Army has a system to keep them up to date.

Exercise 3. While the above two exercises provided practice in processing meaning at the word level, this exercise was concerned with developing the ability to understand the relation between various parts of a sentence. The student was required to determine whether the underlined parts of sentences told when, why, how, what, or where. These sentences were drawn from the reading passage. A sample is shown below.

DIRECTIONS: Read each sentence below. The underlined words in each sentence tell you the answers to the questions what, why, when, how, or where. To help you, you can follow this key:

1. What = a thing or an idea.
2. Why = a reason or cause.
3. When = a time.
4. How = the way it's done.
5. Where = a place.

Decide which question the underlined words answer and put an "X" on the letter that you choose.

1. This information gets out of date because the Army is constantly changing.

Because the Army is constantly changing answers the question:

A. What is out of date?
B. Why is information out of date?
C. When is information out of date?
D. How is information out of date?
E. Where is information out of date?

Exercise 4. In this exercise the student was required to choose between sentences, where the structure had been altered, to identify the one that meant the same as the original sentence. This exercise required the student to read and understand what was

said in the original sentence in order to select the sentence that looked different but meant the same. The stimulus sentence was again from the reading passage for that module. A sample of this type of worksheet is shown below.

DIRECTIONS:

Circle the letter of the sentence that means the same as the first sentence.

1. Information gets out of date because the Army is constantly changing.

A. The Army changes, thus information gets out of date.

B. Information changes, thus the Army gets out of date.

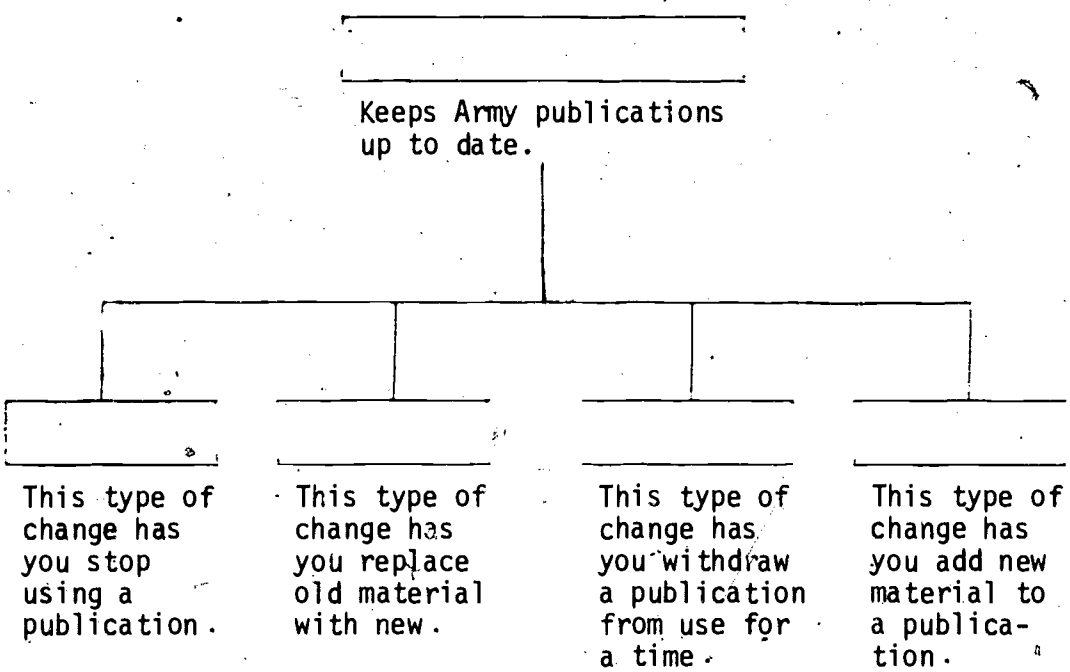
Vocabulary Exercises. An additional part of the languaging component included a set of three worksheets that introduced ten MOS-related words. These words were chosen successively in groups of ten from the list of job-specific words identified earlier and in order of their frequency of occurrence. The ten words were introduced in an exercise consisting of a short paragraph illustrating how the student might see or hear these words in the context of the job. The use of contextual clues in writing the paragraph was emphasized. In order to have the student determine the meaning of the words, he was required to write down what he thought the word meant from the paragraph. This exercise was followed by having the student complete sentences using these words. Following completion of the sentences, the student completed an exercise where he had to match the vocabulary words to definitions.

Conceptualizing. It was the intend of the conceptualizing component to emphasize comprehension and understanding of the job concepts presented in each module reading passage. To complete these exercises the student was required to process the information presented in module reading passages in different ways. A brief description of the conceptualizing skills exercises follows:

Exercise 1. In this exercise the student was required to deal with the concepts presented in the passage in a summary form. This exercise varied from module to module but essentially required some type of summarizing skill of the student. A sample is shown below.

DIRECTIONS: This exercise will help you remember more of the passage you have read. Below is a list of titles and an unfinished outline. Put each title into the correct box in the outline. You will not use all titles.

SUSPENSIONS (suspend)
ADDITIONS (add)
ARMY PUBLICATIONS SYSTEM
SUPERSESSIONS (supercede)
RESCISSIONS (rescind)
DELETIONS (delete)



Exercise 6. This conceptualizing exercise required the student to answer the reading questions about what information was conveyed in the passage. The student was required to function at the literal level of reading comprehension--what did the passage say rather than what did it mean or how can it be applied. An example of these types of questions is shown below.

DIRECTIONS: Answer the following questions about the passage. Put your answer for each question on the line which follows it.

1. Why does the information in Army publications get out of date?

   _____

2. What do you do to keep publications up to date?_____

3. What do you do when a whole publication is rescinded? _____

   _____

4. How do you post a change? _____

5. What type of change do you do when you replace old material with new? _____

6. What type of change withdraws a publication from use for a time? _____

7. What change do you do when you put new material into a publication without taking out anything? _____

   _____

In addition to the worksheet exercises described above, for each reading passage two alternate forms of a cloze test were developed. In one cloze test form, every fifth word was deleted beginning with the fifth word. In the alternate cloze test form, every fifth word was deleted beginning with the first word. The cloze tests were used as a measurement of reading comprehension.

In summary, for each of three MOS clusters, twelve training modules were developed that included the following instructional materials for each module:

a. 300-400 word reading passage;
b. vocabulary list;
c. a packet of worksheet exercises;
d. two alternate cloze test forms.

The worksheet exercises were designed to provide practice in the basic reading skill components of word recognition, languaging, and conceptualizing. Extensive repetition was employed to provide direct instruction in reading and comprehending job-related reading materials.

Strand II (Cycle 1) Administrative Procedures. A flow chart of the Strand II instructional sequence of the Cycle 1 program is presented in Figure 14.

The student was first given the Form A cloze test before beginning the first instructional module for his Strand II MOS cluster assignment. He was permitted to work 20 minutes on the test. Following the cloze test, the student was then required to read the passage aloud for one minute. The number of words he read and oral reading errors were recorded. Following the paragraph reading, the student was required to read the words on the word list as fast as he could. The number of seconds he took and errors in pronunciation were recorded for the word list. If the subject did not achieve the criterion rate of 1 word per second on the word list, he was required to drill and practice until he reached this criterion. Only his first trial at the word list sight recognition task was used for comparison purposes. After reaching criterion on the word list, the subject received a complete set of instructional materials. This included a copy of the reading passage, word list, and worksheet packet for the module. The student proceeded at his own rate in completing all the worksheet exercises.

After completion of the worksheets, each was graded. The student was required to get all exercises correct. If he did not reach criterion, he was given back his graded worksheets and asked to correct the items he had missed. Following grading and correcting of the module worksheet packet, the student was again required to read aloud the module reading passage for one minute. The number of words read and reading errors were recorded. The student also read the word list again and reading rate and errors were noted. At this time the alternate form of the cloze test was administered with test-taking time limited to 20 minutes. Following the post-training cloze test, the preceeding sequence was repeated for each module within the MOS cluster, until the student had finished all Strand II Cycle 1 instructional materials in his MOS cluster. The analysis of the data points described above is presented in Chapter 4. What follows is an evaluation of the operational constraints and problems encountered during the tryout of the initial Strand II development.

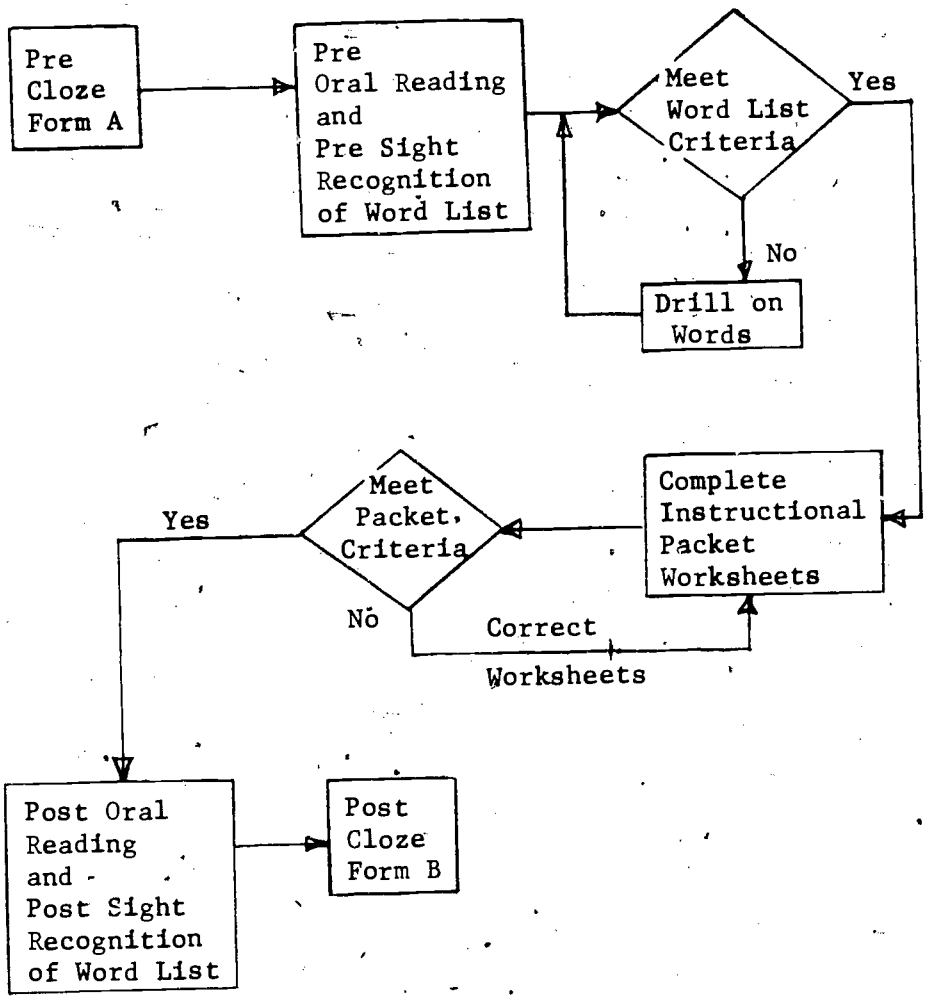


Figure 14. Strand II Instructional Cycle for the Cycle 1 Program.*

*The sequence is repeated for each of the twelve modules within the MOS cluster.

Component Evaluation. A serious drawback of the initial Strand II Cycle 1 materials was that the classroom management procedures and, to a large extent, instructional techniques, were dictated by the materials. The teacher's role was confined to that of monitoring a great amount of paper flow and testing. Worksheet grading and testing the oral sight recognition and reading consumed the major portion of the teacher's classroom time. There were many days in which as much as 75 to 85 percent of the teacher's time was devoted to these activities, especially with more than 11 to 12 students in the class. Of course, this greatly reduced the teacher's time for individual instruction of students.

The heavy involvement of the teacher in the management of the instructional materials generated an additional problem -- that of lack of classroom control. For example, when the teacher was either grading worksheets or listening to the oral production of an individual student, this left no one to monitor students' work habits and production. In addition, because the system required the student to be evaluated at certain points in completing each training module, when the teacher was tied up with oral testing, distributing, or grading material at this time, the other students were forced to wait. This built-in time delay caused many students to become disinterested and bored waiting for the teacher or for knowledge of results. This also provided a ready excuse for not working in class for the less motivated student. These problems apparently contributed to the fact that only 30% of the students were able to complete half or more of the training modules for a given MOS in Strand II (Ch. 4, Table 14).

The administrative burden caused by the volume of paper work for the initial materials was excessive. Worksheet reproduction, assembly, storage and distribution required considerable time to accomplish.

To alleviate these problems the program was substantially revised as the Cycle 2 curriculum of Strand II. The development of the Cycle 2 Strand II materials aimed to fulfill the need for relevant job-related reading training material which offers practice in basic reading skills, while relieving many of the problems mentioned above.

Part II: The Second Cycle of Strand II Development: Because of the previously stated operational problems associated with the Strand II curriculum, it was decided to make a major modification to the Strand II curriculum. Thus, the second cycle of Phase II development was initiated.

The major considerations in the revised developmental design were:

1) to change the role of the teacher from classroom/materials monitor to that of an interactive teacher;

2) to reduce the amount of teacher time required to administer/operate the program and thus increase the amount of teacher time spent in direct instruction of students.

In the process of implementing these changes we also wanted to place more emphasis on the Languaging and Conceptualizing components without a large reduction in the amount of Word Recognition training. In addition, we wanted a large portion of the classroom time devoted to teacher- and student-led group discussions and group problem solving.

These considerations and changes are reflected in the following overall changes in the three major Strand II components:

Word Recognition. The individual testing of job-related words was eliminated along with several worksheets on job vocabulary. Informal word recognition exercises are now included in both the Languaging and Conceptualizing components. This component is now made up of two sub-components: (1) the MOS-cluster vocabulary lists and (2) the passage vocabulary lists.

MOS Cluster Vocabulary Lists. These vocabulary lists are the computer-produced lists developed in Phase I of Strand II. The lists were generated by extensive sampling of MOS cluster manuals which produced 450 to 900 high frequency job vocabulary words for each of the six MOS clusters. Many of the words from these lists appear in the job reading passages. They are also used in the classrooms in much the same manner as the teachers formerly used "general" vocabulary lists; i.e. -- looking up definitions, using the word in context, spelling exercises, etc.

Passage Vocabulary Lists. These vocabulary lists are developed from each of the 72 individual job reading passages. Each list consists of the 6-12 words or short phrases judged to be the most difficult in the passage. Definitions for these words or phrases are given within the context of the passage and are written at a simplified level. Also, space is provided for the student to add more words and definitions in their own words from the passage. Many of the words used in these lists are contained in the MOS cluster lists and are therefore job technical words. The following example is the Passage Vocabulary List for the Combat cluster passage on "Patrolling".

"P A T R O L L I N G" -- VOCABULARY WORDS

TEMPORARY UNIT - A GROUP OF SOLDIERS THAT WORK TOGETHER FOR A SHORT TIME ONLY

MISSION OF RECONNAISSANCE - A MISSION WHERE THE UNIT IS SENT OUT TO LOCATE AND SURVEY THE ENEMY

CAMOUFLAGE - TO GIVE THINGS A FALSE LOOK SO AS TO FOOL THE ENEMY

FLANKS - THE SIDES OF SOMETHING

SECURITY MEN - MEN WHOSE DUTY IS TO PROTECT THE MAIN BODY OF TROOPS BY WATCHING FOR THE ENEMY

POINT OF DEPARTURE - THE PLACE WHERE A UNIT LEAVES FRIENDLY LINES

POINT OF RE-ENTRY - THE PLACE WHERE A UNIT RETURNS BACK TO FRIENDLY LINES

RALLYING POINT - A PLACE WHERE THE UNIT COMES BACK TOGETHER TO MEET

OBJECTIVE - YOUR GOAL, OR PLACE YOU WANT TO REACH

SPECIFIC LOCATION - A PARTICULAR OR SPECIAL POINT RATHER THAN A LARGE, BROAD AREA

AMBUSH - TO LIE IN WAIT AND HIDE, FOR THE PURPOSE OF MAKING A SURPRISE ATTACK ON AN APPROACHING ENEMY

These vocabulary lists are used by the teachers in a variety of ways. They are used:

--- to provide a small dictionary to the student;
--- to provide word meaning drills on job-related words;
--- in conjunction with a standard dictionary to compare the specific job meaning in the passage with the broader dictionary definition of the words.

They are also used frequently in the Languaging and Conceptualizing components when working with the use of words, meanings of single words, words in the context of a complete sentence, and with comprehension of a complete paragraph or job reading passage.

Languaging. The individual oral reading test and many of the worksheets were eliminated. The instruction is now done in both group sessions and with students working independently on MOS-specific worksheets. The responsibility for correcting the written work is shared by the teacher, a student scorer, a peer instructor, or the student himself.

The revised languaging segment deals with language at the level of the individual sentence. Within this broad scope, the focus may highlight different aspects of languaging at different times during the instruction. The three main focal areas are as follows:

(1) Focus on individual words. (Meanings of individual words.)

(2) Focus on individual words in relation to the total sentence. (The syntactical and semantic fit of a particular word or phrase in a particular sentence.)

(3) Focus on the total sentence and on the relationship of its parts to each other. (How the thought units in a sentence work together to build up the complete sentence.)

Although the languaging segment does not directly stress job knowledge, it does give the students job-related content. All the sentences used in the languaging segment are drawn from passages which present job knowledge.

The following points are stressed throughout the languaging instruction.

... Sentences are not made by stringing words together in a haphazard fashion.

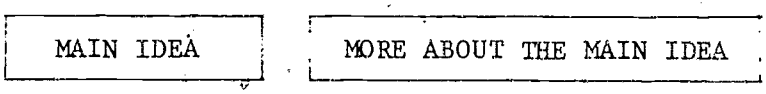
... There are certain "rules" about choosing which words to use in a sentence and how to put those words together.

... The student already uses these "rules", or he would not be able to talk to others using sentences.

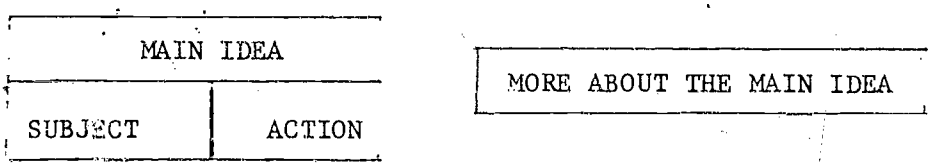
... When the student becomes more aware of these "rules", he does not need to guess or take a wild stab when he encounters a difficult sentence. He can use what he knows about a sentence to help him figure out the parts that he does not know.

The languaging segment introduces a new model of sentence structure. Why not use traditional grammatical models of structure? The reason is simple -- traditional grammatical models of sentence structure can become quite complicated, much too complicated for marginal readers to master in a few weeks' time. The terminology is complex. Consider these few examples: direct object, indirect object, gerund, participle, predicate complement, prepositional phrase, and dependent clause. The number of "rules" that must be mastered to use this system on a wide variety of sentences would be quite high. So we have constructed our own model of sentence structure -- a model that is not a contradiction of traditional grammar but rather one that is based squarely on traditional grammatical structures. It is a "stripped-down" model designed to be simple enough to be learned by learning a small number of "rules", yet comprehensive enough to apply to most sentences which occur in Army training literature.

The structure and terminology of the languaging model is based largely on thought units and the kinds of information which each thought unit contributes to the complete idea expressed by the sentence. The most basic structure divides the sentence as follows:



The main idea can be separated into two thought units.



The Action thought unit in a sentence may be one of three kinds: Active, Passive, or Is-Ness. (The Action: Is-Ness corresponds to linking or copulative verbs.) The thought units which tell more about the main idea may present six different kinds of information. Figure 15 presents the complete basic model of sentence structure.

The Languaging Tasks. Each of the three main focal areas of the languaging segment is treated in at least one languaging task or resource. The focus on individual words is treated in (1) the Passage Vocabulary Words (one set for each passage) and (2) the MOS-Cluster Word Lists (one set for each MOS cluster).

