



Technical Report 724

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Evaluation of the U.S. Army Basic Skills Education Program

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FOREWORD

The Curriculum and Evaluation Team of the Instructional Technology Systems Technical Area of the U.S. Army Research Institute for the Behavioral and Social Sciences performs research concerning military education and training. One facet of this research is evaluation of the Army's Basic Skills Education Program.

This report covers a 5-year evaluation of the Army's Basic Skills Education Program. It details the methodology and the activities carried out, as well as problems encountered and the effects of these problems on the work performed. Results indicate that the Program's impact is favorable in that participants consistently showed improvements in test scores. However, substantial numbers of soldiers graduated from the program without meeting criterion levels of test performance.

This research was supported by the Education Division, Office of the Deputy Chief of Staff for Personnel.



EDGAR M. JOHNSON
Technical Director

EVALUATION OF THE U.S. ARMY BASIC SKILLS EDUCATION PROGRAM

EXECUTIVE SUMMARY

Requirement:

The Basic Skills Education Program (BSEP) is an integral part of the Army Continuing Education System (ACES). BSEP is specifically designed to provide soldiers who demonstrate deficiencies in fundamental reading, writing, speaking, and computing skills with opportunities to develop these skills. In an effort to upgrade the quality of the existing BSEP, the Army initiated a long-range development project to revise existing programs and to develop new BSEP components. The U.S. Army Research Institute (ARI) was given the responsibility for evaluating the overall BSEP. The American Institute for Research (AIR) was awarded a contract by ARI to conduct the evaluation activities necessary to fulfill this responsibility.

Procedure:

AIR provided evaluation services in a number of different program areas. The services included providing technical and advisory assistance to ARI, the Education Division, Office of the Deputy Chief of Staff for Personnel (ODCSPER), the Education Directorates of the Training and Doctrine Command (TRADOC), the U.S. Army Forces Command (FORSCOM), and contractor program developers. It also included conducting both formative and summative program evaluations of BSEP components concerning literacy and English language proficiency for non-native English-speaking soldiers. The evaluations involved the review of relevant documentation; interviews with relevant program participants, instructional staff and program administrators, and with unit command personnel; on-site observations of classroom activities; administration of survey instruments; and the collection and analysis of objective data regarding participant performance prior to, during, and following enrollment in a BSEP course. A major program area involving BSEP components was MOS baseline skills. These skills are the basic educational or academic skills or competencies required in order to learn how to perform job task duties associated with Skill Levels one and two of Military Occupational Specialties (MOS). Other program areas were learning strategies, or learning how to learn, and English language proficiency for soldiers who were not native speakers of English.

Findings:

The need currently exists for some type of remedial education or training in basic educational skills or competencies for soldiers who are deficient in those skills and it will continue to exist for some time. The Army will continue

to accept soldiers who will need help in basic literacy skills in order to effectively absorb typical Army training. The Army will also continue to enlist soldiers who are not native speakers of English, many of whom will be unable to speak and/or comprehend enough English to profit from the Army training they are given in English. The Army will need to continue to provide remediation in basic skills and enabling programs in English.

All of the BSEP components examined did reduce the deficits they set out to reduce, at least to some extent. BSEP literacy programs produced gains as measured by pretest/posttest comparisons on program-specific tests and on standardized tests in reading and arithmetic. All of the English-as-a-second-language (ESL) programs produced gains in English comprehension, as measured by the English Comprehension Level Test (ECLT). These generalizations hold for a diverse set of programs, sites, teaching arrangements, and time periods. The Army's BSEP produced measureable gains in basic academic competencies. On the other hand, while some gains were made by nearly all BSEP participants, large numbers of participants did not reach the levels of proficiency that had been specified by the Army as the objectives of the courses. Thus, there is a need for improvement in the extent to which BSEP components raise the level of academic competencies to Army expectations.

When the evaluation focus shifts from the immediate outcomes such as post-test scores on academic competencies to intermediate outcomes such as the completion of Initial Entry Training (IET), or to still more distal outcomes such as the completion of the first enlistment, reenlistment at the end of the first term, or scores on the Skill Qualification Test (SQT), BSEP participants did somewhat better than did nonparticipating comparison groups of comparable ability levels at the time of first enlistment. This generalization also holds up over different courses offered at different sites and different times.

Utilization of Findings:

Previous and existing BSEP courses have proven partially successful in providing participants with increased levels of proficiency in basic academic competencies and in English proficiency. These programs should therefore be continued so long as there is a demonstrated need for them. Since Army standards set as objectives for satisfactory completion of these courses are not met by a sizable number of participants, improvements are needed in the efficiency with which such courses meet their objectives. Strides have been taken during the course of the project to standardize the curricula and the manner in which they are implemented at various installations throughout the Army. Continued efforts in this direction should be made so that, as soldiers move from one installation to another, they can build upon skills acquired at previous installations.

A problem exists in discrepancies between officially stated objectives and perceived objectives of BSEP. The expectation of many BSEP participants and unit commanders who release soldiers for BSEP attendance is that the instruction will help them increase their GT composites to a point where they can be promoted, reenlist, or change their MOS. None of the BSEP courses explicitly included this as a primary objective. Maximum results cannot be expected from a program that does not directly address a primary objective of the target audience.

The ultimate value of BSEP lies in the extent to which program components increase the proficiency with which soldiers carry out their MOS job tasks, not on increases in test scores of either general academic skills or special academic skills associated with job tasks. None of the programs even attempted to measure effects on MOS task proficiency or on actual job performance. Such evaluations must be undertaken if the real value of BSEP courses to the Army is to be determined.

EVALUATION OF THE U.S. ARMY BASIC SKILLS EDUCATION PROGRAM

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CHAPTER 1

THE EVALUATION PLAN AND ACTIVITIES

Introduction

The Army Continuing Education System (ACES) is the primary educational system for providing service members (SM) with knowledge and skills necessary for the successful completion of military job tasks, for satisfactory career progression, and for coping with the problems of everyday living in a military environment. The Basic Skills Education Program (BSEP) is an integral part of the ACES. It is specifically designed to provide SMs with the basic educational skills or competencies needed to learn to perform job task duties associated with their Military Occupational Specialty (MOS). BSEP is designed to provide SMs who demonstrate deficiencies in fundamental reading, writing, speaking, and computing competencies with opportunities to develop these skills. BSEP also includes the development of English language proficiency for SMs who are non-native speakers of English.

In response to a Government Accounting Office (GAO) report and in order to improve the quality of the then existing BSEP courses, the Army prepared a comprehensive, multi-year BSEP curricula development plan to be implemented under the aegis of the Training and Doctrine Command (TRADOC). This plan envisioned the development of BSEP courses in the following four major areas:

- MOS baseline skills
- life-coping skills
- learning strategies
- English-as-a-Second-Language (ESL)

The schedule for the developmental project is presented in Figure 1-1.

In November 1980, RFP MDA 903-R-0146 was issued by the Army Research Institute (ARI). The purpose of this solicitation was to obtain evaluation services in support of the planned BSEP curricula development project. The American Institutes for Research (AIR) was awarded the contract to provide these evaluation services after review of its proposal in response to this RFP. The work began on 8 February 1981 under Contract Number MDA 903-81-R-0146 and continued under the contract and subsequently under Contract Number MDA 903-84-C-0128 until 30 June 1986. This report summarizes the activities of AIR in conducting evaluations of various BSEP components during the course of the project. During the course of the project, we prepared 46 reports or papers that presented the details of these evaluation activities. These documents are referenced but not repeated in this report.

Summary of Activities

Our project activities were necessarily geared to the developmental activities that actually took place. As is typical of long-range plans for operational programs, the development program did not proceed in accordance with the original schedule. As a consequence, our evaluation activities did

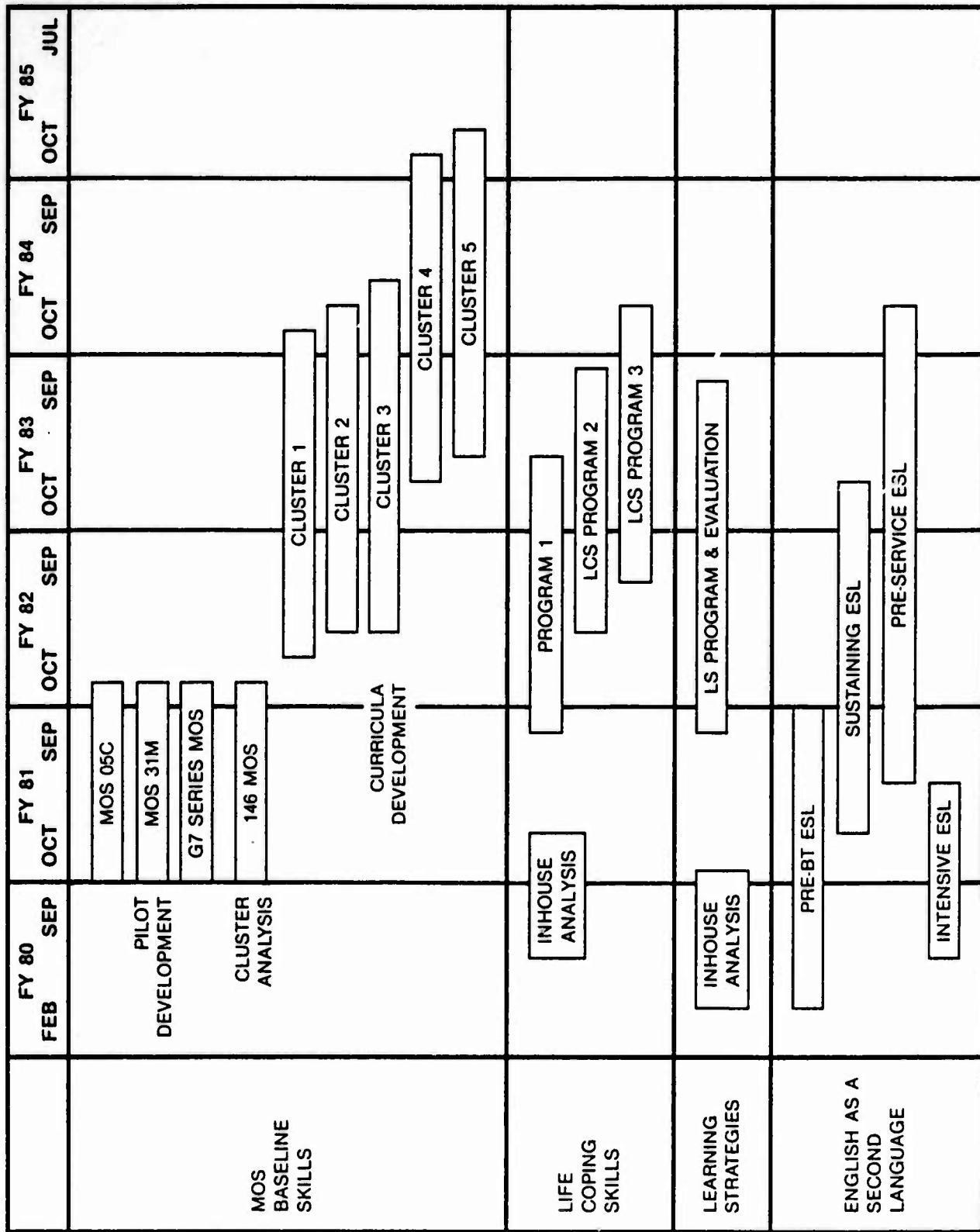


Figure 1-1. BSEP Curricula Development Project Milestones

not proceed according to our proposed schedule. By mutual agreement with personnel from ARI, the Education Division of the Office of the Deputy Chief of Staff for Personnel (ODCSPER) and our staff, our activities were rescheduled to accommodate the changes in the development schedule. These activities are summarized below.

MOS Baseline Skills

MOS Baseline Skills was expected to be the major program area. Two of the three pilot development courses shown in Figure 1-1 were developed. We evaluated functional BSEP (FBSEP) courses for MOS 05C (later changed to 31C) and for MOS 31M. Both of these FBSEP courses were implemented at Ft. Gordon immediately prior to and in conjunction with the Advanced Individual Training (AIT) courses for these MOS. Evaluation of these courses was conducted largely through an examination of the records of performance in FBSEP courses and the subsequent AIT courses in these MOS. Data were obtained from hardcopy documents supplied by the BSEP coordinator at Ft. Gordon, from the TRADOC Education Records System (TREDS), and from the Automated Training Resources Management System (ATRMS). These activities were detailed in Report No. 7.

Another important aspect of the MOS Baseline Skills program area was the delineation of the basic educational skills or prerequisite competencies for a large sample of high-density MOS. This aspect was carried out by the RCA Service Company under contract to TRADOC. Originally, we had not been tasked with any major responsibilities in regard to these TRADOC analysis activities. In place of the evaluation of planned courses that were not developed, we were

asked to generally monitor the analysis activities and to offer appropriate technical assistance and advice to TRADOC, ARI, and the Education Division, ODCSPER, regarding these efforts. This was accomplished through the review of documents and attendance at meetings. We also accomplished a systematic study of the methodology used by the contractor to identify and assign prerequisite competencies on the basis of analyzing job tasks. These activities are detailed in Reports Nos. 7, 10, and 43.

Curricula for the cluster courses, shown in Figure 1-1, were never developed. Two other curricula-development projects, not included in the TRADOC project, were started under the auspices of ARI. One of these was a comprehensive curriculum for a BSEP II course that was developed by McFann, Gray & Associates, (MGA) under contract to ARI at the behest of Headquarters, U.S. Army Forces Command (FORSCOM). An earlier study had found that many unit commanders felt that the existing BSEP II was a detractor from effective unit training. The new curriculum was to be flexible enough to alleviate some of these distractions and was specifically aimed at developing the basic educational skills that were measured by the Tests of Adult Basic Education (TABE). Two field trials had been held before we became involved with the MGA curriculum. Both had shown promising results and Headquarters FORSCOM decided that it would become their standard BSEP II curriculum. We became involved with the early implementation of the MGA curriculum and conducted a preliminary evaluation of the course as it was operated at five posts during early FY84. After some revisions were made and the course had a little time to stabilize, we conducted a comprehensive evaluation of the MGA curriculum at seven FORSCOM

sites early in FY85. Details of the evaluation of the MGA curriculum were presented in Report Nos. 19, 20, 45, and 46.

FORSCOM also used selected modules from the MGA curriculum in efforts to reduce an unacceptably high rate of attrition in their Basic Non-Commissioned Officer Course (BNCOC) academies. We conducted an analysis of the use of these selected MGA modules with BNCOC screening tests and BNCOC academy performance. The details of this analysis are presented in a later section of this report.

The other curriculum development effort initiated during the course of our project involved the Job Skills Education Program (JSEP). This curriculum was most nearly a substitute for the originally scheduled functional MOS cluster BSEP courses, but there were major differences. JSEP was scheduled to be at least half presented via computers and the course management system was to be computer-based. To the extent that the contractor, Florida State University (FSU), and ARI felt it feasible, JSEP was to build on the TRADOC analytic data and the prerequisite competency taxonomy developed from them. The curriculum was to be job-related and was to accommodate differences in MOS requirements, but was to reflect more general Army-wide requirements throughout. Work began on JSEP late in FY82 and is continuing at the present time. While several field tryouts of some curriculum materials have taken place, full-scale demonstration of the completed JSEP is not scheduled until FY87.

Our involvement with JSEP started in FY83 at which time we conducted a needs assessment study for a JSEP-type program. JSEP itself was in a preliminary design phase at the time. Our needs assessment report was

submitted late in FY83 as Report No. 44. Since that time, our involvement with JSEP has been limited to review of relevant documents, attendance at meetings, observation of field tryouts, and the provision of advisory services upon request.

Life-Coping Skills

The TRADOC BSEP development plan called for an Army-conducted analysis of the need for programs that would provide SMs with basic skills necessary to survive in an Army environment other than that directly related to performing MOS job tasks. Remedial programs were to be developed to meet the needs identified. On the basis of the Army-conducted analysis, it was decided not to develop any separate BSEP courses specifically related to life-coping skills. It was felt that existing Army programs addressed most of the problems identified and that some of the required skills could be incorporated into other BSEP courses. Accordingly, there were no life-coping skills courses to be evaluated.

Learning Strategies

We became involved in one of three experimental learning strategy courses being tried by the Army. The course involved an adaptation of the Feuerstein Instrumental Enrichment Program within the context of the ongoing BSEP II courses at Ft. Knox. We conducted a formative evaluation of this effort, which took place in FY82, and issued our final evaluation report, Report No. 40, in FY83. Our staff worked directly with personnel from Ft. Knox, the

Elizabethtown Community College, Curriculum Development Associates, and ARI. We supplied some of the instructional materials, developed special test instruments that were used as part of the course, and evaluated the preliminary results.

English-as-a-Second-Language Course

When we began our project, the only new ESL course in place was a six-month resident course being given at the Defense Language Institute (DLI). Evaluation of this course was our initial program evaluation effort on this project. A second resident course was given at DLI, this one of three-months' duration. We evaluated this course, including following up graduates through Basic Training (BT) and AIT cycles. Details of this evaluation were presented in Report No. 41.

While monitoring and evaluating the newly developed courses, we conducted a comprehensive evaluation of the existing ESL courses given at TRADOC installations during Initial Entry Training (IET). Detailed results of these activities are presented in Report Nos. 22, 23, 24, and 33.

Meanwhile, we worked with personnel from Headquarters TRADOC and from DLI monitoring the development of the IET Pre-BT program. This course, which was based on the functional language requirements necessary to successfully complete BT, was tested first at Ft. Dix and Ft. Jackson, and was implemented at six other TRADOC sites in FY82. In accordance with the wishes of TRADOC, we delayed official evaluation of this course for approximately one year so that

it could stabilize. We evaluated the course and issued a Report No. 39 in FY84. At the same time, we were working with personnel from TRADOC and DLI in performing front-end analyses to develop job language proficiency requirements for a sustaining course that was to be developed. Before the course was developed, TRADOC was relieved of the responsibility for further development of BSEP courses and no further ESL courses were developed by TRADOC.

Continued efforts were made by personnel from the Education Division, ODCSPER, to re-establish a resident ESL course at DLI for Army personnel. Our staff worked with the Education Division on an advisory basis on the establishment of such a course. In FY86, a resident ESL course for enlisted SMs was re-established at DLI and the IET Pre-BT ESL courses at TRADOC installations were discontinued. We made preliminary plans for the evaluation of the new resident course and the officer's ESL course at DLI, but insufficient time before the termination of our contract precluded our carrying out such evaluations.

Review of Existing BSEP Courses

An early planned project activity was a review of existing programs. The intent of this review was to provide a snapshot view of the overall BSEP as it existed prior to the planned implementation of new and revised components. This was to serve two purposes. First, it was to provide some initial indices of the benefits the Army derived from existing programs, and second, it was to provide baseline data on BSEP components. Several drafts of the report on this review were submitted. Since many "existing programs" continued to exist well

beyond the anticipated date for the implementation of new BSEP courses, each successive draft updated the report with currently available data. Our final report on this review activity was submitted in FY84 (Report No. 29).

Another activity that was originally planned for FY85-86 was the development of a comprehensive quality control system for the BSEP part of the ACES. We began the initial work on this activity in FY83 and submitted a concept paper and a draft design for such a system in FY84 (Report Nos. 11 and 12). After a review of these, the Education Division decided that further development of a comprehensive system as outlined in these documents was not warranted at that time. The proposed system is described in more detail in another section of this report.

Analysis of Effects of BSEP

During the course of our project, we were able to collect or to obtain from existing databases 12 different samples of BSEP participants. From these databases, we were able to construct control groups from individually identified eligible-but-not-enrolled SMS or demographically matched comparison groups for each of the participant groups. Comparisons were made between participants and either control or matched comparison groups on first-term attrition rates, first-term reenlistment rates, promotion rates, and Skill Qualification Test (SQT) scores, as well as on grade-level academic competencies measured by the Adult Basic Learning Examination (ABLE) or the TABE.

Summary

The original schedule of evaluation activities was predicated on the implementation of the proposed BSEP curricula development project under the aegis of TRADOC. Changes in the scheduled activities were made to accommodate to changes in the development activities. Our activities included the following:

- evaluation of two BSEP courses implemented in an AIT environment at Ft. Gordon,
- provision of technical and advisory assistance in connection with the MOS Baseline Skills Project,
- evaluation of the newly developed MGA curriculum and an analysis of the use of selected MGA modules in connection with the completion of BNCOC courses,
- provision of technical and advisory assistance in connection with the JSEP,
- participation in the conduct of and the evaluation of an adaptation of the Feuerstein Instrumental Enrichment Program in conjunction with ongoing BSEP II courses at Ft. Knox,
- evaluation of resident ESL courses at DLI,
- evaluation of existing six-week courses at TRADOC installations,
- provision of technical and advisory assistance in the development of the IET Pre-BT ESL course and its later evaluation,
- review of existing BSEP I and BSEP II programs,
- development of a design for a comprehensive quality control system, and
- analysis of overall effects of BSEP I and BSEP II.

CHAPTER 2

WHAT WE LEARNED ABOUT BSEP ESL IN THE ARMY

Introduction

Formal English-as-a-second-language (ESL) instruction in the Army goes back to 1967 with the implementation of a six-week ESL program in the training base for enlisted service members (EMs). Since then, Army ESL instruction has alternated between a centralized program at a single site and a decentralized program conducted at various training bases. The content of instruction has also shifted between materials directed at improving general English skills, materials for improving English skills in Army situation, and materials with some mix of these two types.

This chapter explains the reasons why the Army is very likely to continue to need an ESL program and charts the changes and progress in Army ESL instruction from 1979 to 1986. We also review what has been learned about specific ESL needs and describe those concerns and problems which have yet to be resolved.

The Manpower Problem

Several factors support the prediction that the Army will continue to recruit non-native English speaking (NNS) service members. First, demographic

studies indicate, that to the year 2000, the population in the prime accession age group, 18-20 year olds, is likely to decrease in absolute numbers. During this period, minority populations, particularly Hispanic, are expected to significantly increase for this age group (Berry, Oxford-Carpenter, Dendell, & Wheatley, 1985). The Army, along with the other armed services, will probably be recruiting a greater proportion of the minority population in order to meet its manpower needs.

Two other factors will continue to contribute to the need for non-native English speaking service members. Equal opportunity considerations will lend emphasis to the need to recruit ethnic minorities. The Army also needs speakers of other languages, particularly among its officers. In recent years, nearly half of the Spanish speaking officers have come from the Reserve Officer Training Corps (ROTC) program in Puerto Rico (Barbosa, Gosnell, & Evans, 1986).

The Language Proficiency Problem

Data on the attrition of NNS service members indicate that many of these officers and EMs enter the Army without sufficient proficiency in English. For example, graduates of the University of Puerto Rico's ROTC program in the early 1980s had high Branch Officer Basic Course (BOBC) failure rates that were attributed to language deficiencies. Anecdotal reports about Hispanic officers with language communication problems can also be found in the current literature (Barbosa et al., 1986).

For the first four months of FY86, at least 40 percent of the EMs entering the Army's ESL program at the Defense Language Institute English Language Center (DLIELC) had initial English Comprehension Level Test (ECLT) scores below 50. An AIR study (Report No. 38) reveals that non-native speakers (NNS) with ECLT scores below 50 have a 23 percent attrition rate in Basic Training (BT). Current projections for accessions through the year 2000 also indicate that many of these NNS service members will be deficient in English proficiency.

Service members with insufficient English increase the cost of maintaining the Army because of their higher attrition rates and allegedly poorer job performance. Higher attrition rates also make it more difficult to maintain necessary personnel strength, particularly during periods of a shrinking manpower pool.

The Initial Programs

In this and in the following sections, we use a general framework for examining the changes and gains in ESL instruction; previous and current programs are compared along a limited set of features which include:

- course eligibility and completion criteria
- program management
- curriculum
- teachers' qualifications and training

We will first describe the programs that were operating during the initial part of this project and compare them with the ones that are available in 1986.

Some programs that were in operation in early 1981 go back several years, one to 1976. We will, in effect, be reviewing Army ESL instruction for the past ten years.

In 1981, the Army was conducting four ESL programs for EMs; none for officers. Two of these programs were conducted under the BSEP concept, one for trainees during Initial Entry Training (IET) (BSEP I), the other for soldiers at their permanent duty stations (BSEP II). A third program was provided by the Puerto Rican Army National Guard (PRARNG) in Puerto Rico for National Guard trainees before they received IET in the U.S. In addition, an experimental ESL program was conducted at DLIELC for regular Army troops, first for six months, then for three months.

Both BSEP I and BSEP II ESL programs were defined and established in AR 621-45 dated 1 July 1978, as part of the overall BSEP concept. According to this regulation, the eligibility criteria for both programs were (1) English was not the first or native language of the soldier and (2) soldiers' scores on the ECLT were below 70. The curricular basis for both programs was the American Language Course (ALC). The ALC and instructor orientation on its use were to be made available through the Defense Language Institute English Language Center (DLIELC). The completion criterion for both programs was an ECLT score of 70.

BSEP I ESL. In reality, the content and conduct of these programs varied considerably from the Army Regulation definition. Our knowledge of BSEP I ESL is extensive and detailed (Report Nos. 22, 23, 24, and 33). BSEP I ESL was a six-week program, at 30 hours a week, available at eight Training and Doctrine Command (TRADOC) sites. The program varied considerably across the eight sites in terms of program size, management, and curriculum. Yearly enrollments at a given site varied from approximately 50 to more than 400 students. Management of the program also varied. Some sites hired individual teachers who were responsible to the Education Services Officer (ESO) under individual service contracts. Other sites used the same type of contract with accredited institutions which were then responsible for the programs. In both cases the use of the low bid system tended to result in the hiring of teachers with limited backgrounds in teaching ESL. It also resulted in low morale, with teachers sometimes working for lowering wages in successive years. The scarcity of teachers with training in ESL instruction and the rarity of demonstrable proficiency in using ESL techniques was striking. An important factor contributing to this situation was the general absence of in-program supervision and training.

The problem of lack of teacher training and absence of teachers' use of ESL techniques in the classroom are themes that recur in this chapter. It is a serious problem and it must be made clear why it is so important. ESL techniques are designed to improve students' oral fluency through structured interaction and precise feedback in situations where there is a communication goal. These techniques are effective in improving students' fluency in speaking English. Oral fluency is important for EMs and crucial for officers.

The ALC is a general English curriculum emphasizing practice in pattern drills that are introduced orally by the instructor or presented in the workbooks or on tape. Students respond by producing the drill sentence, or a designated variant, orally or on paper. This approach provides students with the prerequisite elements of language necessary to achieve oral fluency (e.g., vocabulary, control over grammar), but in itself is unlikely to result in oral fluency. The workbooks represent a structured curriculum, with each workbook geared to a specific level of English proficiency and intended to move students to the next higher level. Several months are normally required to progress through the entire range of workbooks, starting with the first book for students with practically no proficiency in English.

In actual fact, however, BSEP I ESL was not conducted under a single curriculum. Instruction varied from site to site along several dimensions: from extensive use of the ALC to no use; from half the course spent on teaching military vocabulary, terms for equipment, and some military information to no military content; from extensive use of commercial and teacher-prepared materials to limited use of such materials.

Because the ALC was designed for conditions not often found at the TRADOC sites, the ALC contributed to the curriculum differences across installations. The ALC is intended for group instruction in classes with relatively homogeneous levels of proficiency. This kind of class organization was seldom possible at an installation. Typically, from one to four classes were conducted at any one time and a few to a dozen new students entered weekly,

each at a different ability level. New students were grouped together to form a new class for that week or distributed across heterogeneous, ongoing classes. As a result, many students were frequently working in books above or below their levels. Teachers would often use commercially available materials or materials they developed because these materials seemed more appropriate for their students and their classroom situations.

BSEP II ESL. We devoted less attention to BSEP II ESL than to its BSEP I counterpart. There are several reasons for this difference in emphasis. BSEP II ESL programs are very small, rarely involving more than one class at a time. Unlike BSEP I ESL, which is conducted at a small number of TRADOC installations, BSEP II ESL is highly dispersed through Forces Command (FORSCOM) and U.S. Army Europe (USAREUR). And the Army's plan was to eventually provide sufficient ESL instruction before BT to make BSEP II ESL unnecessary.

AIR did not conduct a complete evaluation of the BSEP II ESL program. We did, however, obtain descriptive data for this program on a convenience basis while conducting other evaluations in USAREUR, FORSCOM, and Panama. This section presents a summary of these data. In light of infrequent but recurring complaints from commanders in the field about soldiers who do not have sufficient English to perform their jobs, this information provides a useful context for appraising the field situation.

This description of BSEP II ESL is based on interviews with ESOs, teachers, counselors, and students at more than 15 sites in USAREUR, FORSCOM, and Panama; observations of 12 ESL classes; and questionnaires filled out by 11 teachers and 49 students.

ESL programs at the BSEP II level showed nearly as much variation across installations as the ESL programs at the BSEP I level. The number of weeks in a class cycle was determined by the system and duration of training cycles at each installation. The length of an ESL class cycle varied from eight weeks and 160 hours at some FORSCOM installations to as little as two weeks and 40 hours at some sites in Panama. The likelihood of a student with limited English enrolling for a subsequent ESL class was largely a function of unit policy. Classes were usually small, ranging from a couple of students to a dozen. It was not unusual to find dependents in the larger classes. Many installations never conducted ESL classes because the skill levels required by the MOSs at the installation precluded soldiers with limited English proficiency.

Soldiers eligible for ESL instruction were often identified during their initial inprocessing at an installation. Education counselors referred soldiers who seemed to have language problems and/or Spanish names to the education center for ECLT testing. Many soldiers were also placed in ESL through the command referral system.

The American Language Course was typically the major element in the curriculum. Its degree of use varied with the installation, but overall it was used as much or even more than in the BSEP I program. Contractor-developed materials for the BSEP II literacy program were often used to supplement the ALC. Teachers also used materials they had developed along with commercially available materials. There seemed to be less use of military materials and

information in BSEP II than in BSEP I ESL. Most teachers did not use any military materials, but a few allocated as much as ten percent of the class time to materials with a military orientation.

BSEP II contractors were usually responsible for the ESL program. But ESL seems to have been given little priority because of limited enrollment.

The quality of teacher training varied but, as in BSEP I, most teachers had only minimal backgrounds in ESL instruction. Only one teacher had a degree in ESL. Seven of the 11 instructors who were interviewed were in their first year of ESL teaching. When asked about problems, they most frequently cited the difficulties of teaching students at different levels of English proficiency, the lack of appropriate and sufficient materials, class cycles being too short to meet the students' needs, and soldiers sometimes being pulled out of class to perform military duties.

The majority of the 49 students interviewed were Spanish speakers, most of these were from Puerto Rico; seven were Koreans. These students were not recent recruits, relatively fresh out of IET. Their average length of service was 30 months, two had been in the Army for ten years. They all felt that they were having problems with English and wanted to be in the ESL classes. They believed that their biggest problem was spoken English. The most frequently cited problem situations were explaining to the sergeant what they were doing, asking questions about their jobs, and giving a class or speaking to a group of soldiers. They also had problems with using the phone or radio, understanding their sergeants, and using the names of tools and equipment.

PRARNG program. In 1976, the Puerto Rican Army National Guard (PRARNG) initiated a 12-week ESL program in Puerto Rico as a response to the very high attrition rates of its trainees in BT. The program, or English Technical Language School (ETLS), is credited with dropping the attrition rate from approximately 30 percent to around two percent in 1981. Our knowledge of the program is based on Army and PRARNG documents and memos, a field visit by the project principal investigator to ETLS in July 1981, and interviews with BSEP I ESL soldiers who had been in the program. We did not conduct a formal evaluation.

PRARNG recruits with scores below 60 on the ECLT were enrolled in the program. We do not know if the ETLS graduation standard included an ECLT cut-off score. The 12-week ETLS program was a very regimented, military operation which included four hours of English instruction per day, five days a week. Approximately 600 trainees per year were enrolled in the program.

The curriculum was based on the ALC, students were grouped in classes by ability level, and all instruction was in English. The teachers were Puerto Ricans who had been raised largely in the continental United States; all were clearly bilingual.

The sharp reduction in BT attrition for PRARNG recruits is only partially attributable to improved competency in English resulting from the ETLS program. Two other factors also played a role. Between 15 to 30 percent of the ETLS students did not successfully complete the program during the 1976-81 period and, therefore, never reached BT. In addition, approximately 20 percent of the

soldiers enrolled in BSEP I ESL during 1979-81 were in the National Guard, many of whom were undoubtedly graduates of the PRARNG program. It is certain that many of these were from Puerto Rico. The winnowing process at ETLS and the additional English acquired in BSEP I ESL certainly contributed to the reduction in attrition.

DLI experimental programs. In order to determine the benefits of extended ESL instruction and the feasibility of residential programs, the Army conducted two experimental ESL programs at DLI. The first program was conducted for six months from September 1980 through March 1981. The second program was conducted for three months from August 1981 to November 1981. Except for the difference in duration, the two programs were essentially the same in organization, curriculum, and management.

The eligibility criterion for both programs was an ECLT score of 60 or less. Several soldiers who qualified with low ECLT scores at their recruiting centers achieved much higher ECLT scores when they arrived at DLI to take their placement test. For example, 13 of the 151 participating students in the three-month program had placement test scores above 60, three had ECLT scores in the 80s.

There were no course completion criteria; all students remained in their respective programs for the entire period regardless of language gains. For academic, medical, and other reasons, however, some students did not complete their programs. Of the 200 students initially enrolled in the six-month program, 186 graduated; of the 151 students enrolled in the three-month program, 148 graduated.

Control groups with similar ECLT scores were also established for both programs. The control group soldiers did not receive the residential program but many received instruction in BSEP I or II programs. We estimate that more than half received some ESL instruction.

In both the six- and the three-month programs, students were grouped in classes by language ability as measured by the ECLT. Class level determined the ALC text volume with which students began their instruction. They received 5 1/2 hours of ESL instruction per day, Monday through Friday. Nearly two of these 5 1/2 hours were spent in the language lab.

The program was managed and taught by DLI staff. Teachers varied in their depth of ESL experience and their use of modern ESL techniques in the classroom. The 16 teachers in the three-month program had an average of 4.5 years of teaching experience in ESL and 3.6 years of teaching the ALC. Seven of these teachers were in their first year at DLI; three had been teaching the ALC for as long as nine years.

Interestingly, responses in the teachers' questionnaire showed that many teachers believed that students should have received more practice in listening comprehension and oral production. They suggested more conversation practice in the classroom, field trips, and contact with other English speakers in order to practice conversational English. During the study hall sessions observed by AIR staff, which were conducted in the barracks by drill sergeants, soldiers sat at tables in groups of four quietly completing exercises in their workbooks. These sessions could have been used to provide structured practice in conversational English.

The military schedule called for barracks maintenance, formation, inspection, etc., before classes started at 0730. After classes at 1415, students might have drill and ceremonies, PT, military classes, study hall, etc. Apparently the originally scheduled afternoon PT was shifted to early morning because of the summer heat.

The Current Programs

Currently, the Army is conducting three ESL programs for EMs and three for officers. The BSEP I ESL program has been replaced by an ongoing pre-BT resident program at DLI. The BSEP II ESL program has been continued and so has the program for Puerto Rican Army National Guard trainees. Two of the new officers' programs are conducted in Puerto Rico for ROTC cadets. The third program is primarily a pre-BOBC program and is conducted by DLI. AIR has not conducted a formal evaluation of any of the current programs. For some of these programs however, we have observed classes and interviewed administrators, teachers, and students.

DLI resident program for EMs. Overall, the present DLI resident program does not differ much from the earlier experimental programs for EMs. With one exception, the program organization, curriculum, and teaching method are relatively similar to the six- and three-month programs. The major difference is that duration of instruction is now a function of students' language proficiency. Students are enrolled for a period of up to 24 weeks as determined by their entry ECLT score. Eligibility for the program is an ECLT score of 69 or lower; students are graduated from the program when they

consistently achieve a 70 ECLT. Students unable to meet this standard after 24 weeks are considered for discharge.

In addition to the standard of 70 ECLT, the program also has an oral language goal for students' comprehension and speaking abilities. The goal is a Comprehension/Speaking (C/S) rating of 1+/1+ in a standardized, structured oral interview developed by DLI and other government agencies.

BSEP II ESL. AIR has not conducted any recent evaluations of the BSEP II ESL program. We have no reason to believe, however, that there have been any significant changes in the content and organization of the program since 1981.

PRARNG Program. The greatest change in the PRARNG Program is that it has been moved to a newer, more modern facility called the Puerto Rican Army National Guard-Language Center (PRARNG-LC). The program is conducted in five, nine-week cycles per year. Individual trainees can be authorized an additional three weeks of classes when warranted. Students receive eight classroom hours of instruction Monday through Friday. The daily schedule consists of:

English class	-	2 hours
Review class	-	2 hours
Lab class	-	2 hours
Mathematics class	-	1 hour
Common military subjects	-	1 hour

The ALC is the curriculum for the English, review, and lab classes. Students are grouped in classes by language ability level as measured by the ECLT. Teachers seem quite competent and have been with the program for several years.

They have had classes in ESL instruction, receive in-service training, and use ESL techniques in the classroom.

The program standard, as described in a PRARNG-LC booklet, consists of several test scores covering language, mathematics, and military subjects. Under this grading system, it appears that a soldier could graduate from the program with a final ECLT score below 70. Army regulations call for a program standard of 70 ECLT.

University of Puerto Rico UPR) on-campus ROTC program. AIR staff have not observed classes of either of the two ESL programs conducted in Puerto Rico for ROTC cadets. The on-campus program is conducted during the school year for three hours per week each semester. The program was intended for third and fourth year cadets with ECLT scores above 70 who need to develop more fluency in English. Apparently, however, cadets can be enrolled in the program regardless of their academic year or ECLT score. The program goal for fourth year students is to enable them to meet the commissioning standard of 80 on the ECLT. The ALC is used as the course curriculum and we have been told that classes are taught by ESL teachers.

PRARNG-LC ROTC summer program. The summer ROTC program is an eight-week program intended to provide cadets with instruction in ESL and military subjects. It is conducted at the PRARNG-LC; the English portion is taught by PRARNG-LC instructors using the ALC. It is available to third and fourth year cadets with ECLT scores below 80 and first and second year cadets with ECLT scores between 55-75. The program goal for the third and fourth year is an 80 ECLT score.