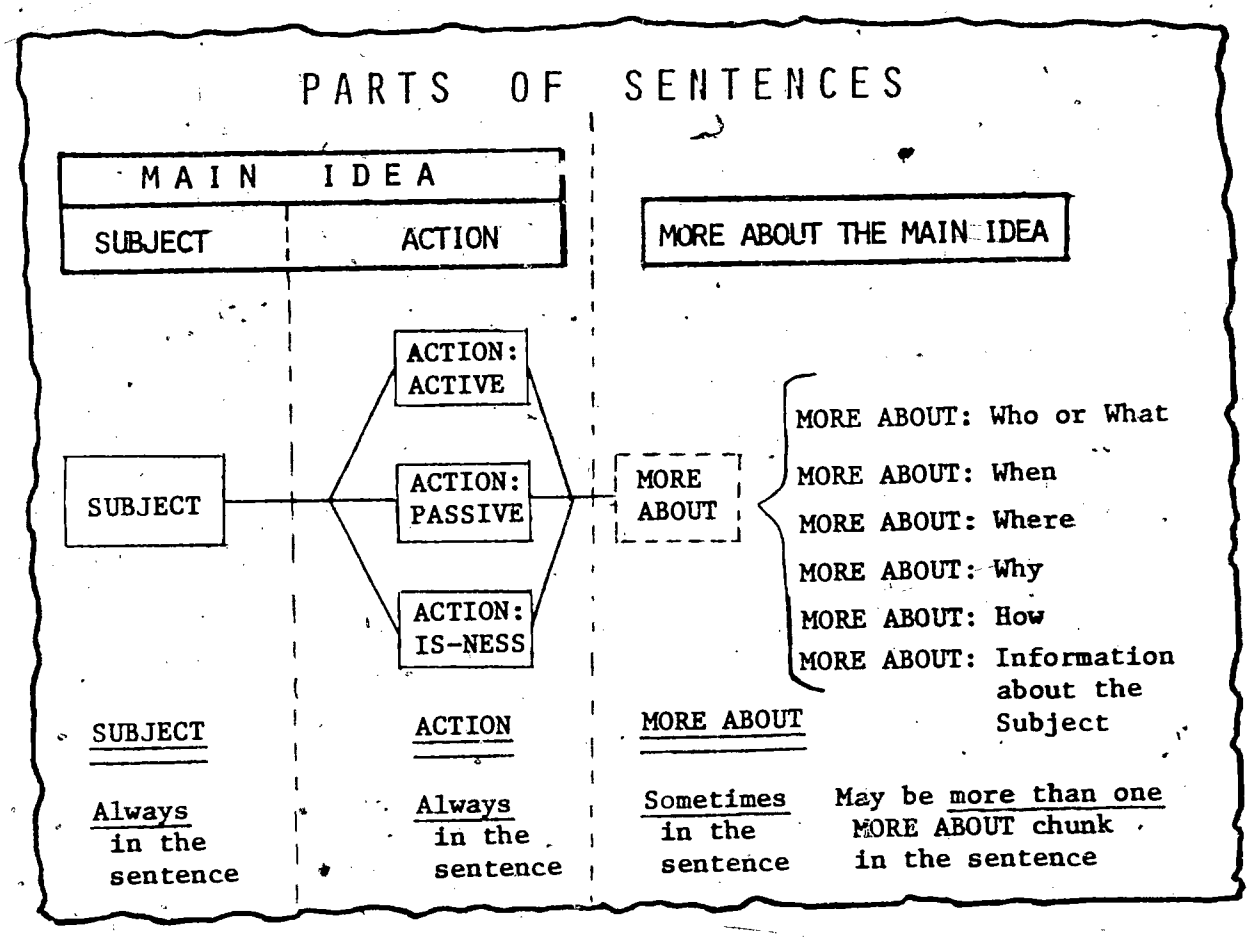


Figure 15. Basic Model of Sentence Structure.

Sample items of Passage Vocabulary Words:

LOW VISIBILITY - A TIME WHEN IT IS HARD TO SEE, SUCH AS IN FOG AND WHEN IT IS DARK

RECONNAISSANCE - TO LOOK FOR THE ENEMY AND FIND HIS LOCATION

Sample items of the MOS-Cluster Word Lists:

CORRESPONDING	DIGITS
CREDITED	DIRECTIVE
CRITICALLY	DIRECTIVES
CURRENT	DIRECTOR
	DISCLOSED

The focus on individual words in relation to the total sentence is treated in the Modified Cloze exercise. The cloze exercise was constructed by removing selected words and phrases in the categories treated by the languaging model.

Sample items from Modified Cloze:

Mortar and artillery squads and platoons control indirect fire through Mortar Gunnery Teams and Field Artillery Gunnery Teams. Each _____ has three parts: (1) an observer, (2) the fire direction center (FDC), and (3) the weapon crews or _____ _____ battery.

The focus on the total sentence is treated in two related exercises: Exercise on Sentence Chunks: I and Exercise on Sentence Chunks: II. Each requires the student to identify sentence chunks as Subject, Action, or More About.

Sample items from Exercise on Sentence Chunks: I --

EXAMPLE:

where
On the battlefield / the weapons / were fired /
who
by the soldiers.

1. Supply publications / are used / by Supplymen.

2. During unit training / field manuals /

are used / to help train the soldiers.

Sample item from Exercise on Sentence Chunks: II --

You _____ supplies in a way that will

protect them from theft.

A. The missing chunk is the SUBJECT chunk.

B. The missing chunk is the ACTION chunk.

C. The missing chunk is a MORE ABOUT chunk.

Five passages, and the exercises drawn from them, present content common to all MOS clusters. These materials are used in-group sessions in which all students participate, regardless of MOS. The remaining passages, and the tasks drawn from them, are MOS-cluster specific and are used only by students training in that cluster.

Each week begins with common training for all students, using a group passage. This training occupies 50-60% of the languaging portion of instruction. The two key exercises in the group instruction are the Exercise on Sentence Chunks: I and the Modified Cloze. The Exercises on Sentence Chunks are presented in a 5-week teaching cycle. Each Exercise on Sentence Chunks contains sentences largely of one (or in some cases, two) Action types. This reduces the complexity of sentence forms which must be treated in any one teaching session and gives the student a chance to learn to work with one Action type before he goes on to another.

The group instruction is followed by training in parallel materials specific to the student's own MOS cluster. This segment is highly flexible; from among the several program options, the instructor selects those activities most suited to the needs of

his students. He chooses from the Exercises on Sentence Chunks: I, cloze exercises, the MOS-Specific Passages, the Passage Vocabulary Words, and the MOS Cluster Word Lists. Students work either alone or in subgroups of men in the same MOS cluster.

Evaluation Procedure. The overall effect of the languaging program is measured by a Modified Cloze test given as a pretest and as a posttest. The Modified Cloze test serves as an overall measure of sentence comprehension. The Modified Cloze Test was generated from a specially written 500 word passage on map reading and land navigation. It has 20 blanks, each blank representing a judgmentally deleted content word or phrase for which sufficient grammatical or semantic cues exist in that sentence. The student is supplied a list of 40 choices (the 20 correct answers and 20 distractors) from which to fill in the blanks. This list is divided into separate columns corresponding to the major categories of the simplified model of sentence structure

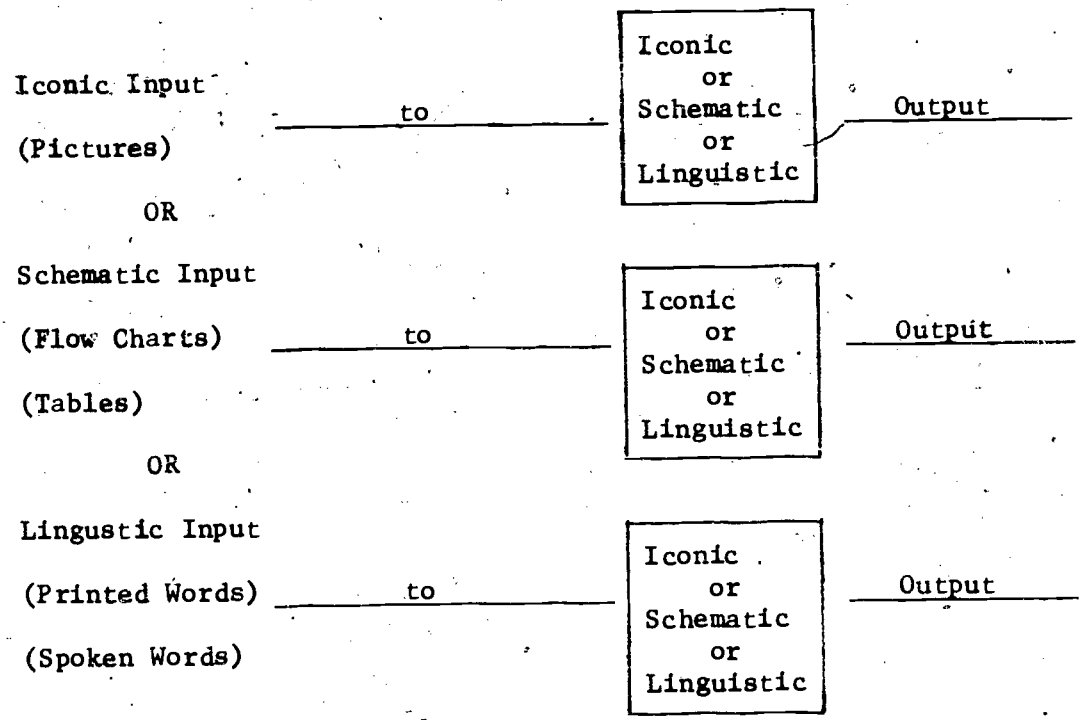
Feedback on Student Progress. The Strand II strategy of moving toward greater teacher freedom relieves the teacher of cumbersome record keeping. However, the teacher is not deprived of feedback data on the progress of his students. Each exercise is scored (by the teacher, by a student scorer, by a student peer instructor, or by the student himself). The teacher thus can judge how well each student does on a given exercise. Furthermore, the teacher can determine a student's general performance level by observing his overall performance on written exercises and the accuracy of his responses in the group discussions. A teacher may also occasionally assign an exercise or activity as a "test" under test conditions to further measure student progress.

Conceptualizing. Worksheets were eliminated and the student is now given more latitude to construct his own response in accordance to the requirements of each exercise. This process is carefully guided by the teacher to keep within the framework of reading comprehension skills training and the direct instruction in job knowledge. As with the Languaging component, the instructional time is divided between group discussions and individual work.

This revised component deals with (1) the development of increased reading comprehension skills and (2) direct instruction to increase job knowledge. Job concepts are presented to the students in the form of the job reading passages along with various conceptualizing strategies or schemes useful in the process of "comprehending" the concepts and thus increase the individual's knowledge base in a job area.

A conceptualizing task, in this program, is any activity in

which the student is asked to translate job knowledge information from one form of representation to another. Thus, a student might be asked to translate:



A typical conceptualizing activity might have the student first read a passage and then draw and label a picture of his understanding of the passage. He would then be asked to explain the picture to the teacher or other students for their feedback and reactions. Also, the student might be asked to locate, in the passage, the sentence/s where the information was obtained for the various parts of his picture. Thus, through a chain of tasks, the student has read the passage, processed the information, developed a new concept of the information, recorded his new concept in the form of a picture, and finally, has made yet another translation of the information by explaining his picture to another person.

Through this type of activity, the conceptualizing program focuses on (1) the development of increased reading comprehension skills through the teaching of various conceptualizing skills, and (2) gives direct instruction to increase job knowledge by using the specially prepared job reading passages as the vehicle for teaching and applying the conceptualizing/comprehension skills.

Conceptualizing Activities. The major conceptualizing activities are:

a. drawing flow charts
b. constructing classification tables
c. drawing pictures
d. drawing posters
e. presenting orally the output product from any of the above
f. paraphrasing the job passages in either written or spoken form and the concepts presented in the passage.

At least two of these conceptualizing activities are prescribed for each of the 72 job reading passages. Common activities among all passages are e. and f. above, presenting orally the output product, or paraphrasing the concepts presented. This procedure forces the student to continually review the concepts and job knowledge presented in the passage in order to perform the required activity, e.g., 1) drawing flow chart → 2) explaining flow chart → 3) presenting the content of the passage.

The operational sequence of presenting the conceptualizing tasks is simple. The student first learns how to perform the task (flow chart, picture, classification table) and is then given repeated practice in applying the skill.

The process of learning the skill is conducted by utilizing job reading passages containing familiar or known content. Passages of this nature are those containing job knowledge known to most of the students through instruction in basic combat training and are passages which are considered to be of "general" relevance across Army occupational clusters. Examples of this type are "Emergency First Aid," "Individual and Direct Fire Weapons," "Food Service Personnel," and "Transportation of Sick and Wounded."

These passages and the conceptualizing tasks performed on each are examined in group sessions in which the instructor demonstrates how better comprehension of the passage can be obtained through the use of a particular conceptualizing activity.

After the students are introduced to the conceptualizing activity by using the group passages, they are then asked to apply it to a series of MOS-specific job reading passages to increase both their skill and job knowledge and thus develop increased reading comprehension ability in their job area.

The design and nature of these activities demand a very active participation by the teachers. The activities were designed to be

"teacher oriented" rather than "material oriented" and for that reason, the teacher's role is far different than with Strand I modules and materials.

Of primary importance to this component of the Strand II program is that students are not given "worksheets" to "fill out and turn in". Rather, they are given a written passage and are then guided by the instructor to make their own worksheets and complete them, to "form" a concept rather than have one presented to them.

The teachers are furnished with guidelines for the presentation, sequencing and description of the conceptualizing tasks and are then required to "teach them" within the context of the job reading passages.

The guidelines contain at least one suggestion for a conceptualizing activity to be performed on each of the 72 job reading passages. The conceptualizing activity guidelines shown here are examples taken from four passages in three MOS clusters.

Passage Title	Conceptualizing Skill	Conceptualizing Activity
Vehicle Recovery	1) Draw	Procedures Used for Vehicle Recovery
	2) Flow Chart	Recovering a Vehicle
Driving Conditions	1) Classification Table	Different Driving Conditions X Procedures to Follow for Each Condition
Baked Goods	1) Flow Chart	Preparation & Cooking of Baked Goods
	2) Draw	Steps in Making Baked Goods
Security in Communications	1) Draw	Poster on "Communications Security"
	2) Classify	Types of Communications X Security Procedures Used

These guidelines, however, are only the minimal requirements for each task, for the teachers as well as the students. The teachers, during the activity, are also emphasizing job vocabulary, sentence construction, paraphrasing techniques, the job concepts, and many factors involved in teaching conceptualizing skills, developing reading comprehension, and building a base of job knowledge.

Evaluation of the Conceptualizing Program. The Conceptualizing program of Strand II, as with the Languaging program, has been designed to reduce the amount of classroom record keeping and thus give the teacher increased freedom to determine appropriate interaction with the students while conducting the program. Again, as with the languaging, the teacher is not deprived of the necessary formative data on the progress of his students. Each conceptualizing activity is examined and judged by the individual student, his peers, and by the teacher. The student is given immediate feedback about his work and retains his written work in a permanent file for review.

The overall effect of the conceptualizing is measured in pre- and post-testing by a (1) Conceptualizing Skills Test, and (2) a Job Knowledge Objectives Test.

The two-part Conceptualizing Skills test measures the student's achievement in his ability to use the major reading comprehension skills taught and applied throughout the six weeks of school. The student is first shown a short passage and a model flow chart constructed from the contents of the passage. Next, he is given another passage of different content and asked to produce his flow chart from the contents of the new passage. This process is repeated in the second part of the test which involves construction of a classification table.

The Job Knowledge Test gives an overall measurement of the student's increase in MOS-specific job knowledge. Two job concepts from each of the 12 job reading passages were selected as test items to be included in the 24-item test. Sample questions from three of the tests are shown below.

Using Recipe Cards

The Cook's Worksheet gives information about: 1) each food on the menu, 2) how much food is to be prepared, and 3) _____.

a) how long to cook the food
b) the different ways to measure ingredients
c) the recipe card number for each food item on the menu
d) methods of keeping the food sanitary

The Engine

The engine stroke in which the spark plug ignites the mixture of fuel and air in the cylinder is called:

a) the intake stroke
b) the compression stroke
c) the power stroke
d) the exhaust stroke

Publications

The four types of Army publications which Clerks and Supplymen use most often are: 1) supply publications; 2) doctrinal, training, and organizational publications; 3) technical publications; and 4) _____.

a) marketing publications
b) administrative publications
c) vehicle operation publications
d) manpower publications

The Decoding Component. The development of Strand I and Strand II did not take into consideration the development of a separate decoding program. The reason, as stated in Chapter 2, was that after examination of Army literacy training data, we found that most of the students entering APT programs had at least 4th grade reading level skills. This reading grade level indicates that they already possessed most of the decoding capabilities. Thus, the development of an intensive decoding program was not warranted.

It is recognized however that for some students at each school, a decoding problem does exist. The magnitude of the problem varies at different AITPT sites as does the number of students at any given time. Some AITPT schools have existing decoding

programs to handle this problem while others do not.

For the schools that do not have a decoding program or for the schools that may not be satisfied with their present decoding programs we are suggesting the use of a modified commercially developed program, The A.D.D. Program: Auditory Discrimination in Depth.[14]

The A.D.D. Program is a comprehensive decoding program which begins at the point of teaching discrimination of gross sounds, advances to the teaching of consonants and vowels, and ends with the encoding and decoding of both simple and complex syllables.

The modifications we have made to the A.D.D. Program are included as a separate teachers guide in the Strand II implementation package. These modifications include an expanded program guide, a revised introduction to the program, and a guide for the use of job-related words in the final segments of the program.

The complete A.D.D. Program also offers an initial screening test (L.A.C. Test - Lindamood Auditory Conceptualization Test). The test is administered on an individual basis, and is a useful instrument for planning individual needs.

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[14] *The A.D.D. Program: Auditory Discrimination in Depth*, by Charles H. Lindamood and Patricia C. Lindamood. Publisher: NYT Teaching Resources Corp. Catalog No. 25-100.

CHAPTER 4

EFFECTIVENESS OF FLIT TRAINING

In this chapter we will present data on the characteristics of FLIT students and on the effectiveness of the prototype FLIT job reading training program as it was developed and operated at Fort Ord, California. The total FLIT program is composed of a number of separate and distinct training components, each of which is directed to the attainment of a specific and clearly operationalized subobjective of the overall program of training. Individual module evaluation data, illustrating the effectiveness of these several separate components of the training program in achieving their own specific training objectives, will be presented separately for Strands I and II. After consideration of the effectiveness of the individual program components, data bearing on the summative, overall evaluation of the effectiveness of the total FLIT training program will be presented. Summative data will be presented primarily in terms of gains and end-of-course achievement level on both the USAFI measure of general reading comprehension and the JRTT measure of proficiency in performing a variety of job reading tasks.

Characteristics of FLIT Students

The appropriateness and operating effectiveness of any training program is in large part a function of the students who are engaged in the program. This section describes some characteristics of the 1,035 students who were trained in Classes 1-125 in the FLIT School at Fort Ord during the period of April 1972 through March 1975..

All the students are young adult males who have been in the Army for 2 months. Detailed descriptive data were obtained from an extensive questionnaire administered individually to the first six classes. This practice was halted because of the length of time required for the interview. The questionnaire was later reinstated as a take-home item, so we have data for 1,035 men. In the tables that follow, numbers fluctuate because of missing information.

The ages and education levels of students in the first 125 FLIT classes are shown in Table 8. The median age is 19, and median years of education completed is 12. Five hundred and eighty seven out of 1,035 (over 57%) reported having a high school diploma or GED equivalency, which contrasts sharply with their mean entry reading grade level of 5.3 on the USAFI general reading test and 5.2 on the Job Reading Task Test.

Table 8. Age and Education Levels of FLIT Students - 125 Classes

Age	N	Years of School Completed	N
17	91	7	14
18	252	8	25
19	247	9	65
20	201	10	145
21	80	11	191
22	42	12	528
23	21	13	27
24	25	14	21
25+	69	15+	7
Total	1,028	Total	1,035
		High School Diploma	572
		GED Certificate	15
		No High School Diploma	448
		Total	1,035

There has been a variety of ethnic groups represented in the FLIT program, as Table 9 shows. About 28% of the men in the FLIT program have been foreign born, with about half of these men having lived in this country for one year or less.

The large range of ethnic groups and number of foreign-born individuals imply considerable language variation, which Table 10 confirms. Here we see that, although English is the primary language for more than 67% of the sample, many of the men have a primary language other than English, with Spanish the next most common language.

It is clear from these data that much of the literacy problem at the FLIT school goes beyond students having inadequate reading, decoding, or word-attack skills; much of the problem is a language problem. In the FLIT job reading program, the student with marginal English language skills is provided practice in using these skills in working with job reading materials.

Module Evaluation Data

Strand I: In this section data appropriate to the evaluation of the individual modules of Strand I of FLIT are presented for students trained in Classes 40-125, in the period from April 1973 through March 1975. Prior to Class 40, the Strand I program was in a state of continual development and revision. Not until Class 40 do the data reflect the performance of students in the fully developed Strand I program in the stabilized form in which it was implemented at all Army Training Centers as an operational program.

The purpose of Strand I of FLIT is to provide training in the performance of the specific reading tasks involved in learning about how to do a job and in the day-by-day carrying out of the duties of that job. Extensive task analysis resulted in 6 sub-objectives and the corresponding component modules of the training program to attain these objectives. These objectives are given full operational meaning in the sets of criterion-referenced proficiency tests constructed for each module. The modular level evaluation of the effectiveness of the Strand I program consists then of determining the effectiveness of each module in training students to reach the mastery criteria on the criterion-referenced proficiency tests for that module.

Training Effectiveness of Modules. Five of the Strand I modules yield data suitable for evaluating the instructional effectiveness of the separate modules: Table of Contents, Index, Tables and Graphs, Body of the Manual, and Procedural Directions. For each of these modules, there are module proficiency tests, prepared in 3

Table 9. Ethnic Group and Foreign Born
FLIT Students - 125 Classes

Ethnic Group	N	Foreign Born	
		Time in USA (years)	N
Anglo-American	218	1/2	104
Negro	268	1	31
Spanish-American	194	2	43
Polynesian	256	3	30
Other	99	4+	79
	Total 1,035		Total 287 (28%)

Table 10. Language Background of FLIT Students - 125 Classes

Language	Students' Primary Language	Language Spoken in Home
English	680	582
Spanish	95	160
Samoan	95	104
All Philippine	81	89
Guamanian	28	27
Korean	23	26
Chinese	7	8
American Indian	6	10
Japanese	2	2
Other	5	6
Total	1,022	1,014

alternate forms, which are used to assess module-specific proficiency before and after instruction. (The forms modules do not have overall module pre- and post-tests for proficiency. Rather each form as its own separate "sub-module". Hence no pre- and post-test proficiency data are presented for Forms.)

Table 11 shows for each module, separately: 1) the percentage of students who successfully passed the pre-test for the module and advanced immediately to the next module; 2) the percentage who failed the pre-test and then passed the post-test after instruction; and 3) the percentage of students who failed the pre-test and subsequently failed the post-test or never did complete the module. Data from all MOS clusters have been combined in this table.

It is clear from Table 11 that most of the students needed training in most of the modules. While 20% of the students were able to reach criterion level on the Tables and Graphs pre-test (and thus did not need training in this task area), only 3% of the students were able to reach the criterion level in extracting information from the Body of the Manual material prior to instruction.

In regard to the Failed or Did Not Complete column, it should be pointed out that some students did not achieve proficiency in a given module after recycling, and they were moved into the next module to make sure that all students had some exposure to all the different job reading tasks before the six weeks of school were completed. While this practice precluded strict adherence to mastery performance criteria, the modules are not necessarily hierarchical and so cumulative deficits in skills would not result. Attempting to achieve mastery did, however, result in a fairly large number of students (61%) who failed to complete the difficult Procedural Directions module satisfactorily. This module comes near the end of the program, and many slower learners had to be moved ahead to learn about their MOS forms without achieving criterion levels of proficiency on the Procedural Directions post-test.

The effectiveness of each of the training modules is shown in Column 6. These data are obtained by dividing the entry in Column 4 by the sum of the entries in Columns 4 and 5. The training effectiveness percentage is thus the percentage of those students who could not pass the module proficiency test before instruction but who did pass the proficiency test in that module after instruction. The difficulty of the Procedural Directions task is shown by the number of students needing training on this task and by the fact that it was this module whose training succeeded in bring the smallest percentage (33%) of students needing training to proficiency. The training effectiveness of the other modules in training students to the criterion-referenced level of proficiency ranged

Table 11. Module Performance: FLIT Students

(1) Module	(2) N	(3) Passed Pre-Test %	(4) Passed Post-Test %	(5) Failed or Did Not Complete %	(6) Training Effectiveness %
Table of Contents	710	19	67	14	83
Index	710	16	56	28	67
Table & Graphs	710	20	53	27	66
Body of Manual	710	3	49	48	48
Procedural Directions	710	9	30	61	33

from 48% to 83%. The failure of these data to more closely approximate 100% in a self-paced mastery training program suggests that, for about one-third of the FLIT students, 6 weeks may be insufficient time in which to accomplish the required learning.

The data of Table 11 indicate that, in terms of criterion-referenced measurements of specific job-related reading tasks, FLIT students are indeed acquiring job-relevant reading skills.

Speed and Accuracy Criteria. Satisfactory performance on the criterion-referenced module proficiency tests is specified in terms of the dual criteria of accuracy and time: 90% of the constructed-response, fill-in questions must be answered correctly within 20 minutes for a student to pass a module proficiency test. Data in Table 12 show, for the 376 students in FLIT Class 40-90, the percentage of students failing any module pre-test who failed that pre-test for reasons of insufficient accuracy, taking too much time, or for reasons of both accuracy and time. For example, of the students who failed the Tables and Graphs pre-test and entered instruction in that module, 44% failed to meet the accuracy criterion, 37% failed to meet the time criterion, and the remaining 19% of those students failed to meet both criteria. Failure to attain the required 90% level of correct answers accounts for more than half of the student failures on the module pre-tests and, on the average, an additional 22% of the students failed to meet either the accuracy or the time criterion.

For these same students, Table 13 shows their mean pre-test scores on the criterion measure which they failed. This table shows, in the case of students failing the Body of the Manual pre-test, that those who failed on the basis of accuracy answered 48% of the questions correctly on the pre-test, those failing to meet the time criterion took an average of 40 minutes to complete the pre-test, and those with sub-standard scores on both accuracy and time answered 63% of the questions correctly and took 42 minutes to finish the test. Data are shown only for the variables on which performance was sub-standard: students whose less-than-90%-correct scores are shown in the accuracy column did complete the test in not more than 20 minutes; those whose failing time scores are shown in the time column did get at least 90% of the test items correct; and those failing on both accuracy and time, the average scores on both criterion dimensions are shown.

Summary of Strand I Effectiveness. Students failing only the accuracy criterion do fail considerably more items on the Body of the Manual and Procedural Directions pre-tests than on the pre-tests for the other modules; for students failing on the basis of time or accuracy and time, their performance is surprisingly uniform from module to module.

Table 12. Percentage of Students Failing a Module Pre-Test for Reasons of Accuracy, Time, and Both Accuracy and Time

Module	% of Students Failing Pre-Test Criteria: Accuracy	Time	Accuracy & Time
Table of Contents	52	19	29
Index	53	11	36
Tables and Graphs	44	37	19
Body of Manual	71	7	22
Procedural Directions	62	30	8
Mean	57	21	22

N = 376

Table 13. Mean Pre-Test Scores of Students Failing Module Pre-Test

Module	Reason for Pre-Test Failure			
	Accuracy	Time	Accuracy & Time	
	% Correct	Minutes	% Correct	Minutes
Table of Contents	75	32	66	36
Index	70	35	71	39
Tables and Graphs	70	30	66	33
Body of Manual	48	40	63	42
Procedural Directions	54	32	52	33
Mean	63	34	64	37
N = 376				

It is clear in these data that, although needing skill training to meet practically useful performance standards, many FLIT students do enter each of the training modules with an established basic ability to perform these job reading tasks. As shown in Table 11 most students fail to pass the module pre-tests and clearly show a need for training on these fundamental job reading tasks. In Table 12 we see that the great majority of those students failing the module pre-tests fail to meet the 90% criterion level of accuracy (on the average 57% fail on accuracy alone and another 22% fail on both accuracy and time). This inability to meet accuracy standards is, however, far from total, for these students average 63% correct on their module pre-test. This gap between 60% and 90% accuracy is sizeable and real, and it does represent the difference between some genuine but insufficient reading ability and the ability to use printed materials with sufficient skill to meet the reading demands of the job. Similarly, students failing to meet the criterion level of time do take considerably more than half again as much time to accomplish the pre-test reading tasks as realistic daily working demands of the job will permit.

Strand II: This section reports data indicating the effectiveness of the several separate instruction components of the experimental FLIT Strand II curriculum. Strand II was developed to provide systematic training in the basic job reading skill areas of word recognition, languaging, and conceptualizing through use of reading materials specially prepared to present the major concepts of MOS clusters in reading passages written at the 7th-9th grade level of reading difficulty. The Strand II instructional cycle which details the instructional and assessment operations of this curriculum is outlined in Chapter 3. Data presented in this section were obtained from 148 students in Classes 100-112 at the FLIT school at Fort Ord from September through December of 1974, the period of the tryout of the first developmental version of this experimental curriculum. Instructional time for these students was divided equally among Strand I, Strand II, and general reading training, daily.

Amount of Training Completed. In each of 3 MOS clusters (Cook, Clerk, and Mechanics), Strand II training consisted of 12 instructional modules, each with its standard complement of worksheets and training exercises directed at improving basic job reading skills. Students progressed at their own rate in this self-paced program which required mastery of all tasks in a module before advancing to the next module. Table 14 shows the number of students completing one module, two modules, etc., in each Strand II MOS cluster.

From Table 14 it can be seen that no student was able to complete all twelve modules for any MOS cluster. Only 30% of the students were able to complete half of the modules during their AITPT

Table 14. Strand II: Number of Modules Completed

Number of Modules Completed	Number of Students Completing			
	Cook	Clerk	Mechanic	Total
1	7	3	1	11
2	5	6	2	13
3	7	10	10	27
4	11	12	10	33
5	6	6	6	18
6	1	12	8	21
7	2	4	7	13
8	0	1	3	4
9	0	1	2	3
10	0	0	3	3
11	1	1	0	2
12	0	0	0	0
N	40	56	52	148

training time. This finding was surprising since a previous pilot tryout had indicated that two modules per week was about the average rate of completion. Several possible explanations could account for this dramatic drop in production. First, the administration of Strand II oral reading exercises required considerable expenditure of instructor time in a one-on-one situation. Sometimes this involved as much as 80% of the time during a 1-1/2 hour training period. During the time that the instructor was listening to the oral reading of one student, there was no one left to monitor the other students in class. Further, there was much unproductive time spent by the students waiting for the next event in the instructional cycle simply because the instructor was either tied up with grading packet worksheets or listening to oral reading production of a single student. Additionally, if the student working on his own in the module worksheet exercises needed help from the instructor, he had to wait until the instructor was free before he could continue. It also is possible that these time delays built into the system caused frustration in the students, resulting in lower production, and also provided a ready rationale for not doing the work if the student was less than motivated to do the reading tasks on his own initiative. These data indicate that the heavy burden of individual oral testing and scoring of worksheets, along with the increased demands by students for individual assistance, prevented students from accomplishing a large segment of this experimental, individualized, self-paced program of training. Because students differed so widely in the number of modules completed, all further analysis of Strand II effectiveness data was carried out by averaging, for each student, his scores for the total number of modules which he completed.

Sight Recognition of Job Vocabulary. One objective of the Strand II materials was the development of rapid sight recognition of job-related words. To achieve this purpose, word lists were developed for each module in each Strand II MOS cluster. This list consisted of all major job concept words introduced in the job reading passage for that module plus other high frequency job-relevant words drawn from a sample of standard Army manuals used in that MOS cluster. Pre- and post-training data on the time required to read these vocabulary lists aloud and the errors made in this oral reading are shown in Table 15.

These data are fully consistent in showing substantial increases in the speed of sight recognition and substantial decrease in the error rates of oral reading of job-relevant vocabulary upon completion of Strand II training modules. On the average, this training enabled students to read a list of 30 MOS-related vocabulary words in 5 second less time and with 3 fewer errors per list. Each module introduced new job-relevant vocabulary, the choice of which was dictated by the job concepts to be presented in that module.

Table 15. Oral Reading and Error Rates for Job Vocabulary

Oral Reading Measures		Cook N=39	Mechanic N=52	Clerk N=56	Total N=147
Rate in Words Per Second	Pre	1.1	1.3	1.0	1.1
	Post	1.4	1.6	1.3	1.4
	Gain	.3	.3	.3	.3
Errors Per List	Pre	5.1	2.8	5.5	4.4
	Post	1.2	1.1	2.6	1.7
	Gain	-3.9	-1.7	-2.9	-2.7

Of necessity, many of these vocabulary words were complex in structure and unfamiliar to the trainees in job reading. This training insured their sight recognition of this job vocabulary as a prerequisite to undertaking the reading exercises of the module.

Training in Oral Prose Reading. Once having insured the sight recognition of the technical job vocabulary contained in the module reading passage, the Strand II modules provided a variety of reading exercises, each involving a different aspect of languaging or conceptualizing training and all using the job-specific material of the passage as the content of the specific training. To assess the development of facility in reading the connected prose discourse of the passages, each student read the passage aloud to the instructor before and after the reading training exercises of the module. Table 16 shows the rate of oral reading obtained in a one minute sample and the number of errors made before and after Strand II reading training.

In these data it appears that the Strand II reading exercises have had the effect of increasing the facility/fluency of oral reading of the module source material passages by an average of 22 words per minute. This 16% increase in reading rate is accompanied by an average reduction of errors from 3.6 per minute to 2.4 per minute. This improvement in the speed and accuracy of oral reading of job-relevant materials reflects an increased facility in the processing of print into oral language. This freeing of involvement in the more mechanical aspects of reading permits the reader to focus increased attention on the major problem of conceptualizing and comprehending the information content of the passage.

Reading Comprehension. The goal of Strand II is to provide training in the constituent skills of reading for the purpose of improving the student's ability to comprehend and gain information from job reading passages. To assess the effect of Strand II training on the comprehension of the job reading passage of each module, cloze tests of that passage were administered at the student's first encounter with the passage (before oral passage reading) as well as the final step in that module. Both cloze tests were of the standard type -- the printed passage was presented with every fifth word replaced by a blank to be filled in by the student. The pre-module and post-module forms of the cloze tests differed in that a different word in the passage was chosen as the starting point for the deletion of every fifth word; therefore a different fifth of the 300-400 words in each passage was replaced by blanks on the pre- and post-test forms of the cloze. The results obtained from the pre- and post-training administration of the cloze tests are shown in Table 17.

Table 16. Oral Reading Rate and Mean Errors for Passage Reading

Paragraph Reading Measures		Cook N=39	Mechanic N=52	Clerk N=56	Total N=147
Words Per Minute	Pre	141	135	135	137
	Post	162	159	157	159
	Gain	21	24	22	22
Errors Per Minute	Pre	2.6	3.5	4.4	3.6
	Post	1.6	2.3	3.0	2.4
	Gain	-1.0	-1.2	-1.4	-1.2

Table 17. Pre-Test and Post-Test Cloze Scores

	Percentage of Correct Responses			
	Cook	Mechanic	Clerk	Total
Pre-Test	22	25	23	23
Post-Test	46	49	43	46
Gain	24	24	20	23
N	39	52	56	147

In each of the MOS clusters, the passage comprehension, as measured by the cloze test, doubled over the period of the Strand II module training and the average percentage of correct answers increased from 23% to 46%. The meaning of a score of 45% correct on the cloze test can be seen from previous research on the cloze measure of comprehension of Army job reading material.[15] On cloze tests of job reading material at the (9th grade) difficulty level of the Strand II passages, approximately half of a sample of 395 Army recruits were able to get 45% of the cloze items correct. Thus the training modules of Strand II enabled students to read the module passages with the understanding of an adult whose general reading comprehension is at the 9th grade level.

In these data, students have been tested, trained, and retested on the same passage in a module. Although their substantially increased reading comprehension of this specific job-content information has been evidenced, and although the module passages do present basic job concepts in each MOS cluster, the data of Table 17 are specific to the passages and the content on which the students were trained. In order to examine the cumulative effect of Strand II training and the generalizability of reading comprehension skills, the pre-test cloze scores on successive modules were examined. If the variety of passage-specific Strand II reading training activities does increase the comprehension of not only that passage but also other passages of similar difficulty in that job-content area, then the pre-test cloze scores (obtained on first exposure to the passage) would be expected to increase for successively encountered passages. Data on pre-test cloze scores for the first five modules of all three MOS clusters is shown in Figure 16 for the 71 students who had advanced through enough of the curriculum to permit this comparison.

These data suggest that reading comprehension may have increased for each new module and passage attempted. Although the initial gain in pre-test cloze score may have been occasioned by "learning to take a cloze test", this explanation has less force in explaining the higher average percent correct on the pre-test to the fifth module -- by which time the students had already taken eight cloze tests.

Summary of Strand II Effectiveness. The data on the effectiveness of Strand II indicate that this program, in its first developmental form, produced statistically and practically significant improvements in the sight recognition of job-specific vocabulary, in

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[15] Sticht, *ibid.*, Ch. 2.

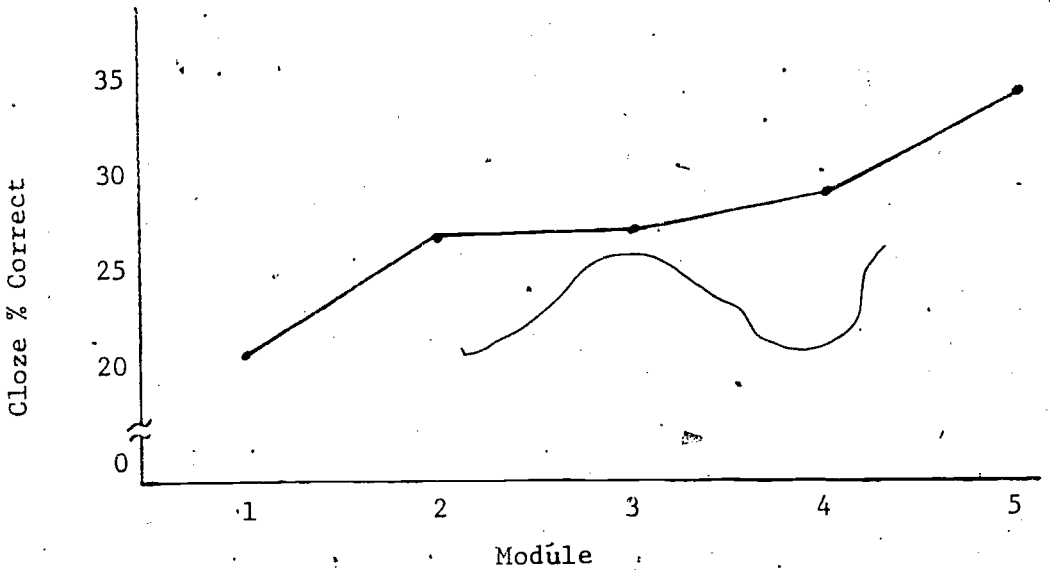

Figure 16. Pre-Test Cloze Scores on Modules 1-5.

the fluency and accuracy of oral reading of prose passages presenting major areas of job content, and in the reading comprehension of the job knowledge content of those passages. However, the burden placed on the instructor by the heavy requirements for listening to oral reading and for scoring worksheets prevented the instructor from giving the assistance and attention necessary to insure that most students completed the entire curriculum. The revisions to this curriculum, which are designed to accomplish the same Strand II objectives more effectively, are described in Chapter 3.

Summative Evaluation of FLIT Program

This section of the report deals with data bearing on the overall effectiveness of the FLIT job reading training program. The data represent the overall resultant of the many separate reading training components discussed in the previous sections. In the course of the FLIT development program, Strand I was developed first and remained essentially stable from Class 40 on. At about that time, preliminary development of the elements of a formal, systematic Strand II program was undertaken. Since then the experimental Strand II program being tried out at the FLIT school has been a

shifting array of experimental training components -- experimentally applied in the FLIT school in various combinations which were dictated more often by the need for experience with the use of the individual elements than by integrated systems considerations.

Data for FLIT Classes 40-125 will be presented in this section. Throughout this period the Strand I program remained essentially constant in its present form. The nature and extent of the Strand II program elements varied during this period. Throughout the entire FLIT school period, the two hours of the instructional day not spent in Strand I and Strand II training have always been devoted to some form of study and practice in general reading in the diversified collection of simplified and standard general reading materials maintained at the school. The FLIT program whose overall effectiveness will be considered thus included a combination of job and general reading training.

The two major components of the FLIT program are job reading training and instruction in general reading comprehension. Overall effectiveness of the FLIT program has been measured by means of pre- and post-training administration of alternate forms of the reading comprehension portion of the USAFI Intermediate Achievement Test and the FLIT Job Reading Task Test (JRTT). Effectiveness of the FLIT reading training program can be assessed by the gain on these composite measures of general and of job reading performance over the 6 week period of FLIT training.

Table 18 presents the data on the mean USAFI and JRTT reading grade level (RGL) of FLIT students in Classes 40-125.