DLI officers' program. The DLI resident program was initiated in 1982 for officers and warrant officers who score below 80 on the ECLT. The majority of the students are officers who were commissioned under the U.P.R. ROTC program with ECLT scores above 80, but were recommended by their Professors of Military Science for additional English instruction. The program standard is an ECLT score of 80. The program goal is an ECLT score of 90 and C/S ratings of 2+/2+.

Students are enrolled in the program for 16 weeks plus an optional four weeks for those who begin the program with ECLT scores below 80. They receive approximately 4 1/2 hours of classroom instruction plus one hour of language lab per day. The curriculum is a combination of commercially available workbooks covering study skills, the structure of English, and pronunciation supplemented by DLI materials for students with ECLT scores below 80. Students also receive practice in writing.

Typically, instructors in the officers' program have been new teachers with little experience and training in ESL instruction. Most of the teachers we observed did not use ESL techniques in their classes. Some of the officers felt that the exercises and drills which they completed in their workbooks were either too elementary or could be more profitably done as homework. Most of the classroom activities that we observed seemed unlikely to result in much of an improvement in officers' fluency with spoken English. Teachers tended to use such techniques as drill and practice, translation of phrases, and lecture rather than communicative language strategies such as simulations.

Comparing ESL Instruction: Then and Now

There have been some changes and some improvements in Army ESL instruction between 1981 and 1986. Overall the Army has made progress, but several fundamental questions and problems need to be addressed if the Army is to bring about additional major improvements. This section will compare ESL instruction on a "then" (1981) and "now" (1986) basis using the programs described in the preceding section. General problems and issues will be dealt with in a subsequent section.

Pre-BT instruction. The Army has made clear gains in terms of Pre-BT instruction. It has gone from a decentralized program to a centralized program, from a collection of programs to single curriculum. A major improvement resulting from the DLI resident program for EMs is that the number of weeks of instruction is now determined by the soldiers' level of English proficiency instead of the arbitrary cut-off of six weeks. Another gain resulting from the centralization of ESL soldiers is that the student population is always large enough to group classes by ability levels so that all students are working with materials appropriate to their levels of English proficiency. There has also been a clear improvement in the quality of ESL instruction. While the quality of instruction at DLI is variable, we believe that overall it represents an improvement.

Another major gain for the ESL program is the establishment of a program standard that must be met in order to go on to BT. Though the specific standard of 70 ECLT can be challenged because available attrition data suggest

that 50 ECLT is more critical for BT, introduction of any standard is a major step. Along the same lines, the introduction of a C/S rating goal for graduates is a positive step that should be further developed. Figure 2-1 presents a summary of some of the main program features referred to in this comparison.

Permanent duty ESL instruction. Because AIR has not conducted any recent evaluations of ESL instruction at this level, we are unable to make any comparative statements based on hard evidence. However, based on our experience in the field and the absence of any Army initiatives in the area, we would expect that ESL instruction at this level has seen the least amount of progress over the past five years. Major features of the BSEP II ESL program are presented in Figure 2-2.

Puerto Rican Army National Guard instruction. We have very limited knowledge of the early program under the English Technical Language School. Obtaining newer, more modern facilities is likely to have some positive effect on the program if only through boosting staff morale. In addition, the program seems to have been able to retain most of its teachers; a positive factor in this instance since the teachers seem to be competent ESL instructors. Figure 2-3 presents some of the features that characterize this program.

ESL instruction for officers. Since there were no ESL programs for officers at the onset of our study, no comparative analysis is possible. Our biggest concern about the DLI resident program centers on the ability of the program materials and teaching techniques to provide officers with an adequate fluency in spoken English.

1981

1986

BSEP I

- decentralized
- heterogeneous curriculum
- varied use of ALC
- 6 weeks of instruction
- varied incorporation of military English
- absence of teacher training
- limited use of ESL techniques
- program completion: 70 ECLT

DLI RESIDENT PROGRAM

- centralized
- homogeneous, general English curriculum - ALC
- up to 24 weeks of instruction
- 4 hours classroom instruction, 2 hours language lab per day
- limited incorporation of military English
- some teacher training
- some use of ESL techniques
- program standard: 70 ECLT

Figure 2-1. Program Comparison - BSEP I level.

1981

1986

BSEP II

- decentralized
- heterogeneous curriculum
- varied use of ALC
- class cycles of 40 to 160 hours
- minimal use of military materials
- general absence of teacher training
- minimal use of ESL techniques
- program completion: 70 ECLT

BSEP II

No known changes

Figure 2-2. Program Comparison - BSEP II level.

1981

1986

ETLS

- curriculum: ALC
- 12 weeks of instruction
- bilingual teachers

PRARNG - LC

- curriculum: ALC
- 9-week program, possible 3-week extension
- teachers use ESL techniques
- teachers have background in ESL methodology and received in-service training
- 4 hours classroom instruction, 2 hours of language lab per day
- program standard: composite of ECLT and other measures

Figure 2-3. Program Comparison - Puerto Rican Army National Guard

Another important concern is that most students enter the program with ECLT scores higher than the 80 ECLT program standard. The ECLT is not a useful instrument to measure language gains for students who enter at this level. The test ceiling renders gain scores meaningless; a new test is badly needed. Figure 2-4 presents some of the main features of the officers' programs.

Program Effects

This section discusses program effects in two areas: immediate language gains and effects on training.

Immediate language gains. Over the years, we have conducted a series of evaluations of different ESL programs for EMs. Programs do not differ markedly in their ability to improve language proficiency as measured by the ECLT. When program gains are calculated in terms of mean ECLT points gained per week, most programs show an ECLT gain of between slightly under two points to 2.5 points per week.

The ECLT gains for three of the 1981 programs discussed in the previous section are presented in Table 2-1. Included in the table is a BSEP I ESL program that was conducted at the TRADOC installations during 1983-85 and terminated with the onset of the DLI resident program for EMs. Because the content of the curriculum was based on military information that soldiers needed for BT, the program is referred to as the Pre-BT program. Table 2-1 also includes preliminary data on ECLT gains in the officers' program at DLI. This is based on the population of 102 officers enrolled in the program between

NONE	<u>1981</u>	<u>1986</u>
		U.P.R. ROTC ON-CAMPUS PROGRAM
		<ul style="list-style-type: none"> ● 3 hours per week ● use American Language Course ● primarily for 3rd and 4th year cadets ● program goal: 80 ECLT
		SUMMER ENGLISH PROGRAM
		<ul style="list-style-type: none"> ● primarily for 3rd and 4th year cadets ● 8 weeks instruction in ESL and military subjects ● use American Language Course ● PRARNG-LC teachers ● program goal: 80 ECLT
		DLI RESIDENT PROGRAM
		<ul style="list-style-type: none"> ● 16 weeks plus 4 week option ● 4 1/2 hours classroom instruction, 1 hour language lab per day ● curriculum: commercial and DLI developed materials ● activities and teachers' techniques do not emphasize skills for developing fluency in spoken English ● program standard: 80 ECLT ● program goal: 90 ECLT, C/S rating 2+/2+

Figure 2-4. Program Comparison - Officers

January 1984 and July 1985. The mean ECLT gain of 0.9 points per week is essentially meaningless since it is a pure function of the test ceiling, as shown in Table 2-2.

Table 2-1

Program Effects on Immediate Language Gains

1981		1986	
Program	Mean ECLT Gain Pts/Week	Program	Mean ECLT Gain Pts/Week
BSEP I	2.2		
DLI 6-month	1.3*		
DLI 3-month	1.9		
Pre-BT	2.5	DLI officers	0.9**

*underestimate

**preliminary data -- 1/84 - 7/85, underestimate

Table 2-2

Officer's ECLT Performance DLI: 1/84 - 7/85

Mean Entry, Exit, and Gain Scores				
Entry ECLT Range	Mean Entry ECLT	Mean Exit ECLT	Gain Pts/Wk	<u>n</u>
90-99	93.0	99.0	0.4	19
80-89	85.0	96.8	0.8	46
70-79	74.9	92.7	1.2	23
39-69	60.7	89.0	1.8	14
All officers	80.9	95.3	0.9	102

Effects on training. Data obtained as part of the follow-up evaluation of the Pre-BT Program reveal a linear relation between completing BT and language proficiency as measured by the ECLT. As shown in Table 2-3, trainees who exited the ESL program with ECLT scores above 50 have an attrition rate between seven and nine percent. Trainees who exit the program with lower ECLT scores have increasingly greater attrition rates. Based on these data, we have estimated that the language gains resulting from this program should have reduced BT attrition by nearly 40 percent (Report No. 39).

Table 2-3

BT Attrition is Linearly Related to Exit ECLT Scores

Population	Exit ECLT Score						n
	0-29	30-39	40-49	50-59	60-69	>69	
Completed BT	64%	75%	84%	91%	92%	93%	507
Discharged from BT	36%	25%	16%	9%	8%	7%	75
n	36	63	95	123	119	146	582

Continual Problems and Concerns

Over the past five years the Army has fielded several new ESL programs, changed policy and regulations concerning ESL instruction, and made progress toward solving the problem of soldiers who have limited proficiency in English. Continued progress will be determined by the Army's attention to two areas: language standards and curriculum and methods.

Language standards. The content and scope of ESL training programs should be driven by the kinds of English skills and levels of English proficiency that are required of SMs in order to perform their jobs. Almost nothing is known of the real requirements in this area. Consequently, the Army's ability to propose valid program standards and to assess the real usefulness of these programs is minimal.

In order to resolve this problem the Army will have to conduct research that answers the following question:

What are the kinds of English skills and the levels of English proficiency that are required of officers and EMs to adequately perform their jobs?

The question may have to be broken down into career management fields and/or stages in the SMs' careers such as training, first enlistment, NCO, etc. But without the answer, no one can know where the programs should be going nor when they are successful.

Curriculum and methods. The curriculum questions are dependent on the answer to the language standards question. Given a language standard that is grounded in job requirements, the Army would be in a position to address the following questions:

- Are the curriculum and content of the program appropriate for teaching SMs the language skills they need?
- Are the instructional methods used by teachers appropriate for teaching the language skills that the students need?
- Is this ESL program teaching SMs the critical language skills they need to perform their jobs?

Summary

When AIR began its evaluation of Army ESL programs in FY81, several BSEP I and BSEP II ESL programs were in existence. AIR conducted an evaluation of the BSEP I ESL programs that were operating at TRADOC installations, and of a three-month and a six-month experimental program operating at DLIELC. We also

described a set of BSEP II ESL programs presented at selected FORSCOM and USAREUR installations. We evaluated the new Pre-BT ESL program that replaced the BSEP I ESL programs in 1983. We also reviewed ESL programs offered for officers at DLIELC and for officer candidates in Puerto Rico. (See Report Nos. 22, 23, 24, 25, 30, 33, 35, 38, 39, and 41.)

During the five-year development period, improvements were made in ESL training in the Army. A notable change occurred in the ESL training for new recruits; they now use a single curriculum that is offered at one site. In addition to an ECLT standard of 70, a Comprehension/Speaking standard has been established. The length of the course now varies for each student based on students' assessed language needs. There has also been an improvement in the quality of the ESL instruction.

Whereas there was no ESL instruction available for officers or officer candidates at the beginning of the evaluation period, there are now three ESL programs, two in Puerto Rico and one at DLIELC.

Data obtained as part of our evaluation of various ESL programs for enlisted personnel show ECLT gains for all programs between two points and 2.5 points per week. Analyses of these data also show a linear relationship between ECLT scores and BT attrition rates. Trainees who exit the program with lower ECLT scores have increasingly higher attrition rates. Based on these data, we can assume that ESL instruction reduces attrition in BT and, for the new Pre-BT ESL program, by nearly 40 percent.

Several questions remain to be answered: What are the kinds of English skills and the levels of English proficiency that are required of enlisted personnel and officers to adequately perform their jobs; and, are the curriculum and instructional methods appropriate for teaching enlisted personnel and officers the language skills they need to perform their Army jobs.

CHAPTER 3

REVIEW OF BSEP CURRICULA

Introduction

One of the primary goals of the five-year BSEP development activity initiated in FY81 was to create standardized BSEP curricula that would be job-related and would teach soldiers the basic skills they need to perform their Army jobs. To teach soldiers the basic skills they needed for Advanced Individual Training (AIT), the Army developed two Functional BSEP I (FBSEP) courses. To replace the various BSEP II programs then in use, the Army developed a computer-based basic skills curriculum, the Job Skills Education Program (JSEP). During the initial stages of the BSEP development, while JSEP was being designed and drafted, installations continued to use a variety of curricula. During the third year of the development period, all major commands (MACOMS), except USAREUR, in an effort to offer a standardized curriculum, ceased using the existing curricula and adopted the McFann, Gray & Associates Curriculum as an interim program until JSEP was completed and became available for Army-wide use. This chapter will review the major curricula developed, under development, or in use during the development period:

- Functional Basic Skills Education Program (FBSEP), designed for MOS 31M and 05C
- Temple University BSEP II Curriculum
- Central Texas College (CTC) BSEP II Curriculum
- Murray State University BSEP II Curriculum

- Fort Lewis Experiment (FLX)
- McFann, Gray & Associates (MGA) BSEP II Curriculum
- FORSCOM Revision of the McFann, Gray & Associates BSEP II Curriculum
- Job Skills Education Program (JSEP)

In previous evaluation reports in which program data were presented, we described characteristics of a few of the individual programs. This chapter presents a descriptive analysis of the eight programs listed above. We describe the following program elements:

- program objectives
- curriculum content
- materials
- military content
- teaching techniques (instructional strategies)
- testing

Review of Curricula

Functional BSEP - FBSEP Courses 05C - Radio Teletype Operator and 31M - Multichannel Communications Equipment Operator

In FY83, as part of the BSEP development effort, Perspective Instructional Communications, Inc., and Applied Science Associates, Inc., were each contracted to develop a demonstration course for teaching soldiers the job-related basic skills they needed as part of their AIT training. The courses were for 05C - Radio Teletype Operator (developed by Perspective) and 31M - Multichannel Communications Equipment Operator (developed by Applied Science Associates, Inc.).

The development of FBSEP followed the Instructional Systems Development (ISD) model closely. During the analysis stage, the prerequisite functional skills and learning strategies for the two MOS were analyzed. During the verification stage, the reliability of the prerequisite skills was established. During the design stage, the course content and order were determined. At the same time, tests were developed for identifying skills deficiencies and for prescribing instruction. During the development stage, all lesson materials were created. And finally, during the validation stage, the effectiveness of the courses in teaching what they were designed to teach was assessed.

In its original design, FBSEP lessons teaching prerequisite basic skills were to be taught at 18 points during the AIT course prior to the related AIT lessons. Because this approach proved to be difficult to manage, the developers modified the plan to teach the lessons at two (31M) or four (05C) points during AIT. In its final form, 47 out of the 66 lessons in the 05C course were taught prior to any AIT instruction, and the remaining lessons taught at three additional points during the AIT course. The 31M course consists of two parts: a set of 26 lessons given prior to AIT instruction, and a set of four lessons (approximately four hours of lessons) given during the fourth week of AIT.

Program objectives. Each program is designed to teach soldiers specific skills that are related to tasks they learn in the AIT course.

Curriculum format. The 05C course consists of several parts: a lesson, covering a small unit of instruction, the Annex, consisting of a group of lessons dealing with similar subjects, the Annex Test, testing the student on all lessons in the Annex, Skill Training in the field, whereby a student performs as a radio teletype operator under simulated tactical conditions, and Tac Eval (Tactical Evaluation), end-of-course test qualifying a student for graduation. The 31M curriculum is a completely self-taught program.

The 05C curriculum is paper-based and is divided into four annexes (groups of lessons). There are two types of lessons: group lessons and self-paced lessons. Some lessons can be conducted either as self-paced or group lessons. In the self-paced lessons, students work on their own with the paper-based materials. A "learning supervisor" conducts the group lessons.

All students take a series of diagnostic tests. Each student is assigned a set of lessons based on the deficiencies identified by the diagnostic tests. The student first reads the guide for each lesson. Within each lesson are lesson activities, practice exercises, and explanations to practice exercises. For some lessons, students also study audio tapes. They then take the lesson test. If they pass the test, they move on to the next lesson assignment. If they fail, they take a Remediation Section, Remediation Exercises, and then a Remediation Test.

The four annexes (groups of lessons) include:

- Study skills - the structure of the O5C AIT course. Memorizing proverbs and prosigns.
- Reading skills - reading comprehension. Finding information in publications.
- Language skills - alphabetizing, spelling, finding errors in messages, and filling out forms.
- Math skills - military time, determining the frequencies, finding the length of an antenna.

Within each annex, lessons are arranged in a hierarchy showing the relationship of enabling lessons to the higher level lessons.

In the 31M course, lessons are organized into nine units with a total of 29 lessons. The units cover the following major topics:

- Reading Comprehension - vocabulary, strategies for understanding sentences, reading negative sentences, reading sentences with dependent clauses, ordering one, two or three tasks, determining the order of steps: multiple actions, understanding lists and paragraphs.
- Using a Table of Contents - Chapters and sections, using a task list to find a task description, tables and paragraph numbers and page numbers.
- Listening Skills - Remembering information heard in lectures, remembering information seen in demonstrations, recognizing when important information is missing.
- Note-taking for Demonstration - Basic note-taking skills, taking notes to show sequence, taking notes to show relationships.
- Recognizing a Part of a Whole
- Locating Information in Tables - The structure of tables and diagrams, interpreting table headings, locating information in 31M tables.

- Reading Cabling Diagrams - The structure of tables and diagrams, identifying connections in simple and complex cabling diagrams.
- Diagnosing Equipment Malfunctions - Deciding whether an indication is normal, deciding whether there is something wrong based on two or more indicators, finding descriptions of symptoms: one indicator, finding descriptions of symptoms: two or more indicators.
- Scale Reading - Labeling place value, numbering scale points, scales divided into tenths, comparing scale settings.

Materials. In addition to the paper lessons, the 05C course makes use of overhead transparencies, charts, the Beseler Cue/See, TEC tapes and TEC printed lessons, the TT-76 Reperforator/Transmitter (a teletypewriter that sends messages by means of a keyboard or perforated tape), a TT-98 Teletypewriter (which sends messages by means of a keyboard and receives messages as printed copy), and the Lesson Study Guide.

For the 31M course, additional materials include the overhead transparencies, videotape lessons, and audiotape material. The curriculum includes an Instructor Training Course presented as a self-study manual. It includes 15 chapters on background of the course, and on specific activities to perform as a FBSEP instructor.

Military content. For the 05C course, vocabulary words were taken from basic skills vocabulary lists (about 30%), government-furnished materials (about 20%), 05C AIT messages (about 40%), and subject matter experts (about ten 10%).

The material for the 05C and 31M courses was taken from the AIT course materials and from Training Manuals (TMs). All content, text, illustrations, and references were drawn from military sources.

Teaching techniques. The curriculum materials include a highly detailed instructor's guide which provides a complete script for the instructor to use in teaching the courses. Although 52 out of 66 lessons in the 05C course are self-paced, the instructor's role is one of active monitor. Each self-paced lesson has a recommended time allotment, although students are encouraged to work at their own pace.