In these data which are free of the regression artifact which has flawed the assessment of so many remedial reading training programs, students enter FLIT performing both general and job reading tasks equally well (or poorly) -- low in the 5th grade reading level. After 6 weeks of FLIT training in general and in job reading, students have gained 2.1 RGL years on the JRTT measure of job reading (3 times the gain made in general reading) and the end-of-course average JRTT score exceeds slightly the targeted course objective of RLG 7.0. The .7 RGL gain on the USAFI measure of general reading is in full accord with typical findings of adult general reading training programs of from 50 to 100 hours of instruction.

A different perspective on the improvement in reading skills produced by the FLIT program can be seen in the percentages of these same students reading at various RGLs before and after training, as shown in Table 19.

As determined on the first day of FLIT training, the distributions of job reading ability and general reading ability are highly

Table 18. Reading Performance in FLIT Classes 40-125

Type of Reading	N	Reading Grade Level		
		Entry	Exit	Gain
General Reading (USAFI)	714	5.3	6.0	.7
Job Reading (JRTT)	714	5.2	7.3	2.1

Table 19. Distribution of Reading Performance Before and After FLIT Training (N=714)

J R T T			RGI	U S A F I		
% of Students				% of Students		
Pre	Post	Change		Pre	Post	Change
2	22	20	9+	1	4	3
3	12	9	8	1	7	6
5	20	15	7	8	14	6
20	20	0	6	19	23	4
24	16	-8	5	27	25	-2
46	10	-36	4-	44	27	-17

similar, with almost half of the scores on either measure falling at the 4th grade reading level or below. At the end of FLIT training, there are 36% fewer students performing job reading at or below the 4th grade level and 17% fewer performing at this bottom level on the USAFI. In terms of the FLIT objective of 7th grade ability in job reading, the 10% of students who read at this level prior to training increased to 54% who reached this objective after training, for a net gain of 44% of students reaching the course objective. Forty-six percent of the students failed to reach the 7th grade level of job reading proficiency in the fixed training period of six weeks. On the USAFI measure of general reading ability, there was, over the six weeks of FLIT training, an increase of 15% in the number of students reading at or above RGL 7.0. Seventy-five percent of the students failed to reach this level of general reading comprehension.

Tables 18 and 19 have shown the average gains in job reading and general reading produced by the FLIT program, as well as the percentages of students reaching various reading levels at the end of FLIT training. Of further interest in evaluating the effectiveness of the FLIT program is the program impact in terms of the proportion of students making small, intermediate, and large amounts of gain. The percentage of students making various amounts of gain on the JRTT and the USAFI is shown in Table 20.

The overall effectiveness of the FLIT training program for job reading is shown in the finding that over three-fourths of the students make JRTT gains of more than one reading grade, with almost half of them making gains in job reading task performance of more than 2 grade levels. In contrast, substantial gains in general reading comprehension are much less frequent -- about one-third of the students made more than 1 grade level gain over the period of the training.

That 31% of the students make zero or negative gains in general reading illustrates a problem in the use of multiple-choice tests of reading comprehension, such as the USAFI. Blind guessing on all 44 4-alternative items of the USAFI would produce chance success on some 11 of these items. Since the USAFI RGL norms have been established on scores uncorrected for guessing, this average chance raw score would be interpreted as being at RGL 3.2, not zero. For students who attempt all items and whose true reading ability is in this region, there is a large and randomly varying chance component to their scores. As a necessary consequence, many truly low readers who happen to guess more fortunately on their pre-training test than after training thus produce negative gain scores on the USAFI. This problem has been obviated on the JRTT by the requirement of fill-in, constructed responses which are specifically dependent on the information in the reading passage and for which

Table 20. Distribution of Student Gain

(% of Students)

(N=714)

	R G L Gain			
Test	Negative-Zero	.1-1.0	1.1-2.0	2.1 and above
JRTT	6	17	30	47
USAFI	31	34	22	13

the expected probability of chance success approximates zero.

Summary of Overall FLIT Effectiveness: The data in the three above tables constitute the main evidence for the overall effectiveness of the FLIT program for general and job reading abilities. These data are highly consistent with each other in showing the FLIT program producing 3 times as much average gain, 3 times as many students brought up to the 7th grade reading level, and 4 times as many students making gains of more than 2 grade levels on the JRTT measure of job reading than on the USAFI measure of general reading comprehension. It is not that the FLIT program is deficient in training general reading comprehension, for the results of general reading comprehension training programs for marginally literate adults typically and consistently show from one-half to one year's gain in RGL for from 50 to 100 hours of general reading instruction. Rather, these data indicate the gains that can be made in brief, one-shot remedial reading training programs by focusing on training on the specific tasks and in the specific reading materials in which the student is required to become proficient.

In summary, most FLIT students needed training in the several basic job reading tasks addressed in this program and most FLIT students demonstrated some, but not enough, reading competence on these reading tasks to meet minimum job requirements without specific training. These data represent the functional reading training requirements to which the FLIT job reading training program is addressed and the effectiveness of the various FLIT modules in meeting these training needs.

The FLIT instructional modules differ greatly in their training effectiveness as measured by the percentage of students needing training whom they bring to criterion level job reading performance. These differences appear to spring from inherent differences in the difficulty of the several reading tasks which comprise the real-world reading requirements of jobs. Module by module, these data demonstrate that marginal job reading skills can be brought to the absolute criterion levels required for satisfactory job performance by concentrated training which focuses on the specific, albeit complex, reading materials to which those reading skills are to be applied. Differences in the effectiveness of the various modules emphasize again the ineluctable differences in the times required to bring widely varying levels of entry skill to an absolute and demanding criterion level of performance.

Subsidiary Evaluation Data

In addition to the basic evaluation data reported above for the current, stabilized version of the FLIT program, two smaller scale evaluation studies were conducted.

Effects of Literacy Training: To further evaluate the FLIT program following the revisions for Classes 40 on, a group of Army personnel entering the Light Vehicle Drivers School at Fort Ord were tested for general reading and job reading ability on the first and last weeks of their MOS training. Thus these men received no general reading training or direct, extensive training in job reading as given in the FLIT school, although of course they were introduced to Army job reading materials.

Table 21 shows how well the FLIT students did on general and job reading task tests compared to Army personnel in the Light Vehicle Drivers School who scored below the 7.0 grade level on the USAFI general reading test on entry into their MOS training. We note that the students who received no literacy training improved 1.0 grade level in general reading -- again reflecting gain that can be obtained simply through retesting at a later date.

Regarding job-related reading, the FLIT students gained some 2-1/2 years, while the non-literacy-trained personnel improved by one grade level. Again, the effectiveness of direct training in job-related reading is demonstrated.

Retention of Literacy Training: In order to examine the stability and retention of the reading gains and end-of-course reading achievement levels attained in FLIT training, 97 FLIT and AITPT graduates undergoing MOS training at Fort Ord were retested at the end of their AIT -- approximately 8 weeks after having completed reading training and immediately before their first MOS duty assignment. As Table 22 shows, these FLIT graduates completed their AIT assignment with job reading skills above the 7th grade level and almost 2 grade levels higher than they had displayed on entering FLIT some 3-1/2 months earlier. On the USAFI measure of general reading ability, the gain of 1.0 RGL, which had been attained in FLIT, had reduced to a net gain of .4 RGL since entering reading training and these men entered their initial MOS assignment with a general reading comprehension below the 6th grade level. Some loss of newly acquired and unconsolidated reading skills can be expected, through disuse, in the heavily performance-oriented MOS training of AIT/CST. The substantially greater retention of the previously-learned job reading skills illustrates again the effectiveness of training in those skills which will be practiced, applied, and retained in the training and job situations which follow the period of intensive reading training.

Table 21. FLIT Students Compared to No Literacy Training Group

Students	N	General Reading			Job Reading		
		Entry	Exit	Gain	Entry	Exit	Gain
FLIT*	94	5.1	6.6	1.5	5.4	8.0	2.6
No Literacy Training	39	5.6	6.6	1.0	6.3	7.4	1.1

*Classes 40-60

Table 22. Retention of
USAFI and JRTT Reading Gains

J R T T RGL			U S A F I RGL		
FLIT Entry	FLIT Exit	AIT Retest	FLIT Entry	FLIT Exit	AIT Retest
5.4	7.8	7.3	5.4	6.4	5.8

CHAPTER 5

FLIT IMPLEMENTATION

The prototype Strand I and Strand II programs described in Chapters 2 and 3 were first developed and tested at the experimental FLIT school at Fort Ord and subsequently implemented. This chapter describes all phases of the implementation program by which the prototype FLIT programs were installed as operational programs to replace the then Army Preparatory Schools (APTs) at all Army Training Centers. With the implementation of Strand I, the APT program was redesignated as Advanced Individual Training Preparatory Training (AITPT) to underscore the functional job reading training emphasis of the new training program. This chapter first describes the implementation plan and follow-up for Strand I, then presents monitoring data on the effectiveness of the operational AITPTs, and concludes by describing the plan and activities for implementing Strand II.

Implementation of Strand I

In September 1973, the Strand I program was approved for implementation at the remaining five Army Training Centers (ATCs) conducting APT: Forts Knox, Jackson, Polk, Dix, and Leonard Wood.[16] The final implementation plan, consisting of student cost estimates, projected time schedule, and specific implementation activities and decisions, was submitted to TRADOC in October 1973. This plan, later included as an attachment to the 5 February 1974 DA Letter which announced the change of the Army Preparatory Training program to the Advanced Individual Training Preparatory Training (AITPT) program, was to implement a minimum of two hours of Strand I training within the APT's six-hour curriculum. The remaining four hours of instruction were left to the discretion of the local AITPT school.

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[16] There was no formal implementation program for the Fort Ord AITPT. In April 1972, the Fort Ord APT was designated as the experimental school for the development and evaluation of the FLIT prototype programs. At the start of the formal Strand I implementation program the FLIT school was redesignated as an AITPT school whose status was changed from experimental to operational by incremental transfer of responsibilities to the Fort Ord Education Office. This transfer was completed at the end of the contract.

Major Implementation Activities: Involved in any large implementation process are major activities and responsibilities which have to occur on the part of both the implementing organization and the system being changed. HumRRO's activities, as the implementor, included:

a. scheduling and conducting workshops for training the APT staff in the AITPT procedures and philosophies;

b. providing technical advisory service to each ATC throughout the implementation process;

c. providing each ATC with camera-ready copies of all the job reading teaching materials, the Job Reading Task Tests, and the in-training proficiency tests. This totaled to approximately 3,200 masters per AITPT school. Samples of assembled materials were included;

d. providing each ATC with lists specifying the quantities of manuals, forms, and other materials needed to conduct Strand I;

e. collecting data on the performance of each of the new AITPT programs.

Each of the five ATCs had to:

a. change the name of the APT to AITPT;

b. change the sequence of literacy training from pre-BCT to post-BCT;

c. stop input to the APT on the date specified in the implementation schedule, upgrade the selection standard to include those with a reading grade level of 6.1 or below, and initiate AITPT screening;

d. obtain the specified number of copies of the manuals, forms, and equipment and materials indicated on the enclosures to the DA Letter dated 5 Feb 74;

e. reproduce and assemble all the printed job reading material provided by HumRRO in the specified quantities (the initial reproduction request was based on the estimated need of training 100 soldiers per year in each of the 6 MOS clusters);

f. change the APT curriculum to include a minimum of two hours of Strand I training;

g. set up a system for retesting all AITPT designees during the 3rd to 5th week of BCT and eliminate any who do not meet the selection criterion or whose MOS is not included on the list of the 18 eligible MOSs; and upon completion of BCT, assign these double screened designees to the AITPT program along with a specific MOS designation;

h. initiate AITPT training;

i. provide HumRRO with test results and other data as requested.

Deadlines for the accomplishment of each of the above activities was given by HumRRO; the time frame for the major activities is shown in Table 23 below.

Major Changes in the Implementation Plan: There were two major changes to the initial implementation plans: (1) the deletion of the phase providing on-the-job training of selected APT staff members at the Fort Ord FLIT School; and (2) a moratorium imposed by TRADOC on further AITPT implementation. The original implementation plans included a phase providing for two weeks of on-the-job training for the APT administrator and one teacher from each implementation site in the Strand I program at Fort Ord. This phase, planned to occur one week after the input to the APT had been stopped, was designed to provide APT staff members with direct exeprience in an operational AITPT program. However, this phase had to be dropped from the implementation plan due to legal problems involving payment of TDY (temporary duty) expenses to contracted personnel such as the APT administrators and instructors. To compensate for the deletion, it was decided to have the USATCHRU (United States Army Training Center Human Research Unit) member of the HumRRO workshop team remain for an additional two weeks after the workshop to work with the local AITPT staff.

Since this change occurred just prior to the Knox implementation, the Fort Knox USATCHRU-HumRRO unit sent one of its military assistants on 2 weeks TDY to Fort Ord so as to be able to provide a FLIT School trained advisor to the Knox AITPT School. Following his training in the FLIT Strand I program, the Knox assistant, along with a USATCHRU military assistant from the HumRRO FLIT staff conducted the HumRRO workshop at the Knox AITPT school.

Table 23. Summary of FLIT Strand I Implementation Schedule

Fort	1st HumRRO-USATCHRU*** visit	No input to APT, selection standard changed	Preparation time	HumRRO workshop	1st AITPT input	HumRRO follow-up visit (optional)
Knox	**Dec 10	Jan 7	Jan 7-Feb 18	Feb 20 to Mar 15	Feb 25	*Oct 23-25
Jackson	Jan 28	Feb 4	Feb 4-Mar 25	Mar 25 to Apr 19	*Apr 1	*Nov 7-8
Polk	Mar 4	Mar 11	Mar 11-Apr 26	Apr 29 to May 24	May 6	*Oct 21-22
Dix	Mar 26	*Sept 23	*Sept 23-Oct 26	*Oct 29 to Nov 22	*Nov 11	*none
Leonard Wood	May 6	*Aug 19	*Aug 19-Sept 30	*Oct 1-11	*Oct 7	*Nov 11-13

*These dates reflect a five-month delay in the schedule due to a TRADOC moratorium imposed on Strand I implementation.

**1973. All other dates are in 1974.

***United States Army Training Center Human Research Unit

The other change in the implementation plan schedule was caused by a 21 May 1974 moratorium placed by Hq, TRADOC on further FLIT implementation, until an Army-wide functional literacy survey could be conducted. The survey resulted in the rescinding on 29 July 1974 of the moratorium on the AITPT implementation program by directing the remaining implementation at Forts Dix and Leonard Wood, and by ordering the inclusion of mental Category III as well as Category IV in the screening selection for the program.

The effect of this moratorium was a five month delay in implementation at Forts Dix and Leonard Wood. During this time, the FLIT USATCHRU military assistant who had been programmed to participate in the Fort Leonard Wood implementation had been discharged from the Army and was not replaced. Therefore, it was necessary to conduct the Fort Leonard Wood HumRRO Workshop with only one member from the FLIT staff and for a period of only two weeks. Fortunately, a military assistant was available to assist in the Fort Dix implementation so that it occurred as planned.

Major Phases of the Implementation Plan:

Phase 1 - Initial USATC visit of HumRRO-USATCHRU research personnel. The first phase of the implementation, the initial visit, was begun with the official notification of all USATCs that the APT program was going to undergo a major revision so as to accomodate a post-BCT job-related reading program developed by HumRRO. This notification, in the form of a DA Letter dated 5 February 1974 entitled, "Advanced Individual Training Preparatory Training", was made in advance of the publishing of the TRADOC Circular 621-1.

Three days were allocated to the initial visit phase for each ATC. Generally the first day consisted of a brief visit with the commanding general or the deputy commanding general; a full briefing on the background and development of the AITPT program for the management levels of those involved in the change; and a brief visit to the APT school. The second and third days were spent in specific coordination of changeover requirements listed in a previous section, with Reception Station, Adjutant General (AG) trainee section, AG publication center, AG duplication office, Education Test Center, and APT personnel.

Phase 2 - HumRRO Workshop for AITPT Staff. The two-week HumRRO workshop, which began one week prior to the initial input to the AITPT, was generally conducted by two FLIT staff members: a HumRRO researcher and a USATCHRU military assistant. The

beginning of the first week was used to complete the preparation of materials and the physical arrangement of the classroom. The second part of the week was used to conduct a two- or three-day simulation of a job reading class with the teachers and administrators participating as students. The classroom simulation began with the administration of one form of the Job Reading Task Test to the staff. The staff was then introduced into the Strand I program by actually taking a Table of Contents (TOC) pre-training proficiency test, filling out TOC worksheets, taking a Table of Contents post-training proficiency test, and then moving to the next module. When time permitted, the participants were given work in all six instructional modules, and they also took turns serving as instructors and scorers in the simulated classroom. During the workshop the principles and philosophies underlying the Strand I procedures and materials were introduced and frequently reviewed. The staff was also taught how to write worksheets, using the basic developmental principles of going from "structure" to "content", and of going from "simple" to "complex". When possible, those instructors who were going to be teaching the job reading participated in some of the rewriting of worksheets under the supervision of the HumRRO personnel.

During the second week, the HumRRO personnel assisted and advised the AITPT staff as it in-processed and began teaching its first AITPT class. Following the workshop, the USATCHRU military research assistant remained an additional two weeks to assist the staff with the new program.

Phase 3 - The Follow-up Visit to Each Operational AITPT. To complete the final phase of the FLIT Strand I Implementation Program, some 12 to 16 weeks following the workshop a follow-up visit was made to each AITPT school. (Fort Dix was omitted because it had just completed its changeover to the AITPT program.) The two-fold purpose of each visit was: (1) to observe and collect information about the conduct and functioning of the AITPT school in general, and of the Strand I Job Reading Classrooms in particular; and (2) to provide additional guidance on the Strand I Job Reading Program where and when necessary.

Each visit started with in-briefings with the Education Officer and the AITPT Administrator; followed by a short meeting with the entire AITPT staff to explain the purposes of the visit and to outline the activities projected during the visit. As part of the information collection activities, the teachers and the administrator were given extensive questionnaires about the AITPT school and the Strand I Job Reading Program. Individual interviews were conducted with AITPT staff members, Education

Test personnel, and the STC Company Commander to elicit information about the functioning of, and attitudes toward, the AITPT Program and its implementation. An observational checklist was used to help focus the classroom observation.

After reviewing the questionnaires, the interviews, and the classroom observation checklist, a general roundtable exit meeting was held with the entire AITPT staff. During this meeting, specific positive and negative classroom practices were noted; the basic philosophies of the Strand I Program were reviewed; suggestions for program change or particular emphasis were made; and general discussion of the operation of the AITPT school was held. Final activity of the site visit was an exit briefing with the Education Officer.

Description of Each AITPT: Before presenting the data obtained during the implementation follow-up visits, a brief description of the AITPT system, as it was configured at the time of the visit, will be given to provide a basis for the forthcoming data discussions. Table 24 below presents student/-teacher information for each of the operational AITPT schools.[17] As shown in the table, the operational system had a total student enrollment of 344 students and an instructional staff of 30 teachers. The average AITPT enrollment was 86; while the average number of students per class per AITPT ranged from 9 to 18.

Table 24. Student/Teacher Information by AITPT

AITPT	Student Enrollment	Total Number of Teachers	Number of Students per Classroom
Fort Knox	73	4	18
Fort Jackson	83	9	9
Fort Polk	89	8	11
Fort Leonard Wood	99	9	11
Total	344	30	

[17] Fort Dix was omitted from the follow-up visits because it had just completed the changeover process to the AITPT program.

Since each school operates under slightly different constraints, both on staff utilization and scheduling procedures, each AITPT will be discussed individually in terms of the number of teachers, number of students, curriculum content, and scheduling procedures.

Fort Knox. This school was conducting 3 hours of job reading and 3 hours of general reading/math per day. School enrollment was 73. The staff consisted of 2 job reading reachers, 2 general reading/math teachers, 1 teacher-trainee for the job reading program, and 1 administrator. Each teacher taught two three-hour sessions per day in his own content area. The then current average number of students per classroom was 18. The teachers and the administrator were employed on a renewable quarterly contract.

Fort Jackson. This school was conducting 2 hours of job reading and 4 hours of various general reading activities. Unlike the other AITPTs, each teacher taught all of the school's curricula to his students. However, since the teacher's home room did not contain the job reading materials or the lab equipment and materials, the teacher and the students rotated to various rooms throughout the day.

School enrollment was 83. (Note: unlike other AITPTs, Jackson tested all personnel, Categories I-IV, for inclusion in program.) The staff was comprised of 9 teachers, one assistant administrator, and 1 administrator. The then current average number of students per classroom was 9. The teachers were on a 6-week renewable contract; the assistant administrator was on a 6-month renewable contract; and the administrator was a GS-11.