Each lesson in the 05C course contains a Lesson Study Guide providing:

- Reason for lesson
- Objective/Conditions/Lesson requirements
- Presentation of material to be learned
- Examples
- Summary and practice
- Lesson Understanding Quiz
- Evaluation
- Learning Supervisor's Prescription
- Practical Exercises
- Performance Test
- Remediation Exercises
- Remediation Test

According to the course introduction, students are taught in a "simulated tactical environment," to give them experience in working under field conditions.

For the 31M course, the following teaching strategies are used:

- Explicit statement of learning objectives
- Self-instructional materials
- Frequent, built in opportunities for student responses
- Immediate feedback for all responses
- Criterion-referenced testing

Testing. All entering students take the Screening Test. If they fail one or more units on the test, they are assigned to FBSEP lessons. The courses consist of diagnostic tests to identify students' deficiencies, a course pretest; lesson tests on the content of individual lessons; and remediation tests, covering the material taught in the remedial lessons. At the end of the course, students take an evaluation test, a post-test on all course material.

Special features. The course developers incorporated learning strategies into the lesson sequence. For both the individual and group paced lessons, the following strategies are used in the 05C course:

- Advance organization - provided in introductory materials
- Motivation - explanations about how FBSEP will help students
- Acquisition - transparencies are used to gain students' attention, prepared questions solicit student participation, printed visuals
- Drill and practice - provide opportunities for self evaluation by students
- Visual processing - transparencies help students focus on points being taught
- Active participation
- Review - repetition of material helps students organize information

The curriculum includes a guide for revising the FBSEP lessons in response

to changes in the AIT course content or course scheduling.

Temple University

Curriculum overview. From FY79 to FY83, Temple University held the contract for BSEP programs in USAREUR. Under this contract, Temple developed BSEP I and BSEP II curriculum materials, as well as materials for NCOES and MOS classes. The Temple program emphasized teacher training, teacher certification, and teacher identification of the individual student's needs.

Program objectives. The Temple program had as its primary objective to teach job-related basic skills in an individualized format.

Curriculum. The curriculum is organized into three subject areas: mathematics, reading, and communications. Within each subject area, reference materials prepared by Temple University are available as a resource for the teacher. The reference materials contain both instructions for teachers and assignments for students.

Materials. The curriculum consists of teachers' manuals and student workbooks. Teachers use an Individual Training Plan (ITP) for developing each student's course of study. Teachers are given responsibility for analyzing the students' abilities and assigning specific work in the ITP. The teachers' manuals instruct teachers on various approaches they can use to teach specific tasks (e.g., vocabulary lists, techniques for reviewing math and for teaching fractions, etc.).

The ITP is a central part of the curriculum. It lists all of the skills a soldier is to master by the end of the BSEP course. During the first three days of class, through testing and observation, the teacher develops the student's ITP. The teacher identifies which of the skills the student needs to master. The teacher must also list on the ITP the application of the skill, suggested activities for learning the skill, and the evaluation. The ITP is then reviewed with the student after every 15 hours of instruction to determine if it needs to be modified.

Each of the reference books developed by Temple for the mathematics, communications, or reading courses consists of exercises, examples, and sample activities that teachers can adapt for their students or select as part of a student's ITP. Many of the activities in the reference books were developed by BSEP teachers throughout Europe. These were edited and combined in the texts for use by students. The emphasis is on activities related to the needs of soldiers (e.g., writing military and civilian letters, writing disposition forms, preparing for the review board, etc.). Some of the references used to create these texts include various Field Manuals (FMs), TMs, and Army Regulations (ARs) related to such subjects as Nuclear, Biological, and Chemical Warfare (NBC), Field Hygiene and Sanitation, the Soldier's Manual of Common Tasks, and Handbooks.

Military content. Of the BSEP II curricula that we reviewed, the Temple curriculum has a higher than average military content. The examples, illustrations, and descriptive information in the student texts use predominantly military vocabulary and context.

Teaching techniques. Perhaps more than any of the programs we reviewed, the Temple University curriculum approaches the typical program found in public schools. The teacher is responsible for determining the sequence of instruction, the materials that will be used, and the pace. Teachers are given guidelines and goals to meet. How they achieve those goals is largely up to them. For this reason, in the classrooms we visited, we observed a wide range of teaching styles, classroom practices, and materials being used.

Testing. The Tests of Adult Basic Education (TABE) is used as the preliminary diagnostic tool for assigning students to the reading, communications, or mathematics course. Within each course, the teachers administer diagnostic tests and also informal tests that they develop.

Central Texas College

Curriculum overview. Beginning in FY82, the American Preparatory Institute of the Central Texas Union Junior College District (CTC) won the contract to operate BSEP programs at major installations worldwide. Central Texas College developed its own curriculum, probably the most extensive array of courses developed by any of the contractors of BSEP II programs. Many of the courses were taught at the various CTC campuses throughout the state of

Texas and included remedial level basic skills curricula. The courses offered in BSEP programs include:

- Basic Mathematics I
- Basic Mathematics II
- Developmental Mathematics
- Reading Essentials I and II
- Developmental Reading
- Technical Writing
- English Essentials
- Speaking and Listening Skills
- Developmental Communications
- Fundamentals of Communications
- English-as-a-Second Language

Program objectives. The main objective of the CTC curriculum is to provide job-related instruction in mathematics, reading, English, and English-as-a-second language.

Curriculum format. Each course is divided into modules of instruction. Each module is based on a competency statement that specifies the skill that the student should have mastered upon completion of the module. The major components of the module are:

- Terminal Performance Objective
 - performance statement
 - conditions and or limitations
 - criteria of acceptance
- Enabling objectives
- Learning activities
- Learning resources: information and worksheets
- Self assessments: practice tests

For each module, CTC developed criterion-referenced tests and test administration guides are available.

Students are assigned to a course or courses based on their scores on the TABE (or standardized test) and the diagnostic test scores for each course. Students work at their own pace on assigned materials. Teachers correct the students' work. Students are provided with a list of the enabling objectives for the module in which they are working, a list of the learning activities they will perform to achieve the module objectives, and resources (e.g., resource material taken from military documents, TMs, and FMs).

Materials. The CTC materials include student text books and workbooks, consumable worksheets, teachers' guides, and resource materials, including commercial references and commercial reading books. CTC also prepared supplementary texts called, "More Opportunities for Success in Mathematics," "More Opportunities for Success in Reading," and "More Opportunities for Success in Communications," each containing MOS related activities in math, reading, and communications. Lower level basic skills texts are written at a lower readability level than are the higher level materials.

Military content. One of the strengths of the CTC materials is the use of military related supplementary materials to support the core curriculum.

Teaching techniques. The American Preparatory Institute (API) instructional model is a self-paced, self-instructional approach. Students essentially work independently on all course materials. Teachers are authorized, however, to use other teaching techniques such as small group discussion, classroom lecture, peer tutoring, and student-teacher conferences. Students receive counseling after every 15 hours of instruction.

Testing. Students take standardized tests prior to enrollment in the BSEP course. Based on their scores on standardized tests, students are assigned to one or more of the BSEP courses. Students then take a diagnostic course pre-test which yields data on the students' deficiencies on skills presented in the course. Students then take module pretests and posttests for each module they study. Students are given a standardized achievement test as a course posttest.

Special features. One of the major features of the CTC program is its teacher training component. Teacher's guides are available for each of the courses and teachers receive regular pre-service and in-service training. Another feature of the CTC program is the student texts written at various difficulty levels.

Murray State University

Curriculum overview. In 1980, when Murray State University received the contract to operate BSEP II programs at Fort Campbell, Kentucky, they chose to develop their own BSEP II curriculum rather than use existing commercial materials. The Murray State Curriculum was used at Fort Campbell until 1984 when the MGA curriculum was implemented at all FORSCOM installations.

Program objectives. The major objective of the Murray State University program is to improve soldiers' functional literacy. Murray State's curriculum applies general literacy skills to everyday situations encountered by service members.

Curriculum format. The curriculum is organized into three subject areas: reading, communications, and mathematics. Within each subject area, topics are ordered in separate modules.

Within each module, students are assigned tasks. These are worksheets containing the task objective; an instructional portion that introduces the topic, provides samples, and explains how to perform the task; and problems to solve.

The course names and subjects treated in each module are:

<u>Courses</u>	<u>Modules</u>
Communication	Paragraph Writing The "How-To" Paragraph Expository Writing Personal Affairs Correspondence
Reading	Using Reference Skills Recalling Facts Understanding Main Ideas Making Inferences
Mathematics	Whole Numbers Fractions Decimals Percents Measurements Reading Graphs Perimeter and Area Map Reading

Materials. The course materials consist of student workbooks and additional worksheets that are assigned to students based on their pretest scores and their progress on individual tasks.

Military content. The Murray curriculum appears to contain an average amount of military content. Throughout each course, the majority of the text and examples either refer to military terms or use military context as the basis for the examples. The communications and reading curricula use military situations as the subject matter for many of the examples. These are taken from the Technical Manuals and Soldier's Manuals. In the mathematics curriculum, generally one page of word problems is interspersed with two pages of drill and practice items.

Teaching techniques. The Murray State Curriculum is intended to be teacher directed but to rely heavily on the use of student workbooks. Teachers act as a resource for students: they refer students to supplementary materials and work with individual students or with groups of students for short periods to resolve problems. Teachers also check the work of each student.

Testing. The Murray State program uses a standardized pretest and posttest. Within the course, students take a test on each task they complete. They must score 80 percent on each task before they are assigned to work on the next task. Students only work on the tasks to which they are assigned.

Fort Lewis Experiment (FLX)

In 1982, Fort Lewis contracted with National Learning Systems to conduct a study of BSEP II programs at Fort Lewis. Based on the results of their evaluation, National Learning Systems was contracted to develop a curriculum and methodology for teaching BSEP II. Fort Lewis conducted a pilot of the new

program, the Fort Lewis Experiment (FLX), in the summer of 1983. Based on the positive results of the pilot program, Fort Lewis decided to replace their existing BSEP II curriculum with the FLX.

Program objectives. The objectives of the FLX are to improve the reading, language, and mathematics skills that soldiers need on the job.

Curriculum. The curriculum is based on the "process" approach to education in which the emphasis is placed on learning to perform certain skills rather than on reaching a criterion on a standardized test. Soldiers are taught the reading, writing, and mathematics skills that are considered to be important in the unit. Success is determined when soldiers demonstrate they can perform the skills.

Based on a study of the writing skills that soldiers need in the units, the FLX curriculum includes instruction on filling out Army forms, on taking notes, and on writing the short narratives needed on Army reports.

Materials. There is no established set of curriculum materials for the FLX program. Teachers are given course objectives but are free to choose whatever materials they wish in order to achieve the course objectives.

The teacher has an FLX manual that includes suggestions of activities and types of materials teachers can develop and use. The manual gives the objectives, the rationale, a discussion of the theories on which the methodology is based, and appendices with sample materials.

Military Content. According to the FLX developers, most reading programs teach reading by using material that is unrelated to soldiers' job needs. The FLX curriculum, however, uses military related materials for teaching reading. The major source for teaching the course is the Soldier's Manual of Common Tasks. Teachers are also encouraged to use FMs and TMs as resources.

Teaching techniques. In the FLX curriculum, the program is teacher directed and students work in small groups. The teacher presents problems to small groups of students and the students resolve the problems by arriving at a consensus in their small groups.

All class activities are conducted in small groups. Each activity is to last approximately 20 minutes. Besides the questions assigned to the groups by the teacher, the groups are encouraged to develop their own activities to meet each objective, to devise games, or to challenge other groups.

The FLX teacher is to encourage discussion within the small group. It is assumed that by working together, students can assist each other.

Some of the activities in which students engage include writing paragraphs, taking notes on information that is dictated to them, filling out Army forms, or analyzing grammar passages.

Testing. In the FLX program, the TABE is used as the diagnostic tool for entrance into the course. No other normed tests are used. The CLOZE test is used for assessing reading comprehension. To assess their writing competency, students are given tests on Army forms. They also take a test on note-taking.

FORSCOM BSEP II - McFann, Gray & Associates Curriculum

Curriculum overview. In early 1984, the U.S. Army Forces Command (FORSCOM) adopted a common curriculum developed by McFann, Gray & Associates (MGA) and introduced it at all FORSCOM installations. AIR produced reports on our evaluation of the initial implementation (Report 45) and two reports on the formal implementation of the MGA curriculum (Reports 19 and 46).

Program objectives. The FORSCOM BSEP II Curriculum developed by McFann, Gray & Associates (MGA) was designed to increase eligible soldiers' scores on the Tests of Adult Basic Education (TABE) to the 9.0 grade level or above. Other than the overall objective of meeting the TABE requirements, the MGA curriculum has no enabling or terminal objectives.

Curriculum format. The MGA curriculum is a series of workbooks teaching basic skills in math, reading, and language. Each workbook contains activity pages that provide instruction, drill, and practice on a skill. For each subject area, MGA developed A and B workbooks with identical instructional content for each activity and with similar drill and practice for the students to perform. The curriculum is organized into 14 modules or units of instruction: seven in math, three in reading, and five in language. Each

module covers information tested on a subtest of the TABE. According to the analysis performed by the FORSCOM team which revised the MGA curriculum, each activity sheet in the curriculum corresponds to one or more items on the TABE.

Within each of the three courses, several subjects are treated. The major subject areas within each course are:

<u>Courses</u>	<u>Modules</u>
Reading	Vocabulary Text Locators and Visuals
Language	Spelling Capitalization Punctuation Grammar
Mathematics	Concepts Whole Numbers Fractions Decimals Measures Story Problems

Materials. The curriculum materials include: six A workbooks and six B workbooks, expendable answer sheets on which to record answers, record-keeping forms, Module Previews and Reviews (pre- and post-tests for each module), class leader materials, and wall charts on which to record students' progress.

Military content. The amount of military content varies across the lesson material. Use of military terminology and actual military context also varies considerably.

Teaching techniques. MGA uses a self-instructional model. Based on pretest scores, students are assigned to work through modules. Each module is made up of a series of activity sheets, each addressing a discrete skill. The instruction for each skill is contained on the activity sheet. It ranges from a one-paragraph explanation to several pages of instruction. The concept is explained to the student and generally examples are provided. The program is designed to require little teacher intervention. Rather, if a student fails to perform well on a module posttest, he is to be assigned to work on the B activity. These parallel activity sheets provide additional practice but use the same instructional information as the A sheets. Thus, if a student had difficulty understanding the explanations on the A sheets, he will receive no additional information on the B sheets.

Testing. In addition to the TABE pretest and posttest, students take module pretests and posttests after they complete the activity sheets in the module. Besides using the TABE, MGA also designed a summative posttest. The alternate forms of this posttest were tested for parallel structure and were found to be non-parallel.

Students work all activity sheets in assigned modules. After they complete each activity sheet, their work is to be checked by a class tutor. If they score 80 percent or above on the activity sheets, students may take the module review.

Revised FORSCOM BSEP II (McFann, Gray & Associates) Curriculum

Curriculum overview. In October 1984, a team of BSEP coordinators from education centers throughout the U.S. initiated a project to revise the MGA curriculum then in use at FORSCOM installations in CONUS. They were concerned about certain inadequacies in the MGA curriculum, based on their observations of soldiers studying the BSEP II curriculum and on commanders' expectations of what soldiers would learn during BSEP II. Their chief concerns were the areas not treated by the MGA curriculum: There was no instruction in writing (e.g., filling out forms, writing short reports) and the military content was limited. They also felt that the math course did not prepare soldiers adequately for improving their GT scores.

The team's first project was to analyze the existing MGA curriculum. They then formulated objectives for a job-related curriculum. The team met monthly and developed a curriculum format and instructional materials. By January 1986, they had completed the reading curriculum. However, when FORSCOM withdrew support of the project, it was terminated.

Program objectives. According to the evaluation plan for the revised BSEP II, the goal of the instruction is to enhance enlisted soldiers' basic academic competencies required for job performance, skill qualification, and career growth.

Curriculum format. The revised MGA curriculum is divided into four subject areas: reading, language, math, and locational skills. Heavy emphasis has been placed on treating subjects covered by the GT. For example, the revised curriculum stresses paragraph comprehension as part of the reading course. Whereas the existing MGA curriculum used military content in about 30 percent of the text, the revised program uses military material in 80 percent of the content. The material comes from the Soldier's Manual of Common Tasks, the Air Force Survival Manual, and other training manuals.

Unlike the existing curriculum, the revised program includes a statement of objective on each activity sheet and describes the procedures soldiers will follow to achieve the objective.

The revised curriculum uses revised A and B activity sheets. Whereas in the original curriculum, the A and B activity sheets were of the same level of difficulty, in the revised curriculum, the A sheets are of a higher level of difficulty than are the B sheets. The A sheets are assigned to advanced students who score between 75 percent and 95 percent on the pre-tests and the B sheets are assigned to students who score below 75 percent on the pre-tests.

Materials. The courses are designed to be presented in workbook format. Students work in their workbooks and these are corrected by the teacher. However, lessons are not corrected by class leaders, as in the existing MGA curriculum. Since many of the lessons require students to write original material or to fill in military forms, teachers must correct the students' work and provide feedback to them.

Military content. The revised MGA curriculum uses considerably more military content than did the earlier curriculum. For the reading curriculum, all text material is taken from military documents.

Teaching techniques. The revised MGA curriculum requires teacher instruction in certain lessons. Although some of the original activity sheets in the existing lessons were selected for use in the revised curriculum, all of the instructional portions of these sheets have been rewritten.

The revised MGA curriculum requires soldiers to fill out military forms and to write the same type of short narratives required for completing military reports.

Testing. As with the existing curriculum, soldiers are identified for BSEP II based on the requirements of the current Army regulation. They are assigned to BSEP courses according to their scores on the TABE pretest. Within each course students take module pretests and posttests.

Job Skills Education Program (JSEP)

Curriculum review. In response to a GAO report that called attention to the need for BSEP programs that would be job related and would be standardized across installations, the Army Research Institute contracted with Florida State University (FSU) and Hazeltine Corporation to develop the Job Skills Education Program (JSEP).

Building on the MOS Baseline Skills Analysis performed by RCA Service Company of the 94 highest density MOS in the Army, FSU prepared a plan to develop computer lessons to teach the 200 prerequisite competencies (PCs), the basic verbal and quantitative skills required to learn a Military Occupational Specialty (MOS). The lessons were developed on two computer systems: PLATO, using a mainframe, and MicroTICCIT, using a television-based microcomputer.

JSEP is still in the developmental stages and lesson development is continuing. A nine-month demonstration at four sites is scheduled to begin in January 1987.

Program objectives. The JSEP development effort has as its goal to create a basic skills curriculum that teaches soldiers the prerequisite academic competencies they need to perform their MOS.

Curriculum format. In its present form, the JSEP curriculum consists of 180 Diagnostic Review Lessons (DRL) and 120 Skill Development Lessons (SDL). The DRL are short lessons intended for review purposes. The SDL are long lessons in which soldiers are taught skills in which they demonstrate deficiencies on the DRLs. There is one DRL for each prerequisite competency (PC) but there are 60 PCs not covered by a SDL. The teacher's guide includes suggested approaches for these "uncovered" PCs. If a student fails to pass the posttest on the DRL, he/she is assigned to the SDL to learn the skills.