Fort Polk. This school was conducting 2 hours of job reading, 1 hour of math, and 3 hours of general reading per day. However, this 6-hour curriculum was spread over an 8 hour teaching day. Thus, not all students were in class at the same time.

School enrollment was 89. The staff was composed of 8 teachers (2 job teachers, 1 math teacher, and 3 general teachers; 2 test proctors who worked as teacher aides in the job reading rooms); and one administrator. The then current average number of students per classroom was 11. The teachers were employed on a renewable 6-month contract, and the administrator was a GS-11,

Fort Leonard Wood. This AITPT was conducting 2 hours of job reading, 2 hours of math/English, and 2 hours of general reading. School enrollment was 99. The teaching staff consisted of 9 teachers (3 job reading teachers, 3 math/English teachers, and

3 general reading teachers) and one administrator. The then current average number of students per classroom was 11. The teachers were employed on a 3-month renewable contract; and the administrator was a GS-9.

Discussion of Follow-up Visit Data: One of the purposes of the follow-up visit was to assess the fidelity of the implemented programs by obtaining information on the operation of the AITPT schools, the staffs, the curricula, and the attitudes of the staff toward the program. This data was collected through the use of:

1. staff questionnaires;
2. individual interviews;
3. classroom observation check list.

The following data, analyzed from the 30 instructional staff questionnaires, will be discussed in terms of the following major topics covered by the questionnaire: Strand I teaching experience; teachers' perception of the AITPT program; Strand I teacher training; positive and negative (problems) aspects of the job reading program; and testing information.

Strand I Teaching Experience.

Table 25. Mean Strand I Teaching Experience in Months

Fort	N	$\bar{X}$	Length of AITPT Operation
Knox	2	6.5	9
Jackson	9	4.4	8
Polk	5	4.2	5-1/2
Leonard Wood	3	1.2	1-1/2
Total	19	4.1	

Table 25 above illustrates the varying amounts of Strand I teaching experience reported by the teachers at the different AITPTs (e.g., the two Fort Knox teachers have a mean time of 6.5 months teaching experience).

The difference between the overall individual AITPT teaching experience mean and the length of time the AITPT had been operational, is due in part to the fact that each school was started

with a small core group of teachers to which new members were added as the student enrollment increased. For instance, one teacher at Fort Knox had 9 months experience with the program and the second teacher had only 4 months experience. The smallest amount of experience was reported by two of the Fort Leonard Wood Strand I teachers who had been employed for only one month each. However, as the length of AITPT operation indicates, each staff, except Fort Leonard Wood, had experienced having several classes complete the AITPT program. Fort Leonard Wood completed its first class during the follow-up visit. Therefore, their staff did not have as broad an experience base form which to respond to some of the questions. (This is particularly noticeable in the discussion of the teachers' prediction of student performance on the USAFI and JRTT.)

Within this group of actual Strand I teachers, there was a dichotomy of experience: nine of these taught Strand I job reading all day; and the other nine taught job reading for only two hours during the day. Added to this group is another, the 12 general reading/math teachers. This group had for all intents and purposes, no experience teaching, and in many cases no knowledge of, the Strand I program. To avoid confounding the data because of this large difference in experience with the Strand I program, the results of the staff questionnaire survey will be presented from the perspective of the two types of teachers so identified in the AITPT system:

a. "job" teachers: those who have Strand I teaching experience;

b. "general" teachers: those who do not have Strand I teaching experience.

Teachers' Perceptions of AITPT Program.

AITPT Goals: An important contributor to the success of any program is the degree of awareness of the staff of the overriding purpose or goal of the activity. To obtain this information, the teachers were asked to state what they felt was the major goal of the AITPT program. The following summary of their responses is presented in order of highest frequency of citation:

1. Nineteen out of 30 of the teachers made statements which indicated that the AITPT goal is to prepare men to perform more effectively in their AIT (Advanced Individual Training) and on the job. The following are examples of the type of statements made:

a. "to help the student to perform efficiently when he does his AIT training and to do his job effectively at his permanent duty station";

b. "to help the man to perform more efficiently in his MOS, by being able to read and work with his MOS manuals with greater ease";

c. "to train students to read and be able to find information quickly in their MOS manuals";

d. "to help the student become familiar with the manuals and to teach him the skills he needs in order to use them so that he is able to successfully complete AIT".

2. Six teachers stated that the goal is to improve the man's reading ability. There was no mention of there being any relationship between the training and the man's job or MOS materials.

3. Four made broader, more general statements than the above. For example, "to teach skills needed by intelligent men to be useful and contributing citizens and soldiers" or "to help the students be more able to find the information they may need later".

4. One teacher declined to respond.

In summary, almost 2/3 of the teachers were aware of the job-relatedness of the AITPT training, while the other 1/3 seemed to be working under a broader, more general goal like that in the old APT program. None of the teachers mentioned any minimal reading grade level objective for the program.

Instructional Principles and Materials: Another indicator of the teachers' perception of the Strand I program is revealed in their awareness of its underlying instructional principles and materials. Each teacher, given a list of various instructional methods and materials, was asked to check all that they felt applied to the job reading program. Tables 26 and 27 display the results, which are listed in order of highest frequency of citation.

Before discussing these results, it is necessary to provide some indication of the Strand I methodological documentation and indoctrination given to the staff. Of the twelve items listed in Table 26, six of these are listed in the HumRRO Professional Paper 13-73, "HumRRO's Literacy Research for the U.S. Army:

Table 26. Frequency of Citation by AITPT Instructors of Strand I Instructional Methods

Instructional Methods	Total # of Citations*		Frequency of Citation			
			Job Teachers**		General Teachers***	
	# of Citations	% of Possible	#	%	#	%
Individualized Instruction	22	96	18	100	4	80
Self-Paced Instruction	20	87	17	94	3	60
Programmed Instruction	19	83	16	89	3	60
Job-Functional Instruction	19	83	16	89	3	60
Student-Assisted Instruction	17	74	15	83	2	40
Student Follow-Up	15	65	13	72	2	40
Performance Oriented Instruction	14	61	12	67	2	40
Quality Control Monitoring of Classroom Performance	12	52	9	50	3	60
Small Group Instruction	9	39	7	39	2	40
Class Discussion	1	4	1	6	0	0
Class Recitation	0	0	0	0	0	0
Homework	0	0	0	0	0	0

*Total possible number of citations per item = 23. (7 of the teachers responded with "Not qualified to answer".)

**Total possible number of "job" teacher citations = 18.

***Total possible number of "general" teacher citations = 5.

Developing Functional Literacy Training", as being basic to the Strand I development:

1. Job Functional Instruction;
2. Performance Oriented Instruction;
3. Individualized Instruction;
4. Student Assisted Instruction;
5. Quality Control Monitoring of Classroom Performance;
6. Student Follow-Up.

These six principles were first introduced to the AITPT staffs during the initial briefing visit, and then re-introduced and reviewed throughout the HumRRO workshop. In addition to some letters and handouts, the professional paper was available to the teachers at that time. When asked if they were aware that reports on the AITPT program were available, 15 of the 23 teachers indicated yes. Of these 15, 11 reported having read one or more reports related to the AITPT program (8 of these 11 were "job" teachers).

Thus, given the above indoctrination, it is not surprising that at least 83% of the "job" teachers, and 74% of the entire staff, cited the first five methods listed in Table 26 as being used in the Strand I program. However, two other important methods, performance oriented instruction and the quality control monitoring of the classroom performance, were surprisingly cited by only 67% and 50%, respectively, of the "job" teachers. In view of the fact that these methods were observed being used in their classrooms, it can be conjectured that the low citation is a function of the definition of terms.

Table 27 displays the results of the teachers' perception of the various instructional materials in use in the Strand I classroom.

Of the 12 types of materials listed in Table 27, only the first six are technically characteristic of the job reading program. However, only the first three were cited by at least 83% of the "job" teachers, and 78% of the entire staff; while the second three received a substantially lower number of citations. The low reported use of the cassette material may be due to:

1) the unavailability of the tapes or the players at two of the schools; and

2) the reported teachers' dislike of, and the students' inability, or lack of time, to use the audio component.

Table 27. Frequency of Citation by AITPT Instructors of Strand I Instructional Materials

Instructional Materials	Total # of Citations		Frequency of Citation			
			Job Teachers **		General Teachers ***	
	# of Citations	% of Possible	#	%	#	%
Worksheets	23	100	18	100	5	100
Job-Related Materials	22	96	17	94	5	100
Performance Mastery Test	18	78	15	83	3	60
Cassett Tapes & Players	13	57	10	56	3	60
Teacher Assembled Materials	12	52	10	56	2	40
Teacher Developed Materials	9	39	8	44	1	20
Commercially Published Materials	7	30	6	33	1	20
Workbooks	6	26	5	28	1	20
Video Tape Equipment	5	22	3	17	2	40
General Education Development (GED) Materials	4	17	2	11	2	40
Teaching Machines	2	9	1	6	1	20
Student Developed Materials	1	4	0	0	1	20

*Total possible number of citations per item = 23. (7 of the teachers responded with "Not qualified to answer".)

**Total possible number of "job" teacher citations = 18.

***Total possible number of "general" teacher citations = 5.

The citation of the remaining six types of materials, although not technically a part of the job reading program, may in fact indicate their use by the teachers as supplemental work for their students; or may indicate a description of the materials used by the entire AITPT school. Overall, at least 2/3 or more of the "job" teachers were aware of five of the six major methods used in Strand I; and over 83% of the "job" teachers were aware of the 3 major types of materials used in the program.

Strand I Teacher Training.

HumRRO Workshop Training: Of the 30 AITPT instructional staff members, only 12 participated in the HumRRO workshop. The other 18 members were not employed in the AITPT system at the time of the workshop.

Table 28. Teacher Satisfaction with HumRRO Workshop: Was HumRRO Workshop Training Satisfactory?

Type of Teacher	N	Yes	No
"Job" Teachers	9	6	3
"General" Teachers	3	2	1
Total	12	8	4

As illustrated in Table 28, eight of the 12 teachers who participated in the Phase 2 HumRRO workshop indicated that the training and classroom assistance was satisfactory in preparing them to conduct the job reading class. When asked for ideas for improving the workshop, over half of the instructors suggested that more simulated classroom experience, particularly in the Forms module, would have been helpful.

Local AITPT Training: Of the 18 teachers hired after the HumRRO workshop, 10 were "job" teachers (including 2 aids), and 8 were "general" teachers. All but 4 of the instructors (the 4 "general" teachers from one post), either observed, or trained in, the job reading classroom for varying amounts of time. Thus, most teachers, regardless of subject content taught, had received some initial minimal familiarity with the job reading program. The mean time spent in job reading training, regardless of specific activity was: 8 hours for "general" teachers; and 13.5 hours

for "job" teachers or about 2-1/4 days since most AITPT days are 6 hours long.

When asked if the local training was satisfactory in preparing them to conduct the Strand I program, 11 of these 18 teachers replied "yes" (9 of these 11 were "job" teachers). Two ideas were suggested for improving the training:

1. have a little longer training period (N=3);

2. have some type of Strand I teacher's manual or reference (N=2).

Positive and Negative Aspects of the Job Reading Program. In the evaluation of any program, it is important to know what the teachers feel are its positive and negative aspects. Therefore, the following sections will report the comments made by the staff on the positive aspects of the Strand I methods and materials; and the negative, or problem areas, encountered with the job reading program. Because of the diversity of these responses, only the most frequently cited comments will be reported. When appropriate, the number of teachers making the statement will be indicated, to provide some indication of the importance of the comment.

Positive Aspects: The following summary reports the five most frequently cited statements made by the staff in reference to particularly good activities and/or procedures in terms of the Strand I methods and materials.

The five method areas most frequently mentioned were:

1. Self-paced movement for the student;

2. Individualized instruction;

3. Use of proficiency testing to assess students' skill in a particular module so as to permit the student to by-pass instruction upon meeting the test criteria;

4. Use of job-related materials for training and exposure;

5. Use of worksheets for training and immediate feedback on performance.

For the materials, the following five areas were most frequently cited by the teachers as being particularly good:

1. Use of job materials as a source for test and text material.

2. The worksheets and proficiency test are good learning aids, and they both provide almost instant and certainly constant evaluation of student performance.

3. Self-pacing use of materials is very beneficial to men at all reading levels.

4. Design and sequence of worksheets from easy to hard makes the materials not too difficult but challenging.

5. Job relevance of the materials is apparent to the student and so increases motivation for learning.

Negative Aspects: This section will discuss problems with the Strand I program as identified by the staff in the areas of: school administrative procedures; classroom procedures; classroom proficiency testing; instructional materials; instructional methods; and classroom records maintenance. Only the most frequently cited, or most relevant, statements are reported.

1. School Administrative Problems

Thirteen teachers, eleven of whom were "job" teachers, indicated experiencing school administrative problems in relation to the Strand I training. The following problem areas, listed in order of highest frequency of citation, were mentioned:

a. "the first-day inprocessing orientation for the new students was inadequate, i.e., it did not answer the students' questions; nor counsel them on their performance adequately; nor describe the actual school program in enough detail" (N=5);

b. there is a need for a set of standard operating procedures for the school and better staff communication (N=3);

c. the administrator is of little or no help, lacks organization and cooperation (these comments were all from one AITPT school) (N=3);

d. the students should have their MOS assignment before being put into the job reading program (this also was at one school) (N=2).

2. Classroom Procedures

Twelve teachers, eleven of whom were "job" teachers, indicated problems with Strand I classroom procedures. These were the most frequently cited problems:

a. a class size of more than 10 students, and/or paperwork, greatly reduced teacher's time for individual attention with students (N=6);

b. it is difficult to give orientation to new students while conducting class (N=2);

c. audio tapes are not useable either because of students' inability to understand tapes, or there is no time if the student is going to complete all six modules (N=2).

3. Classroom Proficiency Testing

Nine "job" teachers expressed the following problems:

a. much of the printing of the test materials is blurred or badly printed (N=3);

b. some of the test questions seemed to be unclear, or were purposely and unnecessarily tricky (N=2);

c. the testing sometimes seems to be overdone, especially with new students, or if a man has to take three tests in each module (N=2).

4. Instructional Materials

In this area 17 teachers stated problems with the Strand I instructional materials, 15 of whom were "job" teachers. The five most frequently cited problems were:

a. lack of paid time to rewrite worksheets, to get worksheets and other instructional materials reproduced, and to assemble the material (N=11);

b. lack of sufficient number of manuals, or no manuals, for many of the worksheets (N=4);

c. materials lack physical durability, and the necessity for constant erasing of marks destroys the print (N=3);

d. procedural directions worksheets in some MOS clusters, clerical and communication, seem inordinately difficulty (N=3).

5. Instructional Methods

Of the 8 "job" teachers indicating problems with the instructional methods, there was only one problem which was mentioned

by more than one teacher: the need for supplemental reading materials for students who finish the Strand I program before the end of the sixth week. The other problems were simply questions on procedures.

6. Classroom Records Maintenance

Seven of the 8 teachers indicating problems with the classroom records maintenance were "job" teachers. The only frequently cited problem was that of the heavy paperwork involved in the Strand I classroom (N=6). However, two of these teachers stated that while there was a lot of paperwork, it was no problem, but rather an excellent reference for checking student progress. The other problems mentioned were of minor consequence.

Testing Information.

JRTT: In order to assess the teacher's awareness of student performance in the Strand I program, the teachers were asked to indicate the average amount of reading gain they generally expect from their students on the JRTT. Table 29 below compares the mean JRTT demonstrated gain scores of the AITPT students with their teachers' expected gain scores.

Table 29. JRTT Mean Gain Scores in Years for AITPT Students

	Forts							
	Knox	N	Polk	N	Jackson	N	L.Wood***	N
Demonstrated Gain*	2.3	370	2.1	485	2.1	391	2.4	99
Gain Expected by all Teachers**	4.1	4	2.8	5	3.4	9	1.7	3
Gain Expected by "Job" Teachers**	3.3	2	2.6	3	3.4	9	1.6	2
Gain Expected by "General" Teachers**	4.8	2	3.1	2	-	-	1.8	1

*Mean demonstrated gain is the mean gain for students who have actually completed the AITPT training at each school.

**Mean expected gain is the mean gain predicted by the various groups of teachers at each school.

***At the time of the follow-up visit, Fort Leonard Wood's first AITPT class was still in their sixth week of training. Thus, the Wood expected gain is pure guesswork. Their data, included only to illustrate their gain expectations, are not included in the following discussion.

As indicated, the "job" teachers' estimates are closer to the actual student demonstrated gain than the "general" teachers' predictions. However, all the teachers' estimates tended to be inflated in comparison to actual school performance; perhaps indicating that some of the estimates were based more on the teacher's subjective impression of the gain being achieved rather than actual knowledge of their students' performance.

The latter statement is supported with more concrete evidence obtained in the questionnaire. Of the 30 teachers, only 16 (9 of whom were "job" teachers) reported receiving test scores for their students. However, it would seem that while the test scores are available to the staff, there is no set standard procedure for distributing them on a regular basis, without which it is doubtful that most of these teachers would have enough information to make a data-based prediction of their students' performance.

USAFI: As shown in Table 30, there was little variability between the students' demonstrated gain score on the USAFI test across the AITPTs. There was less difference across AITPTs in the expected gain on the USAFI than was found with the expected gain on the JRTT.

Table 30. USAFI Mean Gain Scores in Years for AITPT Students

	Forts							
	Knox	N	Polk	N	Jackson	N	L.Wood ***	N
Demonstrated Gain*	1.0	370	1.3	485	0.8	391	0.9	99
Gain Expected by all Teachers**	3.0	3	2.3	7	2.4	9	2.3	6
Gain Expected by "Job" Teachers**	3.5	1	2.8	3	-	-	2.8	1
Gain Expected by "General" Teachers**	1.8	2	1.8	4	2.4	9	2.2	5

*Mean demonstrated gain is the mean gain for students who have actually completed the AITPT training at each school.

**Mean expected gain is the mean gain predicted by the various groups of teachers at each school.

***At the time of the follow-up visit, Fort Leonard Wood's first AITPT class was still in their sixth week of training. Thus, the Wood expected gain is pure guesswork. Their data, included only to illustrate their gain expectations, are not included in the following discussion.

As in the case of the "job" teachers' estimates of JRTT gain, the "general" teachers' predictions were closer to the actual gain scores demonstrated by their students. So in both instances, those teaching the specific content area related to the particular test - predicted gain scores more in line with their students' actual performance. However, all the teachers, regardless of content area, tended to make inflated estimates of student improvement.

Summary: The implementation process worked very smoothly and, except for the moratorium, was completed according to the time schedule in Table 23. At the present time, all the AITPTs are fully functional, and according to the follow-up visit data, are following closely the prototype FLIT program at Fort Ord.

As a result of the implementation, and in particular, the follow-up visits, the following major areas of concern for future development were identified:

1) While the use of actual job manuals is a very valuable learning and motivational tool, the frequent updating of Army manuals creates a chain reaction of revisions in the Strand I job reading materials:

a. Someone has to revise all the worksheets for that manual;

b. New materials must be reproduced and assembled;

c. New tapes must be made if the audio component is involved.

Since most teachers are not given prep time, these activities, if done, must occur during regular class time. Fortunately, the AITPTs are working to help solve this problem, for unpaid extra work requirements can damage any program regardless of its merits. Future development of materials using job manuals might consider producing a workbook comprised of job reading materials which could be reproduced at or provided to the local ATC.

2) The audio component of Strand I is, for all intents and purposes, not being used at any of the AITPTs. Reasons given are:

a. No tape playback equipment;

b. Tapes need revision to be current with manuals;

c. Recording is difficult to understand because of speaker's accent;

d. Slower students lack time to use audio component if they are to complete training in all modules. Careful consideration is indicated when including an audio component in a program, unless the above considerations can be solved satisfactorily.

3) There are definite morale problems involved in pulling a student from the mainstream of training into a special reading program when everyone else goes on to AIT. Some of these problems are related to being attached to the STC. However, most teachers report that the negative attitude generally changes to a more positive one during the first week.

The second, related problem is the disappointment which occurs when students fail to pass out of the school at the end of the 3rd week; and many of these students lack incentive to work since they will automatically go on to AIT after 6 weeks anyway. Granted, there are ways of counselling and orientating students to combat these problems; but possibly a more reasonable, and less costly alternative would be to conduct the training as an integrated part of AIT. This approach will be discussed later in Chapter 6.