A Soldier Management System will be available on line and will consist of the following elements:

- A screening process consisting of a screening test and the Diagnostic Review lessons
- An instructional prescription of additional lessons a soldier is required to take based on his MOS
- A computer-based scheduling system for prescribing lessons which soldiers are to take
- A tracking system, recording soldiers' progress throughout the curriculum

The JSEP computer lessons teach verbal and quantitative academic skills. They do not specifically teach reading or writing skills. Soldiers are expected to read at a suitable level to be able to perform the JSEP lessons.

Materials. The JSEP curriculum consists of computer-based lessons and some additional paper-based lessons that teach the skills not easily presented via computer. A JSEP instructor/operations manual will be available.

Military content. The JSEP materials make extensive use of military information and content. Lesson material, illustrations, and examples are generally taken from the Soldier's Manual of Common Tasks.

Teaching techniques. AIR staff have had several opportunities to work through lessons both on the PLATO and on the TICCAT systems. We were unable to obtain hard copy versions that would have permitted a more extensive review. From the few reviews that we did make, certain teaching techniques that distinguish JSEP lessons from those of the other BSEP curricula were obvious. Probably the most important technique used by JSEP is a "help" key. In most areas of instruction, if students do not understand the information, they can

request on-line help. This appears on the screen as additional instruction and practice. Students are also given frequent opportunities to practice skills they are learning with the use of practice drills and exercises on-line. The use of color on the TICCIT system and the application of such graphics techniques as over-lays, make JSEP an attractive and entertaining method of instruction.

Testing. As currently planned, the final JSEP package will include the following tests:

- JSEP General Questionnaire
- Locator Test, developed by RCA, for screening soldiers for the program
- JSEP Diagnostic Test, a 300 item pretest (180 quantitative and 120 qualitative items)
- Summative Posttest, to measure JSEP performance
- Performance-like Test, testing soldiers' recall of information and ability to apply the knowledge and skills acquired in JSEP.

Summary

Each of the completed programs reviewed in this chapter has been shown to contribute to some improvement of soldiers' competency in basic skills. However, none has been shown to produce substantial progress. Because there is no central quality control system with an active database on soldiers' performance in BSEP II and subsequently on the job, it is not possible to analyze the effects of each of the programs. Scores on standardized tests are

available for most of the BSEP II programs; the data these analyses yield do not answer the important question, "What type of instruction makes a difference in a soldier's job performance?"

Program objectives and content. Because each of the curricula responded to requirements in Army regulations, each had essentially the same program objectives: to provide job-related instruction in basic skills. With the exception of the FBSEP curriculum, which taught the skills required in AIT, rather than skills that were prerequisite to learning job skills, each curriculum taught basic academic skills.

Each of the curricula, except JSEP and FBSEP, taught similar subject matter: reading, language, and mathematics. Figure 3-1 shows the commonalities among programs. JSEP and FBSEP did not teach basic reading skills: students were expected to read at the appropriate level in order to perform the lessons.*

Curriculum. All of the curricula followed a prescriptive approach. Students were assigned to work through a prescribed set of lessons based on course pretests. The Temple curriculum, in addition to using course pre-tests that served as indicators of students' areas of deficiencies, followed a more traditional school approach; teachers were responsible for identifying soldiers' deficiencies and assigning materials based on their own assessment.

*It is important to keep in mind that at the time of writing this report, JSEP was not a completed development and the statements we make apply to its state as of June 1986.

	FBSEP	Temple	Murray State	CTC	FLX	MGA	Revised MGA	JSEP
Reading	X	X	X	X	X	X	X	
Language		X	X	X	X	X	X	X
Mathematics	X	X	X	X		X	X	X
Writing		X	X	X	X		X	
Note-taking					X		X	X
Writing military forms and reports					X		X	X
MOS specific skills	X							
Learning Strategies	X							X

Figure 3-1 Program Content

Materials. All but the JSEP curriculum were entirely paper based, using workbooks or worksheets. The Temple curriculum relied heavily on teacher developed materials. The JSEP curriculum offered on-line lessons and some paper-based lessons. Figure 3-2 summarizes material usage.

Military content. There was some variation in the military content of the curricula. The FBSEP curriculum was based exclusively on military subjects, using military materials for all content, illustrations, vocabulary, and instruction. The FLX and the revised MGA curriculum used only military materials as resources. Murray State, Temple, CTC, MGA, and JSEP incorporate less military vocabulary and context in their curricula than do FBSEP. FLX and the revised MGA, drawing some material and subjects from general educational sources. Figure 3-3 details the military content of the programs.

Teaching techniques. Teaching techniques varied among the programs. Central Texas College, Murray State University, FBSEP, MGA, and the revised MGA used primarily a self-paced, individualized workbook approach, requiring relatively little teacher intervention. The JSEP approach was similar except that students followed the workbook approach on-line. Only Temple and FLX used a teacher directed approach incorporating lecture, group instruction, and independent assignment within the program (see Figure 3-4).

Testing. The pattern of testing was similar among the programs. All programs except FBSEP used a standardized, multiple-choice pretest and posttest. They also had end of module or unit tests as well as practice tests within lessons. Only Temple permitted informal teacher developed tests. Testing practice is summarized in Figure 3-5.

	FBSEP	Temple	Murray State	CTC	FLX	MGA	Revised MGA	JSEP
Workbooks	X	X	X	X		X	X	
Locally prepared worksheets		X	X		X			
Contractor developed military-related texts		X	X	X				
Transparencies	X							
Audio tapes	X							
Video tapes	X							X
MOS equipment	X							
Individual student plan		X						
Military documents		X			X		X	
Civilian reference books		X	X	X			X	
Computer-on-line instruction and supplementary paper based lessons								X

Figure 3-2 Program Materials

	FBSEP	Temple	Murray State	CTC	FLX	MGA	Revised MGA	JSEP
Core materials								
MOS specific	X							
Heavy military content					X			
Military situations and terms		X	X	X		X	X	X
Supplementary materials								
MOS specific								
Heavy military content		X	X	X			X	
Military situations and terms								

Figure 3-3 Military Content

	FBSEP	Temple	Murray State	CTC	FLX	MGA	Revised MGA	JSEP
Self-paced individualized - teacher acts as monitor	X		X	X		X	X	X
Teacher directed - primary mode		X			X			
Teacher directed - supplementary mode			X				X	
Student study guide	X							
Peer working groups					X			
Teacher assistance to individuals	X	X	X	X	X	X	X	?
Student corrects papers						X		

Figure 3-4 Instructional Mode

	FBSEP	Temple	Murray State	CTC	FLX	MGA	Revised MGA	JSEP
Diagnostic tests								
Specific competencies	X			X				?
TABE		X	X	X	X	X	X	?
Informal		X						
Posttests								
End-of-course	X							X
Cloze					X			?
TABE		X	X	X	X	X	X	?
Lesson/Module Tests	X	X	X	X	X	X	X	X

Figure 3-5 Testing

CHAPTER 4

EFFECTS OF BSEP

General Effects

Introduction

We collected program data on seven BSEP courses during the project. In addition, we were able to obtain from Army sources program databases for five additional BSEP programs. A total of 12 different data samples of SMs who had taken some form of BSEP instruction were available for analysis. These included data from the following courses:

- Six-month resident ESL course at DLI
- Three-month resident ESL course at DLI
- New six-week Pre-BT ESL course at TRADOC installations
- Old six-week ESL course at TRADOC installations
- TRADOC BSEP I literacy courses from 1979-1981
- BSEP II literacy courses for FY80
- BSEP II literacy courses for FY81
- BSEP II literacy courses for FY82
- Functional BSEP course for MOS 05C
- Functional BSEP course for MOS 31M
- Early implementation cycles of the MGA curriculum
- Later cycles of the MGA curriculum

The combined databases for participants in these programs contained individual SSN identification for approximately 48,500 SMs. In order to make assessments of potential effects of BSEP participation on factors such as attrition, reenlistment, career progression, and occupational proficiency, our

staff turned to existing databases that were not directly connected with BSEP or ACES activities. Fortunately, access to these databases was provided by ARI. For assessment purposes, it was necessary to compare the participating groups to some baseline group. Ideally, the participant group should be compared with a group of SMs who were eligible for BSEP courses but who, for a variety of different reasons, did not receive them. Four of the databases provided SSN identification not only for eligible/enrolled, but also for eligible/not enrolled SMs. Control samples were available for the six-month and three-month ESL resident courses, and for the TRADOC BSEP I existing ESL courses and the TRADOC BSEP I literacy courses. As described in the next paragraph, comparison groups for the remaining eight participant groups had to be generated from existing databases. As a check on the effect of our matching procedure, we also generated matched samples for the four groups for which we had individually identified control samples. In the case of the BSEP I literacy courses, the matched group showed lower attrition, higher reenlistment, and higher SQT scores than the participant group which was the reverse of what was true of the individually identified control group. For the three- and six-month and the BSEP I ESL groups, the matched sample showed the same relationship to participants as the control group but the differences in attrition, reenlistment rates, and SQT scores were magnified.

The database used for generating demographically matched comparison groups was the Defense Manpower Data Center records. Local access to this database was arranged through ARI. These records for the period FY77 through FY85 provided the pool of SMs from which the matched groups were drawn. To the best

of our ability, we selected matched samples for the SMs who had been enrolled in BSEP. The variables used for selecting matched cases were accession date, MOS, sex, race/ethnic origin, and the AFQT percentile score. The latter was used as a general measure of mental or academic quality. While the matched comparison groups were not true control groups in terms of a classical experimental design, they represented groups of SMs who were very much like the SMs who had been enrolled in BSEP in terms of tenure, occupational field, race, sex, and general mental ability. For the two functional BSEP courses designed for specific MOS, the matching sample was somewhat constricted because the participant groups used up a large portion of the SMs in these MOS who entered the Army during the study period.

Two measures of retention were used. One we labeled attrition rate. There were only two conditions that we used to classify an SM as a non-attrite. One was if the SM reenlisted immediately following termination of the first term. The other was if the SM completed the first term contract and did not immediately reenlist. All other SMs who, for whatever reason, did not complete their first term contract were classified as attrites. The second measure of retention was the percent of SMs who immediately reenlisted after completion of the first term.

We created a variable that we labeled promotion rate for use as an index of early career progression. In previous reports (Report Nos. 26, 28, and 29), we demonstrated that BSEP participants for some of the groups held a slightly higher mean pay grade than did eligible non-participants and that more

participants than non-participants held the modal rank for their time in service. For the present set of comparisons, we generated a somewhat different index. We generated the promotion rate variable solely to provide us with a relative measure of early career progression as measured by pay grade advances. It has no function other than that. For SM who were still in the service, the rate was calculated by subtracting the entry pay grade from the pay grade two years after the SM's accession date and dividing by the years of service. For both participants and either control or matched cases who were no longer in the service, the promotion rate was calculated by subtracting the entry pay grade from the pay grade at the time of separation from the service and dividing by the years of service.

The measure we used as an indication of MOS proficiency was the score on the Skill Qualification Test (SQT). Again, through the auspices of ARI we were able to access the SQT files for FY81 through FY85. We used the SQT score dated most closely after participation in BSEP.

Using the databases and variables described above, we were able to make the comparisons reported below.

Comparative Results

Results of the comparisons of participant groups and either control or matched sample groups are presented in Table 4-1. Data are shown for attrition, reenlistment, promotion rate, and SQT criteria. Data are also shown that demonstrate the comparability of the groups on three general mental

Table 4-1

Comparative Group Results

Group	SM Quality Measures														
	First Term Attrition		First Term Reenlistment		Promotion Rate		SOT Score		AFQT Percentile		ASVAB Verbal		ASVAB GT		
	N	%	N	%	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	
TRADOC BSEP I ESL Six-week Program Participants	1954	28.8	1954	26.5	1954	.88	1559	72.0	1408	21.0	1944	24.9	77	77.2	1894
Eligible/Not Enrolled	793	40.1	793	23.2	793	.87	563	70.3	543	23.4	791	24.7	41	78.5	772
Matched/Not Enrolled	1980	42.9	1980	18.5	1980	.82	1496	74.6	1147	26.4	1917	32.8	133	83.7	1874
SIX-MONTH DLI ESL Program Participants	186	22.7	181	27.6	181	.95	173	76.2	115	20.2	180	-	-	76.3	175
Eligible/Not Enrolled	198	29.2	192	22.9	192	.83	177	70.4	109	19.9	189	-	-	76.6	186
Matched/Not Enrolled	179	43.6	179	16.2	179	.91	132	76.3	90	26.9	173	-	-	84.4	175
THREE-MONTH DLI ESL Program Participants	148	19.6	148	26.4	148	.92	122	71.4	113	22.3	148	22.8	100	79.6	148
Eligible/Not Enrolled	149	20.9	139	26.6	139	.84	113	70.8	102	25.4	138	24.2	117	82.1	138
Matched/Not Enrolled	148	29.1	148	16.2	148	.90	108	70.4	106	28.6	148	28.8	116	86.4	147
NEW TRADOC PRE-BT ESL Six-week Program Participants	1396	18.9	1396	2.9	1396	1.10	1188	69.0	1012	35.1	1395	27.2	1028	89.7	1395
Matched/Not Enrolled	1393	22.4	1393	1.4	1393	1.0	1178	72.3	953	41.0	1392	33.1	1266	95.3	1392

Table 4-1 (continued)

Comparative Group Results

SM Quality Measures

Group	N	First Term Attrition		Z	First Term Reenlistment		Promotion Rate		SQT Score		AFQT Percentile		ASVAB Verbal		ASVAB GT	
		%	N		%	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
TRADOC BSEP I LITERACY Six-week Program Participants	2281	47.0	2281	14.0	2281	.75	1686	64.8	1344	19.9	2258	30.2	19	77.1	2216	
Eligible/Not Enrolled	2659	52.8	2659	14.3	2659	.72	1860	66.5	1781	21.5	2604	31.1	54	78.2	2555	
Matched/Not Enrolled	2286	43.5	2286	18.9	2286	.78	1726	70.8	1258	21.9	2201	32.9	40	81.1	2171	
		(p=.02)		(p=.0001)		(p=.01)		(p=.0001)		(p=.0001)		(N.S.)		(p=.0001)		
FY 1980 BSEP II LITERACY Program Participants	21423	28.3	21423	22.7	21423	.76	19359	72.0	16148	25.9	20071	34.3	113	83.2	19925	
Matched/Not Enrolled	21971	48.4	21971	15.3	21971	.75	16182	70.8	9165	29.7	21322	37.7	634	87.5	21170	
		(p=.0001)		(p=.0001)		(N.S.)		(p=.0001)		(p=.0001)		(p=.0001)		(p=.0001)		
FY 1981 BSEP II LITERACY Program Participants	6263	25.6	6263	27.8	6263	.79	5691	74.8	4607	26.5	6106	32.2	292	83.5	5926	
Matched/Not Enrolled	6352	45.2	6352	16.2	6352	.77	4755	73.7	3218	28.2	6232	34.0	512	86.5	6096	
		(p=.0001)		(p=.0001)		(p=.01)		(p=.0001)		(p=.0001)		(p=.0005)		(p=.0001)		
FY 1982 BSEP II LITERACY Program Participants	3492	22.2	3492	29.8	3492	.82	3102	73.4	2504	26.1	3426	30.2	1028	83.8	3361	
Matched/Not Enrolled	3544	42.4	3544	17.0	3544	.81	2682	72.5	1963	27.8	3472	31.6	1148	86.3	3427	
		(p=.0001)		(p=.0001)		(N.S.)		(p=.03)		(p=.0001)		(p=.0001)		(p=.0001)		
MGA BSEP II Early Program Cycle Participants	1336	5.7	1336	31.1	1336	1.04	1229	71.2	1152	27.5	1322	30.2	838	85.9	1313	
Matched/Not Enrolled	1356	35.5	1356	13.3	1356	.96	1064	71.2	868	28.9	1331	31.1	862	87.4	1325	
		(p=.0001)		(p=.0001)		(p=.0001)		(N.S.)		(p=.007)		(p=.007)		(p=.0006)		

Table 4-1 (continued)

Comparative Group Results

SM Quality Measures

Group	First Term Attrition		First Term Reenlistment		Promotion Rate		SQT Score		AFQT Percentile		ASVAB Verbal		ASVAB GT	
	%	N	%	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
MGA BSEP II Later Program Cycle Participants	3.4	3271	37.9	3271	.97	3016	72.4	2494	28.6	3232	30.8	2081	86.7	3218
Matched/Not Enrolled	34.6	3328	11.0	3328	.90	2600	71.3	2027	30.7	3294	32.0	2162	88.8	3287
FUNCTIONAL BSEP 05C Program Participants	24.1	3735	9.9	3735	1.15	3118	75.5	2464	58.1	3732	39.7	3296	105.8	3732
Matched/Not Enrolled	40.7	3120	8.6	3120	1.01	2036	75.3	1566	58.4	3107	39.8	2353	106.0	3106
FUNCTIONAL BSEP 31M Program Participants	25.4	3027	17.8	3027	1.11	2623	77.7	2529	53.8	2936	38.6	2706	105.5	2937
Matched/Not Enrolled	47.4	2384	8.7	2384	1.16	1450	78.6	1277	57.4	2379	40.0	2056	107.0	2378

ability factors. The statistical significance of group differences were evaluated using T tests.

First term attrition. For BSEP I, the most notable favorable difference was associated with the old six-week ESL courses given at various TRADOC installations. Smaller, but statistically significant, differences in favor of participants in the new Pre-BT ESL course were also noted. No significant differences were associated with either the three-month or the six-month DLI resident courses. Differences in BSEP I literacy courses depend upon which group comparisons are made. If comparisons are made between participants and individually identified controls, the participants demonstrated a slightly lower attrition than their control group. If the comparisons are made between participants and the demographically matched group, the matched group demonstrated a lower attrition rate than participants. Participants in all BSEP II literacy groups had significantly lower attrition rates than did their comparison groups.

First term reenlistment. Neither BSEP I literacy nor BSEP I ESL participants, with the exception of those from the new Pre-BT ESL course, demonstrated any significant differences on this variable. The latter group had a statistically significant though only slightly higher reenlistment rate than their comparison group. Participants in all of the BSEP II literacy courses demonstrated higher reenlistment rates than their comparison groups.

Promotion rate. All groups demonstrated small differences in favor of the participants over either their control or matched cohorts. This was true for BSEP I and BSEP II and for both ESL and literacy courses.

SQT scores. For BSEP I ESL groups, only the three-month resident course participants did not demonstrate a higher mean score on the SQT taken after course completion. For this course, there was no difference. Participants in the BSEP I literacy courses demonstrated a statistically significant higher mean SQT score than their controls. All BSEP II participant groups also scored higher than their comparison groups.

Mental ability measures. The recorded scores on the AFQT percentile, the ASVAB Verbal, and the ASVAB GT composite were used to check on the equivalence of the control or matched comparison groups to the participant group. For all groups, the control or matched sample had equal or higher test scores than the participants. To the extent that these three indices represent general academic capabilities, the advantages were with the control or matched groups. The general results favoring the participant groups were thus achieved in the face of this small apparent disadvantage.

Effects on Academic Competencies

Two types of measures of effects on attaining program objectives were available. One concerned the extent to which participants learned the materials that were presented to them. Lesson tests or module tests based directly on the material presented in the course provided such measures. Such

tests were specific to each course so cross-course comparisons could not be made directly. However, all of the quantitative and qualitative measures we collected indicated that participants learned much but not all of the material presented to them in the course.