4) As evidenced throughout this chapter there is a lack of cross-training of teachers in the AITPT, and of regular interaction between the teaching and administrative staffs. In fact, all the teachers, except two, indicated an interest in receiving reports on the AITPT program. As in most endeavors, outside attention and recognition of achievements are very helpful in maintaining staff morale. Possibly an AITPT bulletin or periodic newsletter could be initiated to add impetus and information to the AITPT system on a continuing basis. There also needs to be some central monitor/coordinator for the whole AITPT program, if it is not to segment and deteriorate when it is no longer being monitored by HumRRO.

5) In future development of similar programs, consideration should be given to reduce the vast amounts of papers to be assembled, shuffled and consumed. Development of some type of reuseable materials, while initially more expensive, might be less expensive and less time consuming in the long run.

On the most positive side, the three-phase implementation plan seemed to be quite effective in providing the schools with the training needed to conduct the program. In individual and group discussions with the staff, the teachers indicated that the classroom simulation was most effective in preparing them for the program; that there was no major complaint about the implementation

process; and all the teachers and administrators interviewed indicated that they were favorable to the program. However, a more concrete evaluation of the success of the implementation will be seen from the analysis of the schools' performance data presented in the next section.

AITPT Effectiveness

As part of its program for implementing Strand I at the several AITPT schools, FLIT undertook to monitor the operation of these programs by monthly analysis of administrative and student performance data submitted by the schools. This section reports the results of these analyses for Forts Knox, Jackson, Polk, Leonard Wood and Dix. Analyses are based on all data reported for students completing AITPT training, from the various starting dates at the different schools, through 31 March 1975. These data were produced by notably different reading training programs which had, as their single common element, the FLIT Strand I job reading task training curriculum. These data will be presented in the major categories of student characteristics, performance on training modules, and overall training gain in general reading and in job reading, to parallel the presentation of the effectiveness data on the prototype Strand I program obtained at the experimental FLIT school at Fort Ord.

Operational Experience with FLIT Screening: As part of the FLIT monitoring of the AITPTs, information was requested on the operation of the multi-stage screening system by which personnel were selected for, assigned to, and entered into AITPT training. Because of differing start-up dates and some problems with missing information, these data (for 4 of the 5 AITPTs) do not represent fully complete strength figures over the same period of time. They do, however, represent the operational experience, as reported to us, of the AITPT schools from their inception through 31 March 1975.

All Replacement Stream Input personnel in Mental Categories III and IV are initially screened for general reading ability in the Reception Station. Of the 23,443 Category III men who were initially tested for screening into AITPT, 17% failed to reach the 6th grade reading level on the USAFI and were tagged for AITPT. Of the 12,506 Category IV personnel screened, 43% were similarly tagged for AITPT.

The following analysis confines itself to only those men who were initially tagged for AITPT in the Reception Station (RS). Taking these men as 100%, Table 31 shows the percentage of these

men, initially tagged for AITPT, who remained designated for AITPT training after each succeeding step in the screening procedure.

Table 31. Effects of AITPT Screening Procedure

Mental Category	Percentage of Initial Designees Retaining Designation After Each Screening Step			
	USAFI Screening in RS (A)	USAFI Re-Screening in BCT (B)	Assigned to AITPT at End of BCT (C)	Retained/ Trained in AITPT After Entry Testing (D)
III	100%	47%	19%	17%
IV	100%	59%	25%	22%

Of those CAT III and CAT IV personnel originally designated for AITPT training by Reception Station Screening, 17% of the CAT IIIs and 22% of the CAT IVs who were initially designated in the Reception Station to receive AITPT training actually did fail all the stages of the multiple screening-out process and were given training.

The percentage of initial AITPT designees who were screened out by any one screening step is obtained by subtracting the percentage shown for that step from the percentage shown from the preceeding step. The difference between the percentages shown for Steps (A) and (B) represents the percentage of men who passed the USAFI on its second administration and were thus screened out of AITPT by the BCT retesting. This attrition seems to stem both from random artifacts in the initial testing and from the more settled frame of mind at the second testing, after several weeks in the Army.

The screening out which occurs in Step (C) results largely from the fact that AITPT designees have been assigned to AIT/CST in MOSs for which AITPT training is not authorized in TRADOC Circular 621-1. Since this MOS classification is not known until late in BCT, elimination of AITPT candidates who are to be job trained in ineligible MOSs cannot be made until this point, immediately before assignment to the school. Some additional elimination of AITPT candidates occurs in the case of men whose service has been terminated at this point for administrative,

disciplinary, or medical reasons. Screening out at Step (D) (USAFI and JRTT testing on the first day of AITPT), again seems likely to reflect mainly the motivational and energy states of the candidate rather than any genuine improvement in literacy over the last few weeks of BCT.

This multiple screen selection procedure (one screening on the AFQT, three on the USAFI, and one on the JRTT) insures that students finally entering AITPT are, indeed, in genuine need of reading training. The data in Table 31 provide a reasonable basis for projecting the 8-weeks-later input to an AITPT school on the basis of the Reception Station Screening. Although this monitoring effort does present current information on the percentages of CAT IIIs and IVs reading below the 6th grade level, these limited data are subject to strong seasonal and economic fluctuations and should be extrapolated with caution.

Student Characteristics: Table 32 presents data on the major characteristics of students at the 5 AITPT implementation sites and, for purposes of regional comparison of student input, at the Fort Ord experimental FLIT school.

Although the regional differences reflected in this composite picture of AITPT students are in some cases sizeable, they are not extreme and appear to be consistent with known regional characteristics. Typically the AITPT students are 19 years old and have completed 11 years of school, although somewhat less than half of them have received a high school diploma or a GED certificate of high school equivalency. For approximately 4 out of 5 of these students, who tend to be drawn disproportionately from minority ethnic groups, English is reported as their primary language. By contrast the Fort Ord sample shows a lower proportion of native English speaking students and a noticeably different ethnic composition, evidencing its substantial input from the Pacific Islands, the Philippines, and Korea. The preponderance of students had MOS assignments, and were given job-reading training, in the Combat MOS career cluster, followed by Clerk, Communications, Mechanic and Cook. Less than 1% of the students were trained in the Medic career cluster.

Performance on Training Modules: Table 33 shows, for the five job reading task training modules which yield appropriate data, the percentage of students meeting mastery criteria on the module pretest and bypassing training in that module, the percentage of students trained in the module and attaining the criterion level on the posttest of that module, and the percentage of students who did not pass the module posttest, typically after some (but a varying) amount of training in the module.

Table 32. AITPT Student Characteristics

Variable	AITPT Site					
	Knox	Jackson	Polk	Wood	Dix	Ord
Number of Classes Graduated	49	45	33	17	13	125
Number of Students Graduated	509	680	702	256	174	1,068
Median Age	19	19	19	19	19	19
Median Years of School	11	12	11	11	10	12
% H.S. Grad/GED	37%	50%	38%	29%	30%	57%
Primary Language						
English %	97%	79%	81%	91%	78%	66%
Spanish %	1%	19%	9%	8%	15%	9%
Other %	2%	2%	10%	1%	7%	25%
Ethnic Membership						
Caucasian %	37%	12%	25%	36%	25%	21%
Negro %	57%	64%	50%	43%	51%	26%
Mexican-American %	1%	2%	15%	14%	10%	19%
Other %	5%	22%	10%	7%	14%	34%
MOS Cluster						
Clerk %	21%	38%	7%	9%	14%	27%
Combat %	51%	36%	82%	57%	27%	43%
Communications %	5%	11%	5%	16%	24%	8%
Cook %	5%	7%	1%	6%	13%	8%
Mechanic %	17%	7%	5%	12%	22%	13%
Medic %	1%	1%	0%	0%	0%	1%

Table 33. Performance on Job Reading Task Training Modules

AITPT	N	Module											
		Table of Contents			Index			Tables & Graphs			Body of Manual			Procedural Directions		
		Percentage of Students			Percentage of Students			Percentage of Students			Percentage of Students			Percentage of Students		
		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Knox	482	23	55	22	19	42	39	27	33	40	8	26	66	17	15	68
Jackson	680	23	50	27	14	36	50	13	35	52	4	22	74	11	17	72
Polk	702	28	61	11	23	46	31	24	40	36	8	32	60	21	22	57
L. Wood	256	49	43	8	42	38	20	52	29	19	15	45	40	34	26	40
Dix	162	27	62	11	17	53	30	20	42	38	6	32	62	17	30	53
Ord	710	19	67	14	16	56	28	20	53	27	3	49	48	9	30	61

A: Passed module pretest without training.

B: Passed module posttest after training.

C: Did not pass module posttest but advanced to next module to insure training in all modules.

Overall, most students needed training in most job reading tasks, as shown by the small percentage who managed to pass the pre-training proficiency tests for these modules. Successively smaller percentages of students reached mastery in the later modules, despite as much training as could be accomplished in the available time. This suggested greater difficulty of the later tasks reflects the criterion-referenced demands of these tasks required for satisfactory job performance.

Performance Tests on General Reading and Job Reading Tasks: Data in Table 34 show the average reading grade level (RGL) of students on their first and last days of training and the amount of improvement in reading level, as measured by the USAFI test of general reading comprehension and by the FLIT Job Reading Task Test.

Table 34. USAFI and JRTT Reading Grade Level Before and After Training

AITPT	N	JRTT RGL			USAFI RGL		
		Entry	Exit	Gain	Entry	Exit	Gain
Knox	509	6.2	8.7	2.5	5.2	6.2	1.0
Jackson	680	5.0	7.2	2.2	5.2	5.9	.7
Polk	702	5.1	7.5	2.4	5.3	6.4	1.1
Leonard Wood	256	6.1	8.2	2.1	5.7	6.7	1.0
Dix	174	4.7	6.4	1.7	5.3	6.9	1.6
Ord	714	5.2	7.3	2.1	5.3	6.0	.7

Despite some differences in the absolute level of Job Reading Task Test scores, the several AITPTs show surprising uniformity in their typical achievement of more than two years of reading grade level gain on the JRTT. Parallel gain on the USAFI measure of general reading comprehension was on the order of a one-year gain in RGL.

For both the JRTT and USAFI measures of reading ability, Table 35 reports the percentage of students who read at or above Reading Grade Level 7.0 before and after training and the gain in these percentages over the period of training. Job reading training in the AITPTs produced a representative gain of 45% in the percentage of students attaining the course objective of seventh grade reading level competence on the JRTT.

Table 35. Percentage of Students Reading At or Above RGL 7.0

AITPT	N	J R T T			U S A F I		
		Before Training	After Training	Gain	Before Training	After Training	Gain
Knox	509	29%	74%	45%	2%	31%	29%
Jackson	680	8%	54%	46%	6%	24%	18%
Polk	702	8%	54%	46%	6%	41%	35%
Leonard Wood	256	26%	69%	43%	14%	42%	28%
Dix	174	6%	35%	29%	9%	48%	39%
Ord	714	10%	54%	44%	10%	25%	15%

The percentage of students making various amounts of gain on the JRTT and USAFI reading tests are shown in Table 36. On the average, more than 50% of the students showed gains of greater than 2 RGL years on the JRTT, about three fourths of the students gained more than 1 JRTT reading grade level, and less than ten percent failed to show any measurable gain. Comparable data on the USAFI gains were substantially lower, with about 25% of the students showing zero or negative gains in general reading comprehension.

Table 36. Distribution of Amount of Gain on JRTT and USAFI

AITPT	N	Intervals of Reading Grade Level Gain % of Students							
		J R T T				U S A F I			
		0.0 and Negative	.1-1.0	1.1-2.0	2.1+	0.0 and Negative	.1-1.0	1.1-2.0	2.1+
Knox	509	15	14	16	55	28	32	22	18
Jackson	680	6	15	25	54	31	32	21	16
Polk	702	6	14	24	56	20	30	27	23
L.Wood	256	11	17	23	49	29	23	23	25
Dix	174	7	24	29	40	16	24	26	34
Ord	714	6	17	30	47	31	34	22	13

Summary of AITPT Reading Effectiveness: During the period of this monitoring, the Strand I job reading training programs in effect at the several recently implemented AITPT schools appear to be operating with overall equivalent effectiveness. The level of this effectiveness matches, overall, that attained in the experimental FLIT school in which the Strand I program was developed and has been essentially operational for two years. In the various operational settings in which it was implemented, the Strand I program has consistently produced a bit more than 2 years gain in average job reading grade level and increased by 45% the percentage of students reaching the minimal job requirement of seventh grade reading level. These findings indicate the portability and robustness of the Strand I job reading training program in its operational application in the full range of local Army training center settings.

Implementation of Strand II

In mid-May 1975 the Strand II program was implemented at the five ATCs conducting AITPT: Forts Knox, Jackson, Polk, Leonard Wood, and Dix. The implementation plan consisted of a one-week workshop conducted at each AITPT school by a member of the HumRRO FLIT implementation team. As in the Strand I implementation, camera-ready copies of all the Strand II teaching materials, and instructor's manuals were provided to each school.

Strand II Implementation Plan: Each visit began with an in-briefing with the Education Officer and the AITPT administrator; followed by a short meeting with the entire AITPT staff to explain the purpose of the visit and the projected implementation activities. The workshop was presented in 2 phases:

1) intensive staff training in a simulated Strand II classroom;

2) practical application of Strand II techniques in an actual classroom.

During the simulated phase, the staff, acting as students, completed a sampling of the various kinds of Strand II activities and materials. They also received intensive training in the program's basic philosophies and instructional techniques. For the second phase, the teachers were required to implement these newly learned Strand II activities in a regular classroom under the guidance of the HumRRO advisor. On the last day of the visit, a general staff meeting was held to review the workshop training and to answer any questions on either of the FLIT programs. An exit briefing was held with the AITPT administrator and the Education Officer.

Since the implementation was completed near the end of the research project, no follow-up visits were made nor performance data collected for the implemented Strand II programs.

Development and content of the Strand II program is described in Chapter 3.

CHAPTER 6

DELIVERY SYSTEMS FOR INTEGRATED JOB READING AND MOS TRAINING

This chapter describes three studies conducted to determine the operational feasibility and the effectiveness of different delivery systems for providing job reading training along with non-reading job training, as integrated training alternatives to the front-loaded job reading training of the AITPT program. The alternative delivery systems presented are the extended training day, the integrated training day, and the learning center.

While the six weeks of job reading training which has been interspersed between BCT and AIT has proven effective in improving job reading skills, there are serious drawbacks to such a program. For one thing, the six weeks of training add to the cost of preparing a person for job performance. Secondly, training programs which disrupt the routine flow of students through the Army's training system pose problems for the personnel management system. Thirdly, and perhaps most importantly, a training delivery system in which reading is offered prior to and separate from job skills training loses the benefit to training which can occur when students can move back and forth between the concrete, hands-on experiences of the job skills training and the symbolic experiences encountered in reading. In such cases, the hands-on experiences can help make the reading training more effective by giving the students experiential knowledge to relate to what they read about. Similarly, the job-related reading training can help students perform their job skills tasks more effectively through following written directions. Students thus see the immediate utility of the reading training.

There are, then, cogent reasons for seeking reading training delivery systems which can substitute for the six week, front-loaded, separate program currently offered as AITPT. Anticipating the desirability of finding alternative delivery systems for literacy training, the Army Research Institute included within HumRRO's contract on Work Unit FLIT the requirement for evaluating three different approaches for delivering job-related reading training. These approaches consisted of offering Strand I job reading task training: 1) in a scheduled extension of the standard training day; 2) as an integrated scheduled component of the standard training day; and 3) as training offered at the Post Learning Center, during and after the standard training day on a continuous, flexible, walk-in basis.

The Extended Training Day Approach

This study investigated the feasibility of delivering add-on job reading training to students during the period of their assignment to AIT. In the extended training day approach, job reading training

was conducted in a daily 2-hour block of instruction added on to the end of the regular training day.

Program Description:

Selection of Students. During the period of April-September 1974, all trainees entering AIT in 15 classes of the Motor Transport Operator Course and 6 classes of the Wheeled Vehicle Repairman Course at Fort Ord were screened for reading ability. Reading grade levels were measured by means of both the Reading subtest of the USAFI Intermediate Achievement Tests (USAFI) and the FLIT Job Reading Task Test (JRTT) which was developed for and is an integral component of the AITPT job reading training program. On the basis of the weekly screening data, the 4 or 5 poorest readers in each week's input were selected for the mandatory after-duty job reading training. This flexible criterion, which was necessary to limit class size for the single instructor, resulted in class sizes ranging from 13 to 20 students. The program provided job reading training to 53 drivers and 13 mechanics.

Instructional Program. Instruction was carried out by means of the FLIT Strand I program, using materials for the mechanic job cluster. The standard Strand I curriculum was modified in only one respect; the accuracy criterion for the module proficiency tests was relaxed from 90% correct to 80% correct in order to complete training in all modules within the available instructional time.

Instructional Staff and Facilities. All instruction and administration of the experimental program was conducted by one enlisted research assistant on the Work Unit FLIT staff. The instructor, who had had 18 months experience in the development, teaching, and implementation of the AITPT program, spent one-half of his normal duty day in conducting all aspects of the experimental program.

Facilities and Materials. All screening testing and training were carried out in a standard classroom centrally located in the AIT training area. The AIT Battalion provided the necessary FMs and TMs and reproduced in volume all worksheets, proficiency tests, and other instructional/administrative materials from master copies provided from the FLIT files.

Scheduled Training. Strand I job reading training was conducted, after the normal training day and evening meal, from 1730 to 1930 hours, Monday through Thursday, for the available period of the AIT training programs. All drivers underwent a

standard AIT course of 5 weeks, with some being retained for 2 weeks of additional training, while the mechanic AIT was 8 weeks in length. A variety of factors reduced the reading training time below the theoretical maximum of eight hours per week multiplied by the number of weeks in the AIT course: time spent in in-processing and reading screening, scheduled night driving training, sick call, duty detail, assignment to AIT study hall, etc. For the students in this study, an average of 34 hours or about 4 weeks of reading training time was potentially available, when scheduled night training was excluded from the available time. A strict accounting of time actually spent in the after-duty reading training course showed an average of 23 hours, or about 3 weeks, of attendance with a range of from 8 to 41 hours.

Results:

Reading Ability of AIT Input. Table 37 shows the distribution of both general and job reading ability for all trainees in the 15 classes of the driver course and the 5 classes of the mechanic course as they entered AIT and were screened for job reading training. Entries in the two left hand columns of this table show the percentage of entering AIT trainees at each of the indicated reading grade levels (RGL), as measured by the USAFI and by the JRTT reading tests. These data show very close agreement between the general reading comprehension measured by the USAFI and the job reading skills measured by the JRTT and this sample of AIT input closely mirrors the general adult population in its wide range of reading ability and in its average reading ability, which is at the 9th grade level.

Entries in the two right-hand columns show the cumulative percentage of trainees reading at or below the indicated RGL. As measured by either USAFI or JRTT, more than one-quarter of these trainees entered AIT reading below the 7th grade level, the minimum objective for the Army's AITPT job reading training program.

Reading Ability of Reading Trainees. Table 38 shows the distribution of entering reading grade levels of those students selected from the AIT input to receive job reading task training.

Reading Gain. The mean reading performance of the 66 students trained in the experimental, after-duty job reading course is shown in Table 39. As shown on the left side of the table, students in the experimental training entered with similar scores in general and job reading--at about the bottom of the 5th grade level. After training in job reading and AIT, their average job reading score had increased 2.2 reading grade levels and met the program

Table 37. Distribution of Reading Ability in AIT Input

% of Trainees at each level		Reading Grade Level	Cumulative % of Trainees at or below each level	
USAFI	JRTT		USAFI	JRTT
6.5	15.1	12.0-12.9	100.0	100.0
22.2	15.0	11.0-11.9	93.5	84.9
10.6	14.4	10.0-10.9	71.3	69.9
13.0	12.1	9.0-9.9	60.7	55.5
12.0	5.3	8.0-8.9	47.7	43.4
7.5	9.0	7.0-7.9	35.7	38.1
8.9	11.9	6.0-6.9	28.2	29.1
9.3	8.2	5.0-5.9	19.3	17.2
6.1	4.7	4.0-4.9	10.0	9.0
3.9	4.3	0.0-3.9	3.9	4.3
100.0%	100.0%			
508	513	N	508	513

Table 38. Entry Reading Grade Level of Trainees in the Extended Training Day

	N	Reading Grade Level				
		0.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0+
USAFI	66	18%	30%	26%	11%	15%
JRTT	66	24%	23%	33%	20%	0%

Table 39. Reading Achievement Before and After Training in the Extended Training Day

Test	Mean RGL			N	Percent of Trainees Reading at or above RGL 7.0		
	Pre	Post	Gain		Pre	Post	Gain
USAFI	5.2/	5.9	.7	66	15%	20%	5%
JRTT	4.8	7.0	2.2	66	0%	44%	44%

criterion of RGL 7.0. The corresponding gain in general reading comprehension (USAFI) was .7 of a reading grade level and terminal achievement was below the 6th grade level.

This same reading performance is shown in the right hand side of the Table, expressed in terms of the percentage of students meeting the criterion reading grade level of 7.0 before and after training. In terms of job reading skills, none of the trainees met criterion before training and 44% of them did so after training. The effects of the job reading training on general reading comprehension were much smaller. The 15% of trainees reading at the 7th grade level on the USAFI measure before training increased to 20% of trainees who did so after training.

The design of this operational feasibility study does not permit partitioning the contributions to reading gain among the Strand I program, the AIT job skills training, and statistical regression. However, the reading data of this study match almost exactly those obtained in the FLIT school where neither job skills training nor regression factors pertain.

Students entered the experimental job reading course with different levels of general reading ability and differed substantially in the number of hours spent in training. Table 40 shows the mean grade level gains in job reading which were made by men entering the course with different levels of general reading ability and spending varying amounts of time in the training. At the one extreme, students who entered reading below the 4th grade level, and who spent not more than 20 hours in the reading training, made an average gain of .6 of a grade level in their job reading. At the other extreme, students whose entry reading ability was at the top of this group (RGL of 6.0 or higher), and who spent the most time in training (29-41 hours), gained an average of 4.5 reading grade levels in their job reading.

At each level of reading ability prior to training, job reading gains increase regularly as the amount of training time increases. Similarly, at each of the three levels of training time, the higher the entry level of general reading ability, the greater was the gain in job reading skills. These results should be treated with caution since the Ns in several cells are quite small. A parallel analysis of USAFI general reading gains showed no systematic relationship of gain to either entry reading level or hours of study.

In Table 41 the training content modules are listed in their order of presentation and, opposite each module is shown the percentage of trainees who 1) completed the module and met the

Table 40. JRTT Mean Gains as a Function of Pretraining Reading Level and Amount of Training in the Extended Training Day

Hours of Training	JRTT Mean Gain*			
	Pretraining RGL			Total
	0-3.9	4.0-5.9	6.0+	
29-41	2.3 (1)	2.6 (7)	4.5 (2)	3.0
21-28	1.7 (5)	2.1 (18)	3.1 (10)	2.3
8-20	0.6 (6)	1.7 (12)	3.0 (5)	1.7
Total	1.2	2.1	3.2	2.2

*Ns are shown in parentheses.

Table 41. Percentage of Trainees Completing Course Modules in the Extended Training Day

Module	% Mastering Module	% Trained and Advanced Without Mastery	% Not Reaching or Not Trained in Module
1. Table of Contents	76%	24%	0%
2. Index	45%	55%	0%
3. Tables and Graphs	35%	51%	14%
4. Body of the Manual	18%	48%	34%
5. Procedural Directions	17%	32%	51%
6. DA Forms	38%	11%	51%

relaxed AITPT mastery criteria; 2) after training in that module, were advanced to the next module without meeting the relaxed mastery criteria; and 3) failed to reach or to receive any substantial training in the indicated module. In general, the policy of "ready or not, on you go to the next module" succeeded in providing at least some training to most of the students in most of the course content. The effects of the enforced curtailment of training time can be seen in the right hand column of Table 41 which shows an increasing percentage of students receiving no training in the later modules. The DA Forms Module, which comes at the end of the course, is an open-ended module in which training is given on as many forms as time permits (typically 2 or 3 forms in the standard AITPT). In the present study, module mastery was defined as the mastery of at least one form.

Summary of the Extended Training Day Approach: This study was conducted to examine the feasibility of the extended training day approach to providing job reading training to students in AIT, as an alternative to the front-loaded, pre-AIT training provided by the AITPT program.

Major findings are summarized below:

1. Reading Ability of AIT Input. Trainees entering the driver and mechanic AIT courses closely mirror the general adult population in their average 9th grade reading ability level and in the wide range of their reading ability. The extent of the reading problem in AIT is shown by the finding that 10% of these AIT trainees read below the 5th grade level, 19% below the 6th grade level, and 28% below the 7th grade level which is the minimum objective of the AITPT reading training program.

2. Effectiveness of the Job Reading Training. The standard Strand I job reading training program maintains its effectiveness when administered to marginal readers in AIT through an extension of the standard training day. Average job reading ability after training was at a reading grade level (RGL) of 7.0, a gain of 2.2 RGL years. The percentage of students who reached the standard AITPT objective of RGL 7.0 in job reading increased from 0% before training to 44% of the students after training.

3. Limitations on Reading Training Time. The full potential of offering job-specific reading training and job training concurrently in the extended training day approach is sharply limited by the time available for job reading training. Although 2 hours a day, from 1730-1930, are nominally available on Monday through Thursday for add-on reading training, activities such as

scheduled night training exercises, guard duty and details, and remedial evening AIT study hall assignments encroach seriously on the time which reading students can spend in their reading classes.

The Strand I job reading training program is designed to be used in a system in which at least fifty hours of job reading training time are available for its completion. This transplanted AITPT program required substantially more training time for completion than the average of 23 hours actually available for concurrent training in the AIT setting of this study.

Moreover, and particularly in an individualized and self-paced program of this sort, the active thinking processes involved in learning reading skills call for a high level of mental alertness which it is understandably difficult for students to muster after an already full and strenuous training day.

On the basis of these considerations, the feasibility of conducting an integrated program of job reading training and job training in AIT was examined in the study reported in the following section.

The Integrated Training Day Approach

Program Description: This study was conducted to gain operational experience with the problems and requirements of delivering Strand I job reading training on an integrated basis in AIT. In the integrated training day approach, job reading training classes were scheduled, in 2 hour blocks, as integral units of the standard training schedule in a self-paced AIT program. As provided in ASubjScd 10-76A10, all students entering the AIT Supplyman Course are routinely given a diagnostic test in reading (USAFI Advanced Achievement Test [UAT]) "to determine if the student can read at the sixth-grade level. If the student cannot perform at this level, special training should be provided to strengthen his skill in this area." In view of this requirement, and the Brigade Commander's decision to implement an operational program of job reading training, the Supplyman Course at Fort Ord was chosen as the vehicle for trying out the experimental, integrated training approach to delivering job reading training in AIT.

Selection of Students. During the period of January-March 1975 all students entering the AIT Supplyman Course at Fort Ord who scored below the eighth grade reading level on the USAFI UAT were further screened on the FLIT Job Reading Task Test. Students reading below RGL 8.0 on both the UAT and the JRTT were placed in experimental job reading training.

Instructional Program. Instruction was conducted by means of a modified FLIT Strand I program for the Clerk career cluster which, in its standard form, uses job manuals drawn from both the supply clerk as well as the administrative and personnel clerk fields. To make the training functionally specific to the Supply field, additional worksheets were developed for the supply manuals and substituted for the non-supply materials of the standard Strand I Clerk cluster curriculum. In addition to restricting training to manuals in the supply clerk field, the program was also modified by strictly pacing the student's reading training to his progress in the Supply Course, in order to accelerate progress through all the job reading modules, regardless of mastery, within whatever time that it took the student to complete the AIT course.

Instructional Staff. All instruction in the experimental program was conducted by one enlisted research assistant on the FLIT staff. The instructor, who had experience in the teaching and the implementation of the AITPT program, spent his entire duty day in teaching three sections of the experimental job reading class and in associated administrative duties.

From its available staff, FLIT was able to provide only one instructor for the experimental program. Since the number of AIT students needing job reading training exceeded the teaching load that the FLIT instructor could handle, a parallel operational program was established by the Supplyman Course to accommodate the overflow. The operational program was functionally identical to the experimental program and was staffed by civilian teachers provided by the Fort Ord Education Office. The experimental program was conducted for 3 months, at which time the operational program assumed all responsibility for continuing the integrated job reading training.

Facilities and Materials. All screening and end-of-course testing was done by the Post Education Office Test Hall. Instruction was given in a standard classroom building centrally located in the AIT area. The Supplyman Course provided the necessary FMs, TMs, etc., and reproduced in volume all worksheets, module proficiency tests, and other instructional/administrative materials from master copies provided by the FLIT research staff.

Scheduled Training. The Supplyman Course conducts its AIT MOS-preparation training by a program of self-paced instruction in several major modules. Instruction in each Supplyman module is offered on an all-day, every-day, continuous basis with the student working in one module, at his own pace, for as many hours or days as it takes him to master that module and then advancing to the next

module. The flexibility of this self-paced modular system permitted integration of the job reading training without interference with the standard, on-going instructional activities of the Supplyman Course. Integration of job reading training with the on-going program was accomplished by scheduling a daily 2-hour block of job reading training during the standard training day for those AIT students needing training in the reading component of preparation for their job. These students were diverted from their self-paced study in a Supplyman module to a daily block of 2 hours of job reading instruction, and then returned to resume their self-paced supply training--all within the time frame of the normal AIT training day.

All students in job reading training received their instruction in one of the three 2-hour time periods scheduled daily, Monday through Thursday, from 0730-0930, 0930-1130, and 1300-1500. The duration of job reading training was tied to the time it took the student to complete the self-paced Supplyman Course, 5 to 6 weeks in most cases. Excluding processing and screening time and the 15 minutes of break in the instructional period, students received an average of 25.5 hours of actual job reading training.

Results:

Reading Ability of Supplyman Course Input. Table 42 shows the distribution of general reading comprehension, as measured by the UAT, for all student input to the 76A Supplyman Course at Fort Ord for the three-months period of this study. In these data the need for reading training in AIT is shown by the 36% of the students entering the Supplyman Course with a general reading comprehension below the 7th grade level, 27% below the 6th grade level, and 18% below the 5th grade level.

Table 42. Distribution of General Reading Ability for Input to Supplyman Course

	UAT Reading Grade Level								N
	Below 5th	5th	6th	7th	8th	9th	10th	11th+	
Percentage of Student Input	18%	9%	9%	9%	13%	19%	15%	8%	415
Percentage of Students Reading At or Below Indicated Level	18%	27%	36%	45%	58%	77%	92%	100%	415

Reading Ability of Reading Trainees. Table 43 shows the distribution of entering reading grade levels of those students selected for and completing job reading training in the three-month period of the integrated training study. Sixty of these students were trained in the experimental program conducted by FLIT; 21 students were trained in the parallel operational program staffed by the Education Office.

Table 43. Entry Reading Grade Level of Trainees in the Integrated Training Day

	Reading Grade Level					
Reading Measure	Below 4th	4th	5th	6th	7th and above	N
JRTT	11%	16%	30%	27%	16%	81
UAT	40%*		17%	18%	25%	81

*In the UAT screening data, scores below the 5th grade reading level were all normed in the single category of below 5th grade reading level.

Reading Gain. The average reading performance of the 81 students who had completed the integrated job reading and AIT training program by 31 March 1975 is shown in Table 44. As shown on the left side of the table, students in the integrated reading training entered the program reading at the 5th grade level on both the JRTT and the UAT (UAT norm scores are expressed in whole reading grade level years only). After integrated job reading and job skills training, their average job reading scores had increased 1.7 reading grade levels and exceeded slightly the program criterion of RGL 7.0. In terms of general reading comprehension, the gain of 1.5 raw score points was insufficient to move the reading grade level equivalent out of the 5th grade level range.

Table 44. Reading Achievement Before and After Training in the Integrated Training Day

Test	Mean RGL			N	Percent of Students Reading at or Above 7th Grade Reading Level		
	Pre	Post	Gain		Pre	Post	Gain
JRTT	5.5	7.2	1.7	81	16%	53%	37%
UAT	5	5	0	81	25%	30%	5%

This same reading performance is shown on the right-hand side of the table, expressed in terms of the percentage of students meeting the criterion reading grade level of 7.0 before and after training. The percentage of students reaching the 7th grade level in job reading skills increased from 16% before training to 53% at the end of the integrated training program. In terms of the UAT measure of general reading comprehension, 25% of these students entered their training reading at or above the 7th grade level and an additional 5% reached this criterion after training.

The design of this operational feasibility study does not permit partitioning the contributions to reading gains among the Strand I program, the AIT job skills training, and statistical regression. However, the reading data of this study, with its reduced training time, are not substantially lower than those obtained in the FLIT school where neither job skills training nor regression factors pertain.

Performance on Reading Modules. In Table 45 the reading task training modules are listed in their order of presentation and, opposite each module, is shown the percentage of trainees who: 1) completed the module and met standard AITPT mastery criteria; 2) after training in that module, were advanced to the next module without meeting the dual mastery criteria; and 3) failed to reach, or to receive any substantial training in, the indicated module. In general, the policy of accelerating training, regardless of mastery, succeeded in providing at least some training to most of the students in most of the course content. The effects of the enforced curtailment of training time can be seen in the right-hand column of Table 45 which shows an increasing percentage of students receiving essentially no training in the last two modules. The DA Forms Module, which comes at the end of the course, is an open-ended module in which training is given on as many forms as time permits (typically 2 or 3 forms in the standard AITPT). In the present study, module mastery was defined as the mastery of at least one form.

Table 45. Percentage of Trainees Completing Course Modules in the Integrated Training Day

Module	% Mastering Module	% Trained and Advanced Without Mastery	% Not Reaching or Not Trained in Module
1. Table of Contents	30%	70%	0%
2. Index	31%	69%	0%
3. Tables and Graphs	40%	60%	0%
4. Body of the Manual	2%	88%	10%
5. Procedural Directions	4%	37%	59%
6. DA Forms	8%	9%	83%

Summary of Integrated Training Day Approach. This study investigated the feasibility of integrating the FLIT Strand I reading training program with standard AIT training for MOS 76A within the time frame of the normal training day. Results of this study indicate that:

1. Fully a third of the students entering this AIT course are performing below the 7th grade level of general reading comprehension.

2. The flexibility of the self-paced, modular, AIT program presented no problems to the integration of the job reading training with the MOS training program.

3. The average JRTT job reading grade level rose from 5.5 before training to 7.2 after training and the percentage of students meeting the minimal job reading requirement of 7th grade reading level on the JRTT increased from 16% before training to 53% at the end of the integrated training program.

The Learning Center Delivery System

As part of the program of examining alternatives to the front-loaded reading training of AITPT, this study investigated the feasibility and effects of offering Strand I job reading training on an unscheduled, available-to-all, walk-in basis through the Post Learning Center. A learning center is a centralized facility offering self-instructional curriculum materials and supporting services, in a wide variety of content areas, to students who undertake training on their own initiative or are directed to the learning center for training which is not otherwise available. Typically, a learning center is open to all students who present themselves, at all times during a 12-hour day, for whatever available instruction is requested by the students, and for a period and schedule of instruction set by the student.

In AITPT, job reading training is provided to only the highly marginal segment of Army input, in a restricted set of MOSs, and prior to their entry into AIT. After this point no job reading training is available. The experimental extended and integrated training day approaches to offering job reading training during AIT illustrate the feasibility of providing Strand I instruction to AIT trainees who were not trained in AITPT. However this training is nowhere available as initial, refresher, or continuing training to personnel in the post-AIT period of their Army career.

In contrast, the learning center delivery system can provide job reading training to that far greater proportion of marginally literate Army personnel (regardless of their trainee or permanent party status) which consists of:

1. All voluntary students (except BCT trainees) who can be released for this training during the duty day or who elect to study after duty hours.

2. All students whose commander assigns them to this training without providing the training in his own unit.

Program Description:

Selection of Students. The distinctive feature of the learning center delivery system is that the training program does not select its students; rather, the students select themselves or they are selected by their supervisors.

Instructional Program. Job reading training was offered by means of the standard FLIT Strand I instructional program. The program that was transported to the learning center for delivery was modified in only one respect: instead of being administered in daily 2-hour periods, the choice of when to study, and for how long, was controlled by the student.

Instructional Staff and Facilities. Instruction in the experimental program was provided by one enlisted research assistant on the staff of Work Unit FLIT. In addition to administering the job reading training, he cross-trained the regular learning center staff in the operation of the Strand I program.

Facilities and Materials. All phases of this study were conducted at the Fort Ord Learning Center. This centrally located facility provided, in one building: 1) the Education Office Test Hall which did JRTT testing; 2) the MOS Library which provided, on a daily basis, the Army manuals used as reading materials; and 3) the study carrels, storage space, and administrative services needed to operate the program. Instructional materials such as worksheets, module proficiency tests, JRTTs, and administrative forms were provided by FLIT.

Schedule of Program Operation. As one of the instructional programs available at the Fort Ord Learning Center, the Strand I program was offered, on an unscheduled basis, to all interested students from 0800 to 2000 hours Monday through Thursday, and from 0800 to 1600 on Friday. Strand I job reading training was first offered in the Learning Center on 13 March 1975 and this experimental program continued through Fiscal Year 1975.

Dissemination of Information about the Learning Center Program: Most training programs utilize delivery systems which incorporate mandatory, scheduled, student attendance; in this case the command decision to implement the program insures full student participation and reduces attention in this area to matters of the volume of students assigned to the training and the efficiency of the program's internal scheduling of training flow. The learning center delivery system is, however, distinctively different, in that the training is merely made available to all comers and the decision to undertake the training is a matter of individual, optional choice, to be made by the student or by his supervisor.

In this study of the feasibility of delivering job reading training in a learning center, the fully transportable self-instructional training program had already been fully developed and installing it in a learning center required only local coordination. The information to be gained from this study was information about how many people would enter and persist in this training when it was offered in the Education Center, but not required by the formal Army training system. Information about the amount of participation in (and, thus, the effectiveness of) this available but optional program can only be interpreted in terms of the extent to which knowledge of the availability of the program was communicated to its audience of potential students. Therefore a major part of the research and development effort on this study consisted of the dissemination activities about the availability of the program.

Prior to installing the Strand I program in the Learning Center, advance dissemination of information about the program occurred in a series of planning and coordination meetings held with DPT, DPCA, the Education Office, the CO of the AIT Brigade, AIT Battalion Commanders, and their staffs. With the opening of the job reading training program in the Learning Center on 13 March 1975, the program was publicized for a 4-week period in both the Fort Ord Weekly Bulletin as well as in a series of spot announcements on the Fort Ord radio. A week after the program's inception, a feature article describing the program and relating the importance of job reading to career advancement was carried in the weekly post newspaper. In the following week, several hundred copies of a one-page informational flyer were distributed through the Education Officer's channels to all units on the post. Subsequent dissemination efforts have consisted of briefings of the assembled Sergeants-Major of the post, the Battalion Commanders and Course Chiefs in the AIT Training Brigade, and to training representatives of the 7th Infantry Division, recently reactivated at Fort Ord.

Results: As has been the Learning Center's experience with its other programs, initial response to this voluntary job reading training program has been slight in the eleven week start-up period of this study to date. During this period, 15 men initiated contact with the Learning Center to inquire about the job reading training program.

Ten of these contacts were telephone inquiries by middle level NCOs about whether the program would help them in preparation for immediately upcoming MOS proficiency tests. After learning of the 30 to 50 study hours needed to complete the training, these callers have made no further contact with the program. Two prospective students have visited the Learning Center to discuss the program, made appointments to take the JRTT, but have not returned. One student entered at the 7.4 job reading grade level and discontinued after one study session. One applicant was advised that he did not need this training on the basis of his initial 11.9 reading grade level performance on the JRTT.

One student, entering at RGL 3.3, has completed the entire training, albeit in non-standard fashion. With substantial tutoring he completed the minimal 10 worksheets in each module but failed to approximate mastery of any module and declined the additional mastery training prescribed in the program. This man terminated his training with an incomplete post-training JRTT turned in after using only twenty percent of the allotted testing time.

This study was conducted during a transitional period at Fort Ord--ATC functions were being reduced while elements of the 7th Infantry Division were being reactivated during the eleven weeks that job reading training has been offered in the Learning Center. This factor, in conjunction with the typically long start-up time for voluntary study programs make it difficult to interpret the low participation in this program. The Learning Center Delivery System does provide fully flexible access to self-instructional programs such as the Strand I training curriculum and appears most highly appropriate for providing this training in a non-resident setting. No significant problems were encountered in installing the program in the Learning Center, or in its limited operation. These results do emphasize one distinctive feature of the Learning Center Delivery System--the decision to undergo this training lies outside the control of the training organization and remains with the individual potential student or his unit commander.

Summary of Studies of Delivery Systems for Job Reading Training in AIT

1. From 25% to 35% of students entering AIT perform below the 7th grade level of general reading comprehension.

2. Within the sharply limited time available in AIT, the Extended Training Day and Integrated Training programs can bring the average reading grade level of marginal readers to the minimal job requirement of 7th grade reading level from a 5th grade entry level.

3. The extent of expected participation in job reading training conducted in a Learning Center could not be reliably estimated from these data. No operational problems were encountered in installing the program in a Learning Center. Initial attendance was minimal.