The other type of measure available was test scores on measures of general academic skills. The two tests used during our contract were the Adult Basic Learning Examination (ABLE) and the Tests of Adult Basic Education (TABE). Both the ABLE and the TABE were reported in terms of grade level equivalents. The tests were normed on different civilian groups and the equivalence between the two sets of grade levels were not empirically established. The results for BSEP I and for five different BSEP II groups are shown in Table 4-2.

Table 4-2

Grade Level Gains on Academic Competencies
 (Sample sizes in parentheses)

	TRADOC BSEP I ABLE	BSEP II FY80 ABLE	BSEP II FY81 TABE	BSEP II FY82 TABE	USAREUR Temple TABE	BSEP II MGA TABE
Reading Comp.	--- ---	--- ---	.77 (3307)	.92 (1358)	--- ---	1.21 (3040)
Vocabulary	.23 (4344)	.53 (9573)	.90 (3426)	1.08 (1448)	---	1.02 (3029)
Total Reading	.17 (4344)	.53 (10118)	.85 (3194)	1.00 (1270)	1.10 (2895)	1.19 (2965)
Spelling	1.44 (4344)	1.30 (9180)	--- ---	--- ---	--- ---	.80 (2833)
Language Expression	--- ---	--- ---	1.44 (3575)	1.55 (1539)	1.70 (2705)	1.50 (2942)
Mathematics Computation	.58 (4344)	1.65 (12219)	2.13 (3822)	2.15 (1652)	--- ---	2.50 (3620)
Mathematics Problems	.46 (4344)	1.21 (11561)	1.11 (3816)	1.17 (1674)	--- ---	1.67 (3230)
Total Mathematics	--- ---	--- ---	1.68 (3705)	1.70 (1562)	1.80 (4276)	2.07 (3167)

Results in terms of reaching stated academic objectives for four of the BSEP II groups are shown in Table 4-3.

Table 4-3
Percent Achieving Grade Level Standards
 (Sample sizes in parentheses)

	BSEP II FY80 ABLE 9.0	BSEP II FY81 TABE 9.0	BSEP II FY82 TABE 9.0	BSEP II MGA TABE 9.0+ 10.5+	
Reading Comprehension	--- ---	51.1 (3445)	47.6 (1396)	64.0 (1051)	26.0 (1051)
Vocabulary	34.2 (13786)	49.7 (3561)	46.6 (1484)	60.0 (910)	20.0 (910)
Total Reading	45.4 (14154)	48.7 (3340)	41.5 (1307)	63.0 (897)	22.0 (897)
Spelling	34.9 (15265)	--- ---	--- ---	26.0 (1357)	8.0 (1357)
Language Expression	--- ---	36.6 (3754)	38.4 (1598)	48.0 (1503)	18.0 (1503)
Mathematics Computation	42.8 (17307)	59.7 (3976)	62.6 (1709)	66.0 (1713)	36.0 (1713)
Mathematics Problems	36.4 (16477)	37.8 (3975)	37.5 (1725)	64.0 (1648)	24.0 (1648)
Total Mathematics	--- ---	48.8 (3976)	50.0 (1717)	63.0 (1691)	29.0 (1691)

All groups showed gains on the academic competencies tested regardless of the curriculum used. BSEP I gains are lower than those obtained by BSEP II programs. The gains for BSEP II programs, particularly those tested with the TABE, are relatively consistent despite the fact that a variety of different curricula were used. Greater gains were consistently made in mathematics,

particularly in computational skills, than in other areas. For the BSEP II programs from FY80-82, only from one-third to one-half of the participants attained the stated objective of grade level 9.0. For the MGA curriculum, a somewhat larger proportion attained the 9.0 objective but not the higher levels associated with newly designed scale score standards.

Although none of the BSEP programs was specifically designed to increase the GT composite, unit commanders and many participants had this expectation. Estimates of GT gains associated with five BSEP II groups are shown in Table 4-4. Gains from programs with heterogeneous curricula appeared to do somewhat better than the more recently developed MGA curriculum. Changes have already been made in the MGA curriculum in order to address that situation.

Table 4-4

Mean Gains in GT Composites

	<u>N</u>	Gain
BSEP II FY80	6809	17.5
BSEP II FY81	1408	16.5
BSEP II FY82	661	16.0
BSEP II MGA - Early	121	10.0*
BSEP II MGA - Later	969	10.2*

*Score adjusted to correct mis-normed cases

Summary

Measures of academic competencies associated with program objectives and general measures such as attrition, reenlistment, promotion, and SQT scores all favor BSEP participant groups over non-participant groups. In some instances, such as attrition and reenlistment, the differences are sizeable, but more generally the differences are moderate but in the right direction. When measured in terms of the numbers of SMs reaching the officially stated standards, however, there is room for much improvement.

None of the programs attempted to use direct measures of job proficiency. Our after-the-fact use of SQT scores as measures of MOS proficiency showed only slight differences generally favoring BSEP participants. None of the programs attempted to use direct measures of actual job performance and we were unable to obtain such measures. BSEP effects in terms of bottom-line job task performance are therefore unknown. That study remains to be accomplished.

CHAPTER 5

QUALITY CONTROL SYSTEM

Introduction

According to the initial plan for the evaluation project, AIR was to design a prototype Quality Control System (QCS) during the fifth year of the contract. The design was to identify required data inputs, sources for the data, methods for assembling and processing the data, and staffing recommendations. A formative test of the system employing ACES personnel and data sources was to be conducted and a report on the prototype system submitted. A later modification to the original contract advanced the schedule for this activity to the third year of the contract.

A concept paper on the development of a QCS for all ACES programs was submitted in November 1983 (Report No. 11). This paper addressed the background for the development of a quality control system and discussed generic system requirements such as goal statements, BSEP-specific evaluation issues, locus of activities, and specific data requirements.

Effective management control of any multi-faceted educational program by a central agency such as the Education Division, Office of the Deputy Chief of Staff for Personnel (ODCSPER), depends upon the availability and use of information by the central agency. The existence of a comprehensive management

information subsystem is, therefore, a vital element in an effective QCS. Certain elements of such a subsystem already exist, other elements have existed but have been eliminated, and other elements are planned as part of current developments. The design for a comprehensive QCS requires a major effort to establish and maintain a management information subsystem that will allow the Education Division to carry out the proposed control functions effectively.

A preliminary design for a proposed BSEP quality control system was submitted in January 1984 (Report No. 12). The overall functions of the proposed quality control systems are shown in Figure 5-1. The recommended basic system configuration is described below.

Control Functions

The major control functions proposed to be exercised by the Education Division and the activities needed to exercise them are outlined in Figure 5-2, BSEP Quality Control System. Six major control functions were proposed. Three involve monitoring system quality through collecting and periodically analyzing and reporting quantitative data. Another involves qualitative data regarding the physical, biosocial, and organizational environments of the program sites. The remaining two involve decisionmaking regarding meeting quality standards through the setting of competency standards and the implementation of cost effective BSEP programs. The six functions are described in greater detail below.

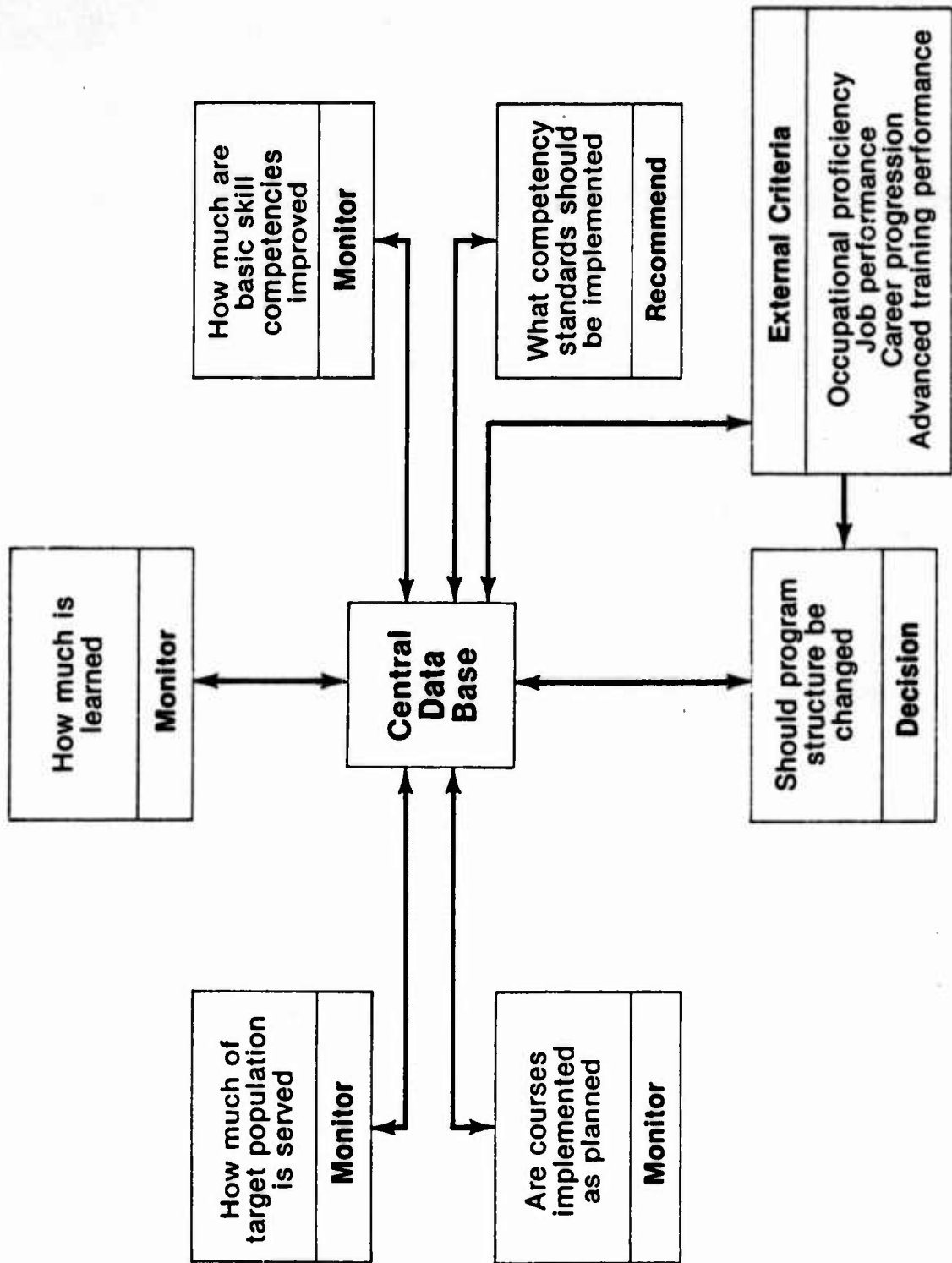


Figure 5-1. Functions of Proposed Quality Control System

Control Functions

I. MONITOR SM population being served

- Establish standards for eligibility for BSEP program
- Assess SM in terms of eligibility standards
- Establish and maintain records of enrollments from eligible population
- Compare installations and MACOMs in terms of populations served
- Examine individual programs that appear to be below average

II. MONITOR extent to which BSEP courses teach what they set out to teach

- Establish course objectives
- Assess enrolled SM with measures of course objectives prior to instruction
- Provide required instruction
- Assess enrolled SM with measures of course objectives immediately after completion of instruction
- Establish and maintain a record of pre-course and post-course measures
- Compare installations and MACOMs in terms of gains in attainment of course objectives

III. MONITOR extent to which BSEP courses engender gains in basic educational competencies as measured by TABE, ASVAB, Locator/diagnostic tests, English Comprehension Level Test, SelectABLE/ABLE

- Establish standards in terms of general educational competencies
- Assess enrolled SM with appropriate measures prior to instruction
- Provide required instruction
- Assess enrolled SM with appropriate measures immediately after instruction

Figure 5-2. BSEP Quality Control System

(continued)

- Establish and maintain a record of pre-course and post-course measures
- Compare installations and MACOMs in terms of gains on general educational competencies

IV. MONITOR extent to which various BSEP programs are carried out as they are intended to be

- Establish standard course management practices
- Assess extent to which program practices match standard practices through field visits and on-site observations
- Report observations to BSEP program staff and MACOM with immediate recommendations for any changes necessary
- Review BSEP program reports to identify system problems that may require changes in recommended standard practices

V. DECIDE which of several available BSEP programs to implement in the training base, in MACOMs, or Army-wide

- Use evaluation data for candidate BSEP programs from II and III
- Collect follow-up data on relevant course participants on:
 - subsequent training performance
 - subsequent occupational proficiency
 - subsequent job performance
 - subsequent career progression
- Collect cost data on BSEP programs
- Establish the relationships between demographic variables from I, BSEP course progression from II, basic skill competency level from III and post-course performance
- Compare post-course performance of enrollees with a like group of non-enrollees or an all-Army cohort
- Implement on Army-wide basis the most cost effective BSEP programs

Figure 5-2. BSEP Quality Control System

(continued)

VI. RECOMMEND educational level and basic skill competency standards for enlistment, promotion, and reenlistment

- Use evaluation data from I, II, III, and V
- Establish estimates of present and short-term future Army needs
- Estimate potential present and short-term future U.S. manpowerpool to fill needs
- Recommend standards to meet both qualitative and quantitative needs

Figure 5-2. BSEP Quality Control System

What Population is Served?

A fundamental question regarding any service program, is to what extent is the target population being served. Since the personnel flow into and out of the Army or any given unit is a dynamic process, monitoring this function requires a continual effort with periodic reporting. The essential reporting element is the percent of SM eligibles for a given BSEP program who have been enrolled. It was proposed that this function be reported on a quarterly basis. It was proposed that the indices be reported for individual Army posts, MACOMs, and Army-wide. Program managers at the Education Division could then examine, in greater detail, any specific programs that were not operating at the desired level. This aspect of the proposed QCS has been implemented through changes in the reporting system for the current fiscal year. Enrollment as a percent of eligible SMs is to be reported to the Education Division on an annual basis.

How Much Content do Courses Teach?

The most direct index of how well the courses teach the materials is provided by tests based directly on materials included in the course. In order to measure effects that may be attributable to the course itself, such tests must be administered both before instruction is given and immediately after instruction is completed. Gains between pre-course scores and post-course scores can be used as a measure of direct course learning. Effective control of an educational program requires constant monitoring of this primary output (i.e., direct learning gains). The proposed QCS, therefore, included the establishment and maintenance of a database covering pre-course and post-course

Development of the Database

The overall concept included the establishment and maintenance of a computer-based management information system that tracked the military career performance of every BSEP eligible soldier at least through the first and possibly through the second enlistment. The major elements of such a system are presented in Figure 5-3. The development cycle envisioned the initial establishment and maintenance of the database by ARI/AIR with eventual maintenance by either the MACOMs or preferably by the Education Division, ODCSPER.

The first step in the design was to specify the data required by the subsystem. The general types of data needed to carry out the management control functions are presented as INPUTS in Figure 5-3. In a similar manner, the general types of subsystem products are presented as REPORT OUTPUTS in Figure 5-3. Given the delineation of the data requirements, the next step was to specify how each datum was to be acquired. A guiding principle was to minimize the reporting burden imposed by the subsystem. This was to be accomplished by

- accessing established Army computerized files to the extent possible to capture relevant existing data,
- using existing site-level data wherever these are sufficient, and
- requiring individual soldier reports only for those data that are not available from site-level reports or Army computerized files.

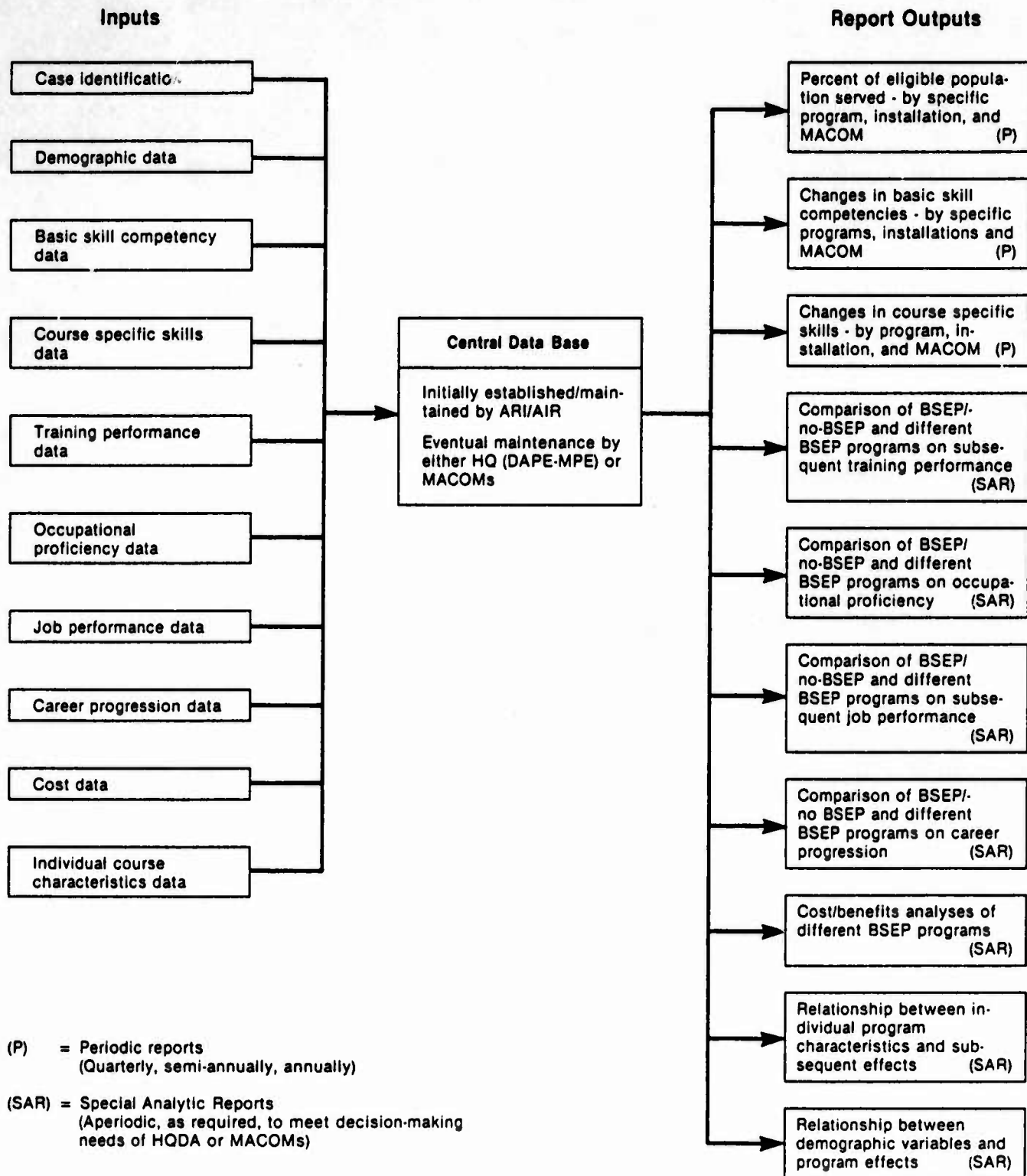


Figure 5-3. BSEP Management Information System

Data elements included in the various categories of data needed are shown in Figure 5-4. Tentative sources from which these data might be obtained are also indicated along with the primary intended uses for the data.

The next step in the development cycle was to specify the arrangements necessary for collecting the data. If the data are collected from sources at a local Army post, arrangements will have to be made to have the data collected and forwarded to the BSEP database location. This can either be through the respective MACOMs or directly to the central database. If the data are to be obtained from existing Army databases (Accessions, EMF, DMDC, SQT, etc.), administrative arrangements necessary to access these databases on a routine basis would have to be made. Because of requirements for other research programs, ARI currently has direct access to many of these databases.

The next step would be to actually create the basic BSEP eligible base file that was to be updated on a routine basis. It was recommended that the database be managed by the Education Division, ODCSPER, although maintenance at the MACOM level was also seen as a possibility. The updated computer file would provide a comprehensive record of significant events that occur during the soldier's first two enlistments. Events included BSEP course enrollments; BT, AIT, or OSUT completion; SQT and CTT scores; reenlistment; discharge, etc.

The evaluation of the MGA curriculum gave the project staff an opportunity to use data elements from the proposed QCS at a more detailed level. Data recorded on FORSCOM 150 and accompanying Module Record Sheets included

Data Element	Source (s)	Uses
Case Identification Name Social Security Number	Army Education Center (AEC)	Data case identification Provide access to other data bases
Demographic Variables Date of entry to active service Estimated separation date Age Sex Race/ethnic designation Educational level Rank PMOS SMOS	MILPO at local post Self report Enlisted Master File (EMF)	Description of population and subsamples Statistical control for non-treatment variables
Basic Skill Competencies SelectABLE/ABLE TABE Locator/diagnostic tests (TRADOC developed) ASVAB English Comprehension Level Test (ECLT) JSEP Academic Competencies	AEC/Testing Center	Determine eligibility for BSEP programs Determine changes in basic skills competencies that are attributable to BSEP
Course Specific Skills Survey of Basic Skills Instructional module pretests Instructional module posttests	Classroom Teachers	Determine placement in BSEP course Determine changes in course-specific skills that are attributable to BSEP
Subsequent Training Performance BT/AIT/OSUT Pass/progression; recycle; reclassify; attrite NCOES Courses Pass/progression; attrite MOS Improvement/Apprenticeship Courses Other ACES Courses	Academic Records Branch at IET posts Academic Records Branch at NCOES school AEC through institutional educational contractor AEC and/or institutional contractor	Determine effects of BSEP on training performance
Occupational Proficiency Common Task Test (CTT) MOS Skill Qualification Test (SQT)	Local Army post or Army Troop Support Command (ATSC) Ft. Eustis	Determine effect of BSEP on common task proficiency Determine effect of BSEP on MOS task proficiency
Job Performance Enlisted Evaluation Report (EER) Special Job Performance Measures	EMF Defense Manpower Document Center (DMDC) ARI/AIR evaluation team	Determine effect of BSEP on EER scores Determine effect of BSEP on subsequent job performance
Career Progression Pay grade; skill level; attrition	EMF and/or DMDC	Determine effect of BSEP on career progression
Cost Data Staff costs; facility costs	Educational Services Officer at local Army post	Establish cost/benefits relationships for BSEP programs

Figure 5-4. Data Components of BSEP Data Management Information System

end-of-module test scores, as well as end-of-program TABE and GT scores. These data were collected by local instructional personnel on a standard multiple copy form and forwarded to FORSCOM Headquarters. This evaluation demonstrated the feasibility of collecting this type of data for quality control purposes. These data were used by the project staff for the evaluation of the MGA program (Reports 19, 20, 45, and 46). These data were also utilized along with others by a FORSCOM task group which began to revise the MGA curriculum.

In a small ancillary study, relationships between selected MGA modules and success on BNCOC screening tests, and in BNCOC academies were examined. Existing hard copy documents prepared by local personnel as a routine part of the program were transferred to a database using floppy discs and a PC system. This database provided easy entry into a larger computer system for more comprehensive analyses. The establishment of an automated database containing many of the elements included in the proposed QCS may involve no greater investment than the cost of a PC and an operator for each Army Education Center. Many of the data elements for the proposed QCS already exist but they need to be pulled together into an integrated system. The one critical ingredient that is missing is an Army agency assigned responsibility for the establishment and maintenance of such a system. Without such an agency and a reasonable assurance that the data will be used to control the quality of educational programs, the investment is probably not warranted.

measures. It was proposed that average gain scores be reported on a quarterly basis. It was proposed that gain scores be reported for individual Army posts, MACOMs, and Army-wide. Program managers at MACOMs or at the Education Division could then examine in greater detail any specific programs that were not operating at the desired level.

Almost all of the BSEP courses examined during our study used end-of-lesson type tests of some sort to measure direct learning by SMs of the material taught. These tests were administered during the course of instruction and results were used mainly to guide the SMs through the course of instruction. Records were initiated by local instructional personnel and reviewed by local command personnel. Decisions for program continuance or deletion or program revisions were made at local levels based on local review of these data or recommendations based on these data were forwarded to the relevant MACOM. For the FBSEP course at Fort Gordon, these data were maintained by the BSEP coordinator and were later turned over to our project staff. For the MGA samples, these data were initiated by local instructional personnel on a standard data form (FORSCOM 150) in multiple copies. Thus, these data were simultaneously available to the local personnel, the Education Directorate at FORSCOM Headquarters, and to the project staff. Lesson tests were also used in the Pre-BT ESL course at the discretion of the instructional staff. Again, results were used mainly to guide the SMs through the course of instruction rather than as a measure of quality control of the instructional programs. With the exception of the MGA course, these data were not forwarded in a systematic manner to either MACOM headquarters or to the Education

Division for analyses of program quality. In all cases, however, the basic data regarding direct learning of program content were collected. It is also expected that the course management system for JSEP will produce such data as a matter of course. The inclusion of such data in the proposed QCS did not, therefore, represent an administrative burden that was not already being borne by local personnel. Systematizing, collecting, and forwarding such data to a central monitoring agency would, however, require some additional effort, staff time, and funds.

Does BSEP Improve Basic Educational Competencies?

Objectives for many BSEP program elements are still expressed in terms of generalized educational competencies even though the Army has recently emphasized job-related skills. The QCS was, therefore, designed to monitor gains on one or more general educational indices on a continuing basis. User expectations in terms of these generalized indices warrant their use even though BSEP courses are not always specifically designed to create such gains. The proposed QCS included the establishment and maintenance of a database covering pre-course and post-course indices of general educational skills. The three recommended indices were the TABE, ASVAB, and ECLT. These three were recommended largely because, despite their inadequacies in some respects, they represent indices of general educational competencies that have been used extensively in the past and are, therefore, somewhat familiar to Army personnel. The TABE provides objective standards in that current Army regulations define success in BSEP programs in terms of scale scores on TABE

subtests. Of the 12 major databases available for our study, seven of them included TABE scores as a primary data element. The early BSEP databases reported data on about the same general educational skills as the TABE derived from the ABLE tests, which were not systematically equated with TABE tests. The grade level data from the two tests are not directly comparable but both were normed against civilian school populations. The TABE data are particularly relevant to the MGA curriculum since this curriculum was specifically designed to increase soldier proficiency in the skills tested on the TABE. TABE subtest scores were also a major data element in the supposedly Army-wide system for reporting BSEP II progress that was in effect until 1983.

The ASVAB/AFCT was included because ASVAB or AFCT composites, particularly the General Technical composite, were included in Army-wide standards for personnel actions such as reenlistment, promotion, and MOS reclassification. The ASVAB was also included because all SM have recorded scores and all installations throughout the world have the capability of re-administering the AFCT, which is another format of the ASVAB.

The ECLT was included because it represents a much used index of English language proficiency. While it does not directly measure production aspects of language proficiency, ECLT scores have routinely been found to correlate with a variety of other measures for all aspects of language proficiency.

All three of these measurement instruments have been widely used at Army installations so their recommended inclusion in the proposed QCS would present no insurmountable obstacles or additional burdens. Scores obtained from these

instruments should be recorded on individual SM's Educational Development Record (DA Form 669). The only additional burden imposed by the proposed QCS would be to have these scores forwarded to a central databank for analyses. Once adequate test measures are established for the prerequisite competencies included in JSEP, scores for these tests and perhaps for the mathematics and verbal locator tests might also be included in the QCS. It was proposed that average gain scores be reported on a quarterly basis. It was proposed that gain scores be reported for individual Army posts, MACOMs, and Army-wide. Program managers at MACOM headquarters and the Education Division could then examine in greater detail any specific programs that were not operating at a desired level.

How Standard is Course Implementation?

One of the criticisms of the BSEP program over the past several years has been its lack of standardization and the fact that soldiers moving from post to post can not effectively build upon what they have previously learned. More precise course management plans have been included in the development of new BSEP courses. The Pre-BT ESL Course provided a standard curriculum for use throughout TRADOC. While we still found differences in the manner in which installations implemented the standard curriculum, the use of standard end-of-course tests ensured a fair degree of conformity among programs at different installations. Currently all ESL instruction is centralized at DLI, thus ensuring a standard program.

The MGA curriculum included a course management plan designed to utilize a standard set of instructional modules for individually prescribed instructional sequences. Thus, while not all SMs took the same instructional modules, the population of modules from which they were drawn was standard. While the basic instructional units were standardized, there was still room for individualized treatments that varied from one installation to another. This same concept of individualized instructional sequences drawn from a standard set of instructional modules will be implemented in JSEP.

Adherence to course management plans in the implementation of any curriculum should be monitored. During the course of our study, frequent visits to Army installations to observe the manner in which the programs were implemented were made only by our project staff, not by ACES personnel. The proposed QCS recommended that ACES personnel, either from MACOM headquarters or from the Education Division, ODCSPER, make field tests that include on-site classroom observations.

Field visits should be made to exemplar installations, as well as to installations which appear to have problems. The on-site observations of the visiting team members should be reported immediately to the BSEP staff of the installation and to the ACES staff at MACOM Headquarters. These reports should include any recommendations for immediate changes in program practices that may be warranted. Program managers from the Education Division should review the reports from different installations in order to identify any generic problems that are present at several installations. Such problems should be examined to

determine whether changes in the recommended standard practices are warranted. The reports should also be reviewed to determine if there are unique characteristics associated with exemplar programs that might be mandated for Army-wide implementation. This function is mainly concerned with qualitative information and should be carried out on an "as needed" basis. Some visits should be scheduled on a random basis. Other visits should be scheduled because the quantitative data indicate either exceptionally good or not-so-good program results.

Which Particular BSEP Course Should be Implemented?

Ideally, the Army should implement most widely those BSEP courses that produce the most cost beneficial results. The exercise of this QCS function will necessarily be aperiodic since it depends upon the availability of several BSEP courses at the same time. The decision to centralize all entry ESL instruction at DLI rather than to continue it at TRADOC installations represents one such decision. Ideally, such a decision would require the collection and analysis of comparative cost/benefit data for the two programs. In this case, the known costs and benefits of the TRADOC program were compared with the expected costs and benefits of the DLI program and the decision was made.

A similar decision will presumably have to be made before too long between the use of the MGA curriculum for BSEP II courses and the newly developed JSEP. Cost and benefits data should be collected on the current MGA program and on the JSEP during its demonstration year so that the objective data can influence such a decision.

What Competencies Should be Required?

Unless there were some portion of the SM population deemed to have inadequate basic competencies, there would be no reason for a BSEP program. The size of the relevant population is ever changing, depending upon the interface between the needs of the Army for these competencies and their availability to the Army from the total manpower pool. Matches between skills needs and skills availability can be achieved by selection and classification procedures, through continued use of remedial training procedures, and through combinations of the two. The performance data collected as part of the evaluation process can and should also be used to develop more empirically based standards for selection, promotion, and reenlistment. Once these empirically based standards are established, the Army can examine the likelihood of being able to meet both its qualitative and quantitative requirements either through initial selection processes or through the continued use of remedial basic skills training.

In order that empirical data be available to either MACOM or Education Division ACES personnel for exercising the six control functions described above, the proposed QCS included the establishment and maintenance of a management information subsystem which is described below.

Management Information Subsystem

Information Requirements

A major subsystem of the proposed QCS concerned the collection of an information or database in a format that would facilitate the exercise of management control functions by program managers. The information needs concerned:

- the extent to which the target population is served,
- the extent to which program elements attain the immediate specific objectives they are designed to attain,
- the relationship between attainment of immediate specific objectives of program elements and the attainment of other objectives, and
- costs associated with various program elements.

Unless a systematic procedure exists for the collection and review of these types of information, decisions regarding program implementation, modification, substitution, expansion or contraction must be made without an empirical base for justification. The collection and analysis of these types of information require the expenditure of personnel effort and money that is difficult to justify unless program managers use the empirical data in making the required decisions.

Summary

Both a concept paper and a draft design of a proposed quality control system were submitted for review by ARI and the Education Division, ODCSPER. The proposed QCS was based on the assumption of central monitoring or control functions being carried out either at the MACOM or Headquarters, Department of the Army, level on a continuing basis. A comprehensive management information database was to provide the necessary empirical data to allow the monitoring agency to carry out six major control functions.

After review of the proposed QCS design and further discussions, the Education Division decided that they did not wish to pursue the development of a comprehensive QCS at that time. Further development of the system as proposed therefore ceased. Some of the data elements included in the proposed QCS have been included in the ACES Cost/Participation Report and ACES Program Evaluation Report procedures. Number of enrollees, hours of instruction, and costs associated with this instruction are to be reported to the Education Division, ODCSPER, on a quarterly basis. Program evaluation data such as number of SMS eligible for various programs, number of enrollees, number of eligibles and participants who successfully complete the course and those that do not are to be reported to the Education Division, ODCSPER, on an annual basis. So data relating to at least one of the monitoring functions proposed for the new QCS will be available for the present fiscal year. Gross measures of program quality will also be available in terms of pass/fail rates.

CHAPTER 6

BSEP Preparation for NCOES Participation

Introduction.

For some time, several MACOMs had been experiencing an unacceptable attrition rate in Basic Non-Commissioned Officer's Course (BNCOC) programs. A major cause for the high academic attrition rate was felt to be the individual soldier's deficiencies in some of the basic educational competencies required to successfully learn the skills taught in BNCOC. Two major activities were undertaken to address this problem. One activity was the development of screening tests to be given to all candidates for BNCOC. With respect to policy, all eligible BNCOC candidates had to pass the BNCOC screening tests with 100 percent accuracy before being assigned to BNCOC. The second activity was providing opportunities for candidates who had not passed the BNCOC screening test on the first trial to develop increased proficiency in relevant basic educational skills so that they could pass the screening test on subsequent trials. Within FORSCOM, BSEP II materials designed to teach the skills tested on the BNCOC screening tests were used to increase soldiers' proficiency on relevant basic educational skills.

With the cooperation of the ACES staff at Headquarters FORSCOM, we were able to obtain a sample of data concerning FORSCOM soldier candidates who were tested during the period September 1984 through December 1985. Data were also

made available on performance at the BNCOC academies for those soldiers attending selected FORSCOM academies during July, August, and September of 1985. Analyses of these data were accomplished to determine the extent to which the use of selected BSEP II materials affected admission to and successful completion of BNCOC courses.

Description of the Sample

The database used for our analysis was supplied by Headquarters FORSCOM. Data from hard copy documents were transcribed onto floppy discs using PC hardware. Data elements included in the database were:

- Case Number
- Name
- Social Security number
- Permanent duty station
- MOS
- Grade
- ASVAB GT composite
- Prior BSEP II participation
- MOS BNCOC academy attended, if any
- BNCOC screening test dates
- BNCOC screening test scores
- McFann, Gray & Associates (MGA) remediation dates
- Total hours of MGA remediation
- Number of NO GO scores on tasks tested at the BNCOC academy

The total number of soldiers included in the data base was 2,319. As is true of all databases obtained from operational field records, as this one was, not all records contained valid information on all data elements. In the tables presented below, the sample numbers will not always agree due to cases with missing data. The tables include all cases having complete data for the

variables displayed. Of the total number of cases in the data base, 527 cases contained data on task performance at a BNCOC academy.

The total sample included soldiers having 21 different primary MOS, all of which are covered by one of the following BNCOC academies.

- 11C - Indirect fire infantryman
- 12B - Combat engineer
- 13B - Cannon crewman
- 13E - Cannon fire direction specialist
- 13F - Fire support specialist

The candidates came from 10 different permanent duty posts stateside and from posts in Alaska and Panama as shown in Table 6-1.

Table 6-1

Duty Assignment Locations of FORSCOM NCOES Sample

Location	<u>Academy Attendees</u>		<u>Other Candidates</u>	
	N	%	N	%
Alaska	15	3	57	3
Fort Bragg	159	30	382	21
Fort Campbell	106	20	191	11
Fort Carson	44	8	152	8
Fort Devens	10	2	71	4
Fort Hood	79	15	224	13
Fort Lewis	29	6	124	7
Fort Ord	25	5	65	4
Fort Polk	11	2	148	8
Fort Riley	37	7	155	9
Fort Stewart	10	2	176	10
Panama	2	>1	47	3
All	527	100	1792	100

The proportion of candidates who attended an academy during the period studied is relatively constant between posts although Forts Bragg and Campbell are somewhat over-represented. The five MOS academies were conducted at 10 posts as shown in Table 6-2.

Table 6-2

Location of BNCOC Academies

Location	Number of Attendees
Fort Bragg	161
Fort Campbell	117
Fort Carson	45
Fort Hood	78
Fort Lewis	31
Fort Ord	29
Fort Polk	11
Fort Richardson	9
Fort Riley	36
Fort Stewart	10

The majority of the BNCOC candidates and those actually attending the academy during the period studied were E-5s; E-4s and E-6s were next most prevalent, with only a smattering of other grades (see Table 6-3). The Cannon crewman academy had the greatest number of attendees followed in order by combat engineer, infantryman, cannon fire direction specialist and fire support specialist.

Table 6-3

Grade Distribution of FORSCOM NCOES Sample

Grade	Academy Attended					Attendees		Non-Attendees	
	11C	12B	13B	13E	13F	N	%	N	%
E-1	1	-	-	-	-	1	>1	2	>1
E-2	-	-	-	-	-	0	0	17	1
E-3	-	-	-	-	1	1	>1	26	2
E-4	34	17	31	8	4	94	18	496	29
E-5	63	93	126	13	68	363	70	997	58
E-6	7	17	25	2	8	59	11	190	11
E-7	-	-	2	-	-	2	>1	5	>1
Total	105	127	184	23	81	520	100	1733	100

Recorded ASVAB GT composites for the overall sample ranged from 64 to 155. As shown in Table 6-4, the mean GT composite for the non-attending candidates was 1.5 lower than for those attending the academy. This difference is insignificant from both a statistical and practical point of view. Keep in mind also that many of the non-attendees during the period from which the sample was drawn undoubtedly attended an appropriate academy at a subsequent date. The data in Table 6-4 also show that the mean GT composite of those who attended an academy and attrited was 4.0 lower than successful academy graduates. This small difference was also not significant either statistically

Table 6-4

Mean GT Composites of FORSCOM NCOES Sample

MOS Academy	Academy Status											
	Successfully Completed			Attrited			Total Attendees			Non-Attendees		
	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.
11C	40	113.6	14.9	6	116.7	12.6	46	113.9	14.5	76	111.1	15.1
12B	57	109.4	11.5	8	107.8	12.1	65	109.2	11.5	133	107.6	13.3
13B	45	108.7	16.0	16	101.1	9.3	61	106.7	14.8	202	102.8	15.0
13E	10	108.0	9.7	0	-	-	10	108.0	9.7	24	115.2	12.9
13F	15	104.5	11.5	2	103.0	4.2	17	104.4	10.8	86	113.3	13.5
A11	167	109.7	13.7	32	105.7	11.6	199	109.1	13.4	521	107.6	13.4

or practically. The 11C academy attendees had the highest mean GT composites while attendees from CMF 13 had the lowest. These differences were small, but statistically significant. Of the groups shown in Table 6-4, attrites from the infantryman academies had the highest mean GT composites.

Description of Test and Academy Performance Variables

BNCOC Prerequisite Survey

The BNCOC screening tests for which FORSCOM data were available (BNCOC Prerequisite Survey) consisted of two general sections. Section I contained 11 sets of mathematics problems that applied to all of the MOS involved. Section I will, therefore, hereafter be referred to as the Common Section. Topics covered in the Common Section included:

- Whole numbers
- Decimals
- Fractions
- Algebra

Section II of the screening test contained sets of problems that uniquely applied to different MOS. Section II is hereafter referred to as the MOS Section. For MOS 11C, the MOS Section contained an additional set of problems on whole numbers and a set on fractions. For all MOS in CMF 13, the MOS Section contained an additional set of problems on fractions and an additional set on locators and visuals. For MOS 12B, the MOS Section contained an additional 11 sets of problems dealing with whole numbers, fractions, locators and visuals, mathematics concepts, and story problems. A passing score was 100

percent for each of the sets of problems in the Common and MOS Sections of the screening test. If a candidate failed to pass both sections, the candidate was supposed to be assigned remedial instruction before retaking an alternate form of the failed screening test. Modules within the MGA curriculum were indexed to the sets of problems on the screening tests. According to policy, candidates who failed any set of problems on the screening test were to be assigned the MGA activity sheets indexed to the problems missed. After remediation, the candidate could retake the screening test. There were some indications that the prescribed assignment of remedial materials was not followed precisely. Some candidates were retested with no recorded intervening remedial instruction. Others took remedial instruction on more or fewer modules than indicated by test problems they missed. The data available for this study included only an indication of the dates and total hours of remedial instruction taken but not the specific MGA modules or other instruction taken. The database included some cases who had taken the screening tests as many as four times. Presumably, no soldier attended a BNCOC academy without first passing both sections of the screening test.

BNCOC Academy Performance

Two measures of performance at the BNCOC academies were available for most attendees. One measure was binary (i.e., either graduate or attrite). The other measure was a count of the number of task trial errors made by the attendee in order to attain the criterion of a GO on all tasks tested. Attendees were allowed multiple attempts at each task test in order to achieve

criterion level. The range in the sample collected was from soldiers who passed on the first attempt to those who required the maximum allowed four attempts before attaining a GO. The number of tasks tested varied not only between MOS but between installations within the same MOS. The number of tasks tested per MOS at the various posts is shown in Table 6-5.

Table 6-5
Number of Tasks Tested at BNCOC Academies

Installation	MOS				
	11C	12B	13B	13E	13F
Fort Bragg	54	39	34	79	72
Fort Campbell	37	40	36	81	63
Fort Carson	48	44	39	-	63
Fort Hood	52	47	39	-	64
Fort Lewis	44	41	-	-	65
Fort Ord	-	35	42	-	67
Fort Polk	-	41	-	-	-
Fort Richardson	-	-	46	-	-
Fort Riley	55	47	41	-	-
Fort Stewart	-	39	-	-	-

Two academy scores were calculated. One was the percent of task tests passed on the first attempt taking into account the different number of tasks tested at the various BNCOC academies. The second was an error score based on the total number of trials taken to reach criterion level. In order to account for differences in the number of tasks tested at different BNCOC academies, the total number of trials taken was divided by the total number of tasks tested at any given academy.

Results

BNCOC Prerequisite Survey

Similarities and differences in the level of preparedness of attendees and non-attendees are best demonstrated by scores on the first recorded trial of the BNCOC screening test. Keep in mind that many non-attendees were, in fact, enrolled in subsequent BNCOC programs. Results from the Common Section of the screening test are shown in Tables 6-6 and 6-7. Results from the MOS Section of the screening test are shown in Tables 6-8 and 6-9. These tables include only those cases for which actual scores, as opposed to pass/fail data, were reported.

For the Common Section, the majority of soldiers in all MOS, both attendees and non-attendees, passed on the first trial and therefore needed no remedial training. Mean score differences between attendees and non-attendees in any MOS were not significant. Mean score differences between MOS were somewhat greater. MOS 13E and 13F had the highest scores while MOS 12B and 13B had the

Table 6-6

First BNCOC Screening Test Scores - Common Section
Academy Attendees

Number Correct	MOS Academy					All
	11C	12B	13B	13E	13F	
0	-	-	-	-	-	-
1	-	-	-	-	-	-
2	-	-	-	-	-	-
3	1	-	-	-	-	1
4	-	1	-	-	-	1
5	1	1	1	-	-	3
6	2	2	2	1	1	8
7	4	2	9	-	-	15
8	2	15	4	-	2	23
9	2	12	11	3	6	34
10	12	10	4	-	4	30
11	47	33	61	13	31	185
Mean	10.13	9.55	10.00	10.35	10.39	10.00
S.D.	1.68	1.63	1.58	1.37	1.13	1.57
	71	76	92	17	44	100

Table 6-7

First BNCOC Screening Test Scores - Common Section
Non-Attendees

Number Correct	MOS Academy					All
	11C	12B	13B	13E	13F	
0	-	-	-	-	-	-
1	-	-	1	-	-	1
2	-	-	1	-	-	1
3	1	2	4	-	-	7
4	1	1	4	-	-	6
5	3	3	10	-	1	17
6	4	6	16	-	6	32
7	11	12	29	-	3	55
8	11	20	33	-	6	70
9	9	32	32	3	11	87
10	15	16	23	11	14	79
11	110	131	202	33	108	584
Mean	10.10	9.84	9.53	10.64	10.32	9.87
S.D.	1.72	1.71	2.09	.61	1.37	1.81
N	165	223	355	47	149	939

Table 6-8

First BNCOC Screening Test Scores - MOS Section
Academy Attendees

Number Correct	MOS Academy					
	11C	12B	13B	13E	13F	A11
0	7	-	13	1	4	25
1	21	-	17	2	16	56
2	39	3	65	13	22	142
3	-	2	-	-	-	2
4	-	2	-	-	-	2
5	-	5	-	-	-	5
6	-	7	-	-	-	7
7	-	5	-	-	-	5
8	-	9	-	-	-	9
9	-	10	-	-	-	10
10	-	9	-	-	-	9
11	-	5	-	-	-	26
Mean	1.48	8.46	1.55	1.75	1.43	1.52*
S.D.	.68	2.63	.73	.58	.67	.69*
N	68	78	95	17	42	300

*Excludes 12B

Table 6-9

First BNCOC Screening Test Scores - MOS Section
Non-Attendees

Number Correct	MOS Academy					All
	11C	12B	13B	13E	13F	
0	29	2	59	1	11	102
1	33	5	68	11	49	166
2	92	4	231	35	90	452
3	-	12	-	-	-	12
4	-	10	-	-	-	10
5	-	7	-	-	-	7
6	-	11	-	-	-	11
7	-	21	-	-	-	21
8	-	22	-	-	-	22
9	-	24	-	-	-	24
10	-	10	-	-	-	10
11	-	76	-	-	-	76
Mean	1.41	8.16	1.48	1.72	1.53	1.49*
S.D.	.79	3.02	.76	.50	.63	.73*
N	155	204	358	48	150	915

*Excludes 12B

lowest. With mean scores ranging from 9.53 to 10.64 out of a possible passing score of 11, it is obvious that remediation was necessary for only one or two sets of problems for most soldiers.

For the MOS Section, the results were not quite so positive. With the exception of MOS 12B, the MOS Section had two sets of problems that were different for each CMF. The MOS Section for MOS 12B contained 11 sets of problems. Except for MOS 12B, the majority of soldiers, both attendees and non-attendees, passed on the first trial. For MOS 12B, only one-third of the soldiers passed on the first trial. Mean score differences among attendees and non-attendees were not significant. Mean score among MOS were greater. MOS 13F again scored highest and MOS 11C and MOS 12B scored lowest. For MOS 12B with a mean score of only 8.46 out of a possible 11, the need for remediation in more areas was greatest. For the remaining MOS, about one-quarter of the soldiers needed remediation in only one area and between 10-15 percent needed remediation in two areas.

BNCOC test results for all trials are shown in Table 6-10. This table includes all cases in which pass/fail indices were reported whether or not actual test scores were reported. More pass/fail indices were reported than were actual test scores. The number of cases and the percents shown in Tables 6-6 to 6-9, and in Table 6-10 are, therefore, different. The first trial pass rates ranged from 32 percent/26 percent for MOS 12B to 76%/76% for MOS 13E. The first trial pass rates for academy attendees were somewhat higher than for non-attendees. The pass rates for subsequent trials rose dramatically to 100

Table 6-10

BNCOC Screening Test Scores

Academy	Non-Attendees				Academy Attendees			
	Common Section		MOS Section		Common Section		MOS Section	
	N	Pct. Pass	N	Pct. Pass	N	Pct. Pass	N	Pct. Pass
11C								
First trial	393	28	392	24	81	58	81	49
Second trial	95	64	101	60	30	80	35	74
Third trial	14	86	14	86	1	100	5	100
Fourth trial	0	-	1	100	0	-	0	-
12B								
First trial	488	27	486	16	104	32	103	26
Second trial	137	65	171	57	57	77	64	72
Third trial	28	75	39	64	6	83	10	90
Fourth trial	3	100	7	71	1	100	1	100
13B								
First trial	591	34	590	39	158	39	158	42
Second trial	176	66	156	69	81	79	82	76
Third trial	26	50	19	60	10	100	11	100
Fourth trial	6	83	3	67	0	-	0	-
13E								
First trial	62	53	62	58	17	76	17	76
Second trial	15	93	13	85	3	100	3	100
Third trial	1	100	2	100	0	-	0	-
Fourth trial	0	-	0	-	0	-	0	-
13F								
First trial	242	46	242	38	69	45	69	32
Second trial	59	83	70	81	34	74	41	88
Third trial	4	100	9	89	5	100	4	100
Fourth trial	0	-	1	100	0	-	0	-
Total								
First trial	1776	33	1772	30	429	43	428	39
Second trial	482	68	511	65	205	78	225	77
Third trial	73	70	83	70	22	95	30	97
Fourth trial	9	89	12	75	1	100	1	100

percent for academy attendees, particularly between the first and second trials. In most cases, the intervening period between the first and second trials of the BNCOC test is when remedial training took place. Some training also took place between the second and third trials on the BNCOC test. The total number of reported hours of MGA instruction for BNCOC candidates is shown in Table 6-11. As these data indicate, approximately half of the candidates spent no more than ten hours taking MGA remedial instruction and only 15 percent spent over 30 hours. The investment in remedial instruction was therefore relatively limited.

Table 6-11

Total Hours of MGA Instruction

Total MGA Hours	Percent of Sample		Total N=609
	Academy Attendees N=198	Non-Attendees N=411	
1-5	28	28	28
6-10	23	16	18
11-15	20	12	14
16-20	12	14	13
21-25	4	6	6
26-30	4	8	6
Over 30	10	17	15

Tables 6-12 and 6-13 present data showing passing rates broken down by those for whom either no or some remedial MGA instruction was reported. Several points are of interest. The data for soldiers attending a BNCOC academy during our study period as shown in Table 6-12 are very similar to those shown in Table 6-13 for other candidates who did not attend an academy during the study period. Thus, it appears that the sample of attendees is fairly representative of the total candidate population. The first time pass rates of the soldiers for whom no remediation was reported are uniformly higher than for those for whom some remediation was reported. This is as it should be since there would be no reason for those who initially pass to be assigned remedial treatment. If, as according to policy, all soldiers not passing the first trial were assigned remedial instruction, then the first trial passing rate for the "No MGA" group should have been 100 percent. It appears that either some soldiers were administered additional trials of the BNCOC screening tests without intervening instruction, or any intervening instruction was something other than MGA, or intervening instruction was given but not recorded and reported.

For the group for whom some MGA instruction was reported, the most dramatic increases in passing rates were between the first and second trials. Most of the MGA instruction took place during this interval. It appears, therefore, that the MGA modules that were indexed to the sets of problems in the BNCOC screening tests effectively remediated, at least on a short-term basis, the deficiencies demonstrated. For both attendees and non-attendees, the 100 percent pass rate was achieved by the third test administration except

Table 6-12

Success on BNCOC Screening Test Scores in Relation to
MGA Hours - Academy Attendees

Academy	Common Section				MOS Section			
	No MGA		Some MGA		No MGA		Some MGA	
	N	Pct. Pass	N	Pct. Pass	N	Pct. Pass	N	Pct. Pass
11C								
First trial	50	76	31	29	50	66	31	19
Second trial	7	86	23	78	10	90	25	68
Third trial	0	-	1	100	1	100	4	100
Fourth trial	0	-	0	-	0	-	0	-
12B								
First trial	48	54	56	13	48	52	55	2
Second trial	8	75	49	80	11	64	53	74
Third trial	1	100	5	80	3	100	7	86
Fourth trial	0	-	1	100	0	-	1	100
13B								
First trial	88	61	70	10	88	66	70	10
Second trial	22	86	61	75	20	85	62	73
Third trial	1	100	9	100	1	100	10	100
Fourth trial	0	-	0	-	0	-	0	-
13E								
First trial	13	92	4	25	13	92	4	25
Second trial	0	-	3	100	0	-	3	100
Third trial	0	-	0	-	0	-	0	-
Fourth trial	0	-	0	-	0	-	0	-
13F								
First trial	34	62	35	29	34	59	35	6
Second trial	8	88	26	69	8	100	33	85
Third trial	1	100	4	100	1	100	3	100
Fourth trial	0	-	0	-	0	-	0	-
Total								
First trial	233	65	196	17	233	64	195	9
Second trial	45	84	162	77	49	84	176	75
Third trial	3	100	19	100	6	100	24	96
Fourth trial	0	-	1	100	0	-	1	100

Table 6-13

Success on BNCOC Screening Test Scores in Relation to
MGA Hours - Non-Attendees

Academy	Common Section				MOS Section			
	No MGA		Some MGA		No MGA		Some MGA	
	N	Pct. Pass	N	Pct. Pass	N	Pct. Pass	N	Pct. Pass
11C								
First trial	326	22	67	7	325	27	67	6
Second trial	39	49	56	75	44	48	57	70
Third trial	9	89	5	100	8	75	7	86
Fourth trial	0	-	0	-	0	-	1	100
12B								
First trial	363	29	126	20	361	21	126	2
Second trial	38	61	99	67	52	37	120	66
Third trial	5	80	23	74	11	36	28	75
Fourth trial	0	-	3	100	3	33	4	100
13B								
First trial	451	43	141	7	449	48	146	11
Second trial	47	60	129	69	34	62	122	70
Third trial	3	33	23	52	3	67	17	65
Fourth trial	0	-	6	83	0	-	3	67
13E								
First trial	46	67	16	13	46	72	16	19
Second trial	2	100	13	92	1	100	12	83
Third trial	0	-	1	100	0	-	2	100
Fourth trial	0	-	0	-	0	-	0	-
13F								
First trial	183	53	59	24	183	45	59	17
Second trial	16	88	43	84	24	13	46	80
Third trial	1	100	3	100	3	100	6	83
Fourth trial	0	-	0	-	0	-	1	100
Total								
First trial	1369	39	409	14	1364	36	409	9
Second trial	142	61	340	71	155	53	357	71
Third trial	18	78	55	69	25	60	60	75
Fourth trial	0	-	9	89	3	33	9	89

for a few isolated cases. Non-attendees in MOS 13B were the sole exception. The fact that some soldiers, who presumably had no assigned remedial instruction, also passed the BNCOC screening tests on subsequent trials indicates that something other than MGA instruction may also have been responsible for later successes on the test.

A direct analysis was made between gains made on successive trials of the BNCOC screening test and reported hours of MGA remediation. Gains in percent correct scores between the first and second administrations of the test, and between the second and third administrations were calculated separately for the Common and MOS Sections of the test. These gains were correlated with the number of hours of MGA instruction reported as having been associated with the intervening period between test administrations. Results of this analysis are in Table 6-14. The number of cases for which data were available was limited to approximately 100 for the differences between trials one and two and to an insignificant number between trials two and three. The coefficients between remedial hours and test score gains were low and statistically insignificant. Thus, while participation versus non-participation in MGA remedial modules appeared to be associated with increased pass rates, the association was not a direct linear one with the number of hours of participation.

Table 6-14

Correlations Between Remedial Hours and Test Score Gains

	Gains Between Trials 1 & 2		Gains Between Trials 2 & 3		Total Hours	
	Common Section	MOS Section	Common Section	MOS Section	Common Section	MOS Section
Pearson Correlation Coefficient	.20	-.11	.46	-.75		
No. of Cases	92	79	10	4		
Probability	.06	.33	.18	.25		
No. of cases	103	96	12	4	187	21
Mean	.18	.36	.21	.30	13.34	19.57
Standard Dev.	.12	.19	.11	.16	13.75	35.88

The number of remedial hours taken by soldiers who passed the screening test on either the second or third trial are shown in Table 6-15. In all cases, the mean number of remedial hours for those who passed the test on subsequent trials is lower than for those who failed. This is true for both the Common and MOS Sections of the test. This is most likely a reflection of the assignment of MGA modules in relation to the number of deficiencies on the screening test. The relationship between remedial hours and screening test

scores is therefore moderated by the size of the deficits demonstrated. This undoubtedly has the effect of attenuating the demonstrated relationship between remedial hours and test gains.

Table 6-15

Remedial Hours Versus Pass/Fail on Screening Test

	N	Attendees Mean	S.D.	N	Non-Attendees Mean	S.D.
<u>First Test Failures - Common Section</u>						
Pass	121	13.6	13.6	242	18.3	22.4
Fail	20	16.5	15.6	40	36.6	62.4
<u>Second Test Failures - Common Section</u>						
Pass	17	38.2	44.6	37	29.8	23.6
Fail	1	24.0	0.0	13	36.6	48.2
<u>First Test Failures - MOS Section</u>						
Pass	129	11.6	12.2	250	17.1	22.5
Fail	21	16.3	15.2	45	34.0	59.6
<u>Second Test Failures - MOS Section</u>						
Pass	22	31.6	41.3	44	26.2	21.4
Fail	1	24.0	0.0	10	43.5	53.6

Attrition

The actual attrition rate from BNCOC Academies during the period studied varied from 0 to 15 percent (see Table 6-16). Across all BNCOC academies the rate was 12 percent. The bulk of the attrition was attributed to academic rather than disciplinary or medical reasons. Since all attendees had presumably passed the screening test, it appears