A summary of the research of Work Unit FLIT, recommendations and conclusions are given in Chapter 7.

CHAPTER 7

SUMMARY, CONCLUSIONS, AND DISCUSSION

This chapter presents an overview of Work Unit FLIT and a summary of its major findings, a statement of the conclusions drawn from this research, and a discussion of general problems and policies encountered in and springing from the conduct of this research.

Overview and Summary

Work Unit FLIT was conducted a) to develop and evaluate an experimental program of job reading training designed to provide a level of functional literacy appropriate to minimal job reading requirements in high density Army MOSs, b) to conduct an implementation program to install job reading training at all Army Training Centers and to monitor the operational effectiveness of these programs, and c) to conduct studies to develop information on the feasibility of different vehicles for integrating job reading training and job skills training in AIT. This report describes the development, content, and system operation of the two curriculum components of the job reading training program: the Strand I component to provide training in the application of existing general reading skills to the specific reading tasks and materials of the student's own job; and the Strand II component to improve basic reading skills through instruction using rewritten simplified reading materials presenting basic job information. In both Strand I and Strand II, all reading materials and all reading instructional materials were selected or prepared in 6 parallel sets, to permit job reading training to be given in the manuals and content of the MOS career cluster of the student's future MOS assignment. The feasibility studies of integrated job reading training in AIT are also described.

In this report data are reported which permit examination of: a) the extent of the current literacy problem, b) the module-by-module effectiveness of the experimental Strand I program, c) the effectiveness of the several elements of the Strand II program, d) the overall effectiveness of the entire job reading training program in its operation at the experimental FLIT school, e) the training results obtained in the operational job reading programs implemented at all Army Training Centers, and f) the feasibility of various ways of delivering integrated job reading training in AIT. The major findings on several categories of information are summarized below.

1. *Information on the incidence of marginally literate personnel in Reception Station and AIT input.*

In testing conducted during Reception Station Processing, 17% of the Mental Category III personnel and 43% of the Category IV personnel were identified as performing below the 6th grade level of general reading comprehension. Subsequent retesting 4 weeks later in BCT reduced these figures by half. This discrepancy seems to reflect the inevitable testing error involved in the use of multiple choice tests not corrected for guessing and the importance of mental attitude and composure in the testing of the reading ability of marginally literate men.

Reading screening of all input to 3 AIT Combat Support Training Courses identified one-quarter of these trainees as having less than a sixth grade level of reading comprehension.

2. *Information on the characteristics of students entering job reading training.*

Regional differences were reflected in the characteristics of the job reading trainees at the several Army Training Centers: median amount of formal schooling ranged from 10 to 12 years, 29% to 57% of the students held a high school diploma or GED certificate, 66% to 97% spoke English as their primary language, and the ethnic composition at the different schools varied considerably.

3. *Information on the appropriateness and training effectiveness of the several separate training modules.*

Pre- and post-training module proficiency testing did show improved student performance on the content of all training modules. The training modules of the self-paced Strand I curriculum showed non-trivial differences in the difficulty of their tasks, as measured by the proportion of students who could meet the mastery criteria for these tasks without training, and in training effectiveness, as measured by the proportion of students trained to the mastery level by the different modules. The greater difficulty of the later modules in the Strand I training sequence suggests the greater inherent difficulty of these more complex tasks (when mastery is specified on a criterion-referenced basis) as well as the effects of the fixed 6-weeks time constraint placed on the training program.

While the Strand II modules did produce substantial improvement in reading performance, the gains were made on simplified job reading materials purposely written at the 7th-9th grade level

of reading difficulty. Although this level of reading difficulty was found appropriate to the existing reading skill level of students in the program, there still exists a gap between the 7th-9th grade level reading skills trained in Strand II and the 11th grade and higher reading difficulty level of most Army manuals.

4. *Information on the overall effectiveness of the operational job reading training program.*

In the data obtained from the operational, non-experimental AITPT schools, students showed a gain of 2.2 grade levels in job reading and an end-of-course proficiency at RGL 7.5, as measured by median scores on the Job Reading Task Test. Similarly there was an increase of 45% in the number of students who attained the course objective of RGL 7.0 after training. Over half of the students made gains of more than 2 reading grade levels while 7% of the students showed zero or negative gains in job reading.

These same programs also devoted differing but substantial amounts of time to traditional reading training, using general reading materials rather than Army manuals. The effects of focusing functional reading training on job reading tasks and job reading materials, as well as the difficulty of accomplishing substantial improvement in general reading ability in a program of less than major duration and scope, can be seen in a comparison of the gains in job reading (shown above) with the gains in general reading produced by these programs. As measured by the USAFI Intermediate Achievement Test measure of general reading comprehension, these same students showed a median gain of 1.0 reading grade level in general reading comprehension and an end-of-course median RGL of 6.4. There was an increase of 29% in the number of students reaching the seventh grade level, 23% made gains of more than 2 reading grade levels, and 28% of the students made zero or negative gains.

These data obtained from the operational programs conducted by the Post Education Offices at the implementation sites are in close accord with the results obtained in the program directed and conducted mainly by the FLIT staff at the experimental school at Fort Ord.

In a study of the stability of gains produced by the job reading training program, net gains of 1.9 RGL in job reading skill level and .4 RGL in general reading comprehension level were measured over the period from entry into job reading training to the retesting which occurred 13 weeks after that time and 7 weeks after job reading training was completed.

5. *Information on the feasibility of integrating job reading training and job skills training in AIT.*

Student performance in the Extended Training Day and in the Integrated Training Day studies was approximately equivalent to that obtained in the other applications of the Strand I program. This indicates that it is feasible to provide effective job reading training, along with job skills training, in AIT and to thus avoid the administrative and training problems of the front-loaded AIT program which interposes 6 weeks of job reading training between BCT and AIT, and interrupts the standard flow of the unit fill training system.

The integrated training was accomplished at the cost of a fifty percent reduction in the training time available for job reading instruction. This entailed largely abandoning the module mastery principle of the self-paced Strand I program in order to pace the student's progress in reading training to his remaining time in AIT skills training, rather than to his reading performance. The addition of reading training and its time requirements to an already full AIT schedule necessitates some additional time for the integrated training program. The flexibility of self-paced AIT job skills programs would seem to permit integrated mastery-based training in both job reading and job skills with the minimum total expenditure of training time.

6. *Information on the effectiveness of the implementation program.*

The experience of the developer in providing implementation support for installing the experimental program as an operational entity indicates the importance of a series of site visits before, during, and after the initiation of a new program. Of major importance were the continuing implementation interchanges which continued after the implementation team had returned from assisting in the initial week or two of the school's operations. In this period, the monitoring of student performance data and a follow-up visit after the shaping-up phase of the school's operation refined and insured the fidelity of the operational programs to the experimental model.

Conclusions

On the basis of these results it was concluded that:

1. There is a substantial proportion of current Army input whose literacy skills are inadequate to meet the reading requirements of MOS training and job performance. For these personnel,

training to improve job reading skills is required to allow them to qualify for and perform the entry level duties of an Army job.

2. The FLIT job reading training program is generally effective in producing a level of job reading skills sufficient to meet the reading demands of AIT and initial duty assignment. The effectiveness of this self-paced, mastery-based training program could be enhanced by establishing, as its individualized objective, the reading level requirement established for each student's job field.

3. The FLIT job reading program is fully implementable in Army Training Center settings and retains its effectiveness when it is embedded in a wide variety of local training contexts.

4. The FLIT job reading training program is readily transportable to programs providing integrated job reading training and job skills training in AIT settings. Such integrated programs provide an important alternative to the AITPT program of 6 weeks of full time reading training interjected in the standard training sequence between BCT and AIT.

Discussion and Implications

Career Education and General Educational Development: In the Army, as in the other Armed Services, there has traditionally been a distinct separation between military job training, career educational programs (e.g., advanced technical schools; Non-Commissioned Officers schools for management and leadership training) and general educational development (GED) programs. Generally, the military job training programs have focused on the teaching of skills and knowledges for performing Army jobs, while the GED programs have focused on teaching skills and knowledges for obtaining a high school equivalency diploma, and they have offered access to post-secondary, college-level education for those military personnel seeking college degrees or simply advanced study in some academic or professionally oriented curriculum.

Within the Army, the management of military job skills training and GED have been separated at the Post level, with job training falling under the management of the Directorate for Plans and Training, while the GED activities fall under the Directorate for Post Community Affairs. The military job training is managed and, for the most part, conducted by military personnel. The GED program, on the other hand, is managed by the Post Education Officer

(most prevalently Civil Service) and conducted largely by a civilian staff of Civil Service personnel or special contract civilian personnel (the teachers of the Army's AITPT literacy programs discussed in Chapter 5 are, for the most part, civilians who work on 6 week contracts).

Operating within this type of management framework, in 1966, when Project 100,000 started and large numbers of less literate personnel entered the Army, the task of providing literacy training was viewed as the initial stage of GED, and thus became the responsibility of the Education Officers at the various Army Training Centers. These administrators then established literacy programs by hiring or assigning available personnel to be administrators of the various Army Preparatory Training (APT) schools. These APT administrators in turn hired teachers from the civilian sector and proceeded to embark upon the early stages of GED (indeed the directive establishing the literacy schools called for training in reading, language arts, social studies and mathematics).

Now the critical aspect of this arrangement is this: the Army established literacy training programs because there was concern that the less literate men would not be prepared to handle the literacy demands of Army basic military training, advanced individual (job) training (AIT), nor the Army jobs themselves. Thus the concern was one of Army career skills training and performance, yet the solution offered was the initial stages of GED (to teach personnel to read at the 5th grade level--clearly an objective stated in terms of the K-12 general educational curriculum).

Why would this arrangement occur? Clearly there would not be an attempt to teach automotive mechanics by offering students an introductory chemistry course--though certainly there are overlapping aspects of these areas of study: principles of combustion, combining of gases, etc. In fact, these courses of study are offered by the Army, the first as advanced individual job skills training, and the latter as secondary or post-secondary general educational development.

While there seems to be no difficulty in appreciating the distinction between job training and GED in the foregoing example, the distinction gets less clear when basic literacy skills/knowledges are considered. Presumably, the early stages of GED training are viewed as general prerequisites for further specialized study in either vocationally or academically oriented training and education programs. This is, in fact, the way our K-12 curriculum typically operates: students pass through a common curriculum

up to around the 9th or 10th grade. Beyond this, some quit, some are tracked into vocationally oriented curricula, while others pursue the "college preparatory" curriculum. The latter is considered as GED, for which a high school equivalency diploma may be obtained, while the vocationally oriented curricula have traditionally been excluded from the high school equivalency diploma program.

From the foregoing, we see that the elementary and grammar school curriculum has been viewed as prerequisite to specialized study at the high school level in technical, vocational training, or in academic, "college-prep" training. Furthermore, the further backward through the K-12 curriculum one goes, the more homogeneous the curriculum becomes until in the elementary grades, and especially grades 1-4, the academic curriculum becomes very much the traditional 3 Rs: "reading, rite'n, 'n 'rithmetic" (we are excluding the non-academic, enrichment activities which go on in elementary schools--even though certain functionally equivalent activities are no doubt necessary for successful adult literacy development).

It seems likely that reasoning such as the above was the basis for the Army's decision to provide remedial literacy training of a GED nature for its less literate personnel, and to assign responsibility for such training to the Directorate of Post Community Affairs, rather than to the Directorate for Plans and Training--even though the major concern was that less literate personnel would fail in their military, not academic, training programs.

Now as it turns out, the FLIT program has questioned the validity of the foregoing argument for its relevance to the Army's literacy training needs (and, indeed, to the needs of the adult literacy student in general). The point is this, while there is no arguing that the early stages of literacy training must focus on the teaching of basic reading, writing and arithmetic skills: the content (words, paragraphs, problems) used to teach these skills must be quite different from that of the typical elementary curriculum for literacy training to have the most direct and immediate impact on a person's capability to perform Army jobs. For these purposes, the content of the literacy program should contain the words, paragraphs, and other reading, arithmetic, and communication tasks involved in such jobs.

Interestingly, much this same point was understood in World War II when the Private Pete reading series which contained numerous Army terms and concepts was developed. Though these materials are today out of date, and were never oriented to career clusters--just to general Army terminology and procedures--they

never-the-less recognized the need for military content for teaching basic literacy skills to Army personnel in such a way that job-related literacy performance might most rapidly be improved.

In the FLIT research, development, and implementation program there has occurred a bridging of the gap between Army job skills training and basic literacy training. This is in effect a re-institution of the World War II concept of functional literacy extended to career cluster literacy training, not just general military terminology and concepts. There are, however, some interesting questions which arise when it is considered that the early stages of literacy training, the most homogeneous stage of training in GED, are offered within the context of job skills training. For instance, what about the later stages of literacy training? Having started with a job performance oriented literacy training program (and one which, because of time constraints, provides only limited improvement), where does the student go next? If the student leaves AITPT, and is still lacking skill levels appropriate to his job, does he enroll in the GED program which, in its later stages will consist primarily of skills and knowledges of the "college-prep" type? Will such training then improve the student's job proficiency and chances for promotion and career development? What is the transfer value of GED to job proficiency? Conversely, what is the transfer value of job training to GED?

It is clear from the "career education" movement in civilian life that the problems faced by Army training and education management are not unique to the Army. Many factions have come to question just how "general" is "general educational development"? How appropriate is the "college-prep" curriculum for life outside the college?

Having made a solid start on the integration of job/career training and literacy training, the Army should continue R&D which will help explicate the relationships of job proficiency to education, both of a job-oriented and GED-oriented nature. Today most Education Offices already participate to an extent in job skills training by providing MOS non-resident instruction in learning centers. Research needs to be performed which will reveal the motivations of personnel for pursuing during and after duty GED and job related training. This could perhaps lead to a more cost effective utilization of general education and job training funds to improve both personnel job proficiency and academic a accomplishment.

Literacy Training and the Diversity of Army Personnel: Whenever literacy training in the Army is discussed, there is a tendency to think in terms of a group of personnel, generally from Mental Category IV, who are not competent readers. Little thought is given to the fact that the personnel in need of literacy training do not form a unitary mass. But as indicated in Chapter 4, the Army's literacy schools include an enormously wide ranging group of students who, to be sure, share the common characteristic of not being able to perform Army reading tasks too well, but beyond this offer a mixture of: oral language skills--some very low level native English language speakers; some students from foreign lands having high skill in their own native language, but low skill in English as a second langauge; cultural backgrounds--some are native American Indians from U.S. reservations, some, blacks, whites, chicanos from inner cities, others of these groups from rural areas; educational levels--some have taken college courses, almost half have high school diplomas, while some lack 8th grade educations; occupational levels--some are right out of school, others have worked; some have had white-collar, managerial positions, others have moved from one unskilled job to the next; learning activities levels--some have reported initiating and pursuing many self-education (learning) projects in the 12 months just prior to entering the literacy program, at least one reported doing nothing for a whole year!; social maturity levels--some are acting-out, young adolescent men who are coping in a maladaptive manner with many social and personal problems; others are more mature personnel seeking personal improvement as a means of improving their own and their families' life circumstances.

All of these problems enter the literacy program. Yet, for the most part, there is no personal counseling made an integral part of the literacy or job skills training in the Army. To be sure, there are psychiatric and other counseling services available in the Army, but there is a need for the development of counseling services which are integrated in a functional manner with literacy and other training programs--especially the entry level training programs.

At the present time, there is no provision for training in English as a second language (ESL) as an integrated component of job skills and job literacy training (some Education Offices offer ESL courses, conducted by civilian contractors and usually not designed according to the best educational technology, and clearly in a non-job-functional manner, except perhaps for the ESL teacher here and there who attempts to use a few military phrases now and then). At the time of this writing, we are aware of the fact that the Defense Language Institute has been queried regarding the development of functional, job-oriented, ESL programs for Army

personnel. While this is a positive step, the development of ESL programs should be accomplished within the guidelines of a comprehensive study of the Army's total language/literacy requirements, and according to a blueprint which will produce a workable, functionally integrated language, literacy, and career development education system.

Our experience in operating the FLIT experimental school has revealed that, without question, there are majo differences among students in their information processing proclivities. By this we mean that some tend to welcome the challenge of performing difficult tasks--some do not; some will persist at a problem, others will make a rapid response and quit; some report pursuing considerable learning projects of an informal nature (e.g., building a model airplane; learning guitar; gymnastics) others seem to avoid learning situations. In practically all cases (and these are informal observations it should be noted) we have not found that students could not perform some information processing tasks--rather they simply do not. Where we have observed to be what constitute cannot problems, we have found that many of these students cannot process information as rapidly as their non-literacy training age cohorts, or in some cases not as rapidly as average 5th grade students. Also, we have found that an inordinate amount of practice may be required to acquire, retain, and appropriately use a new skill, such as learning certain sight-sound correspondences.

At the present time we have nothing resembling a comprehensive understanding of the less literate personnel as information processers. We know very little about how literacy students may learn to be literate. Furthermore, we do not understand how learning to read might further affect a person's information processing capabilities and proclivities--does the person who becomes literate as an adult use his literacy in the same ways as the typical literate adult who became literate as part of a childhood developmental process? Would the newly literate soldier recapitulate this sequence during his Army career? Could the rate of information processing within and outside the formal classroom be improved by continuing literacy training, career education, and general education? There is a need for extensive basic research in the Army to understand the soldier as an information processer, and to understand how his information processing skills may be affected by the long term training and education that can be accomplished during an Army career.

Literacy and Job Communication Task Analysis: Throughout this report we have focused our attention on the performance of reading tasks in Army jobs and job training programs. Clearly, though, reading is only one of the communication skills needed in Army jobs. Other communication skills: writing, speaking, and auding are certainly of importance in all Army jobs, while other skills such as illustrating, sequencing of verbal communication for instruction, formating, and the like will be called for in a smaller number of Army jobs. To our knowledge, there is no comprehensive information available on the nature of the full range of communication skills tasks found in various Army jobs and job training programs.

Regarding job reading tasks, the Army/HumRRO research to identify job reading tasks utilized a type of critical incident technique in which job incumbents were asked to report tasks in which they had used some reading materials.[18] They were asked to tell what they were trying to find out (what their information needs were) and to show the interviewer the exact materials used. Through this procedure, a reading task was identified as a source document and an information requirement (i.e., a question of some sort in the reader's mind).

While this procedure did provide an indication of what materials were used, and for what kinds of problems, the data base was small (less than 170 interviews in only three jobs), and there was no attempt during the interviews to distinguish uses of the materials which were mediated by considerable prior knowledge and experience and those uses which novices made of the materials. Also, there was no attempt to query the respondents in depth about the manner in which they used the manuals (did they use Tables of Contents or Indexes to locate information or did they thumb through; did they read a little, perform some task, and then read a little more, etc.; in what tasks do they use materials to perform in a step-by-step manner, and when do they use materials simply to refresh their memories of something they already know, etc.). In short, the early Army/HumRRO reading task identification methodology was not designed to provide an analytic understanding of the nature of Army reading tasks.

As suggested, in the Army/HumRRO research on job reading tasks, there was no clearly articulated theory or model of human information processing to guide the development of the interview schedule nor to interpret the results of the interviews. Since "an understanding" can only come about when new information is fit

[18] Sticht, *op. cit.*

into some prior knowledge, and since theories or models provide clear statements of the knowledge realm relevant to the phenomenon being studied, there is a need for theory-based research to produce methodologies for the identification of communication tasks in Army jobs and to conduct communication task analyses of Army training programs and jobs. Such data could be used in the development of training literature and training programs, and could also form a data base for the construction of assessment (job communications skills proficiency tests) instruments for a variety of purposes.

Summary of Implications: Briefly, our experience in working in the area of literacy training for the Army has suggested the need for further study to:

1. explicate relationships of job performance and proficiency to education; to show how general or job specific education impacts on job performance;

2. produce information about why Army personnel do or do not pursue educational opportunities available to them;

3. develop more effective career and personal counseling services and means of insuring that personnel utilize these services;

4. produce information on the diversity of language and cultural backgrounds of Army personnel so that any comprehensive, functionally integrated language, literacy and career development system might accomodate such diversity;

5. provide information about the soldier as an information processor; to produce a better understanding of why some personnel seek learning experiences and others avoid them; to find out why some personnel are slow learners and why others learn quickly; and to find out if training can improve the tendency to use information skills, improve capacities for processing information, or both;

6. develop theory-based methods for task analysis of jobs to identify job related communication skills (including literacy skills) and to provide a data base for the evaluation of the communication skills demands of jobs, and the development of functionally relevant communications skill training in entry and advanced level career development programs.

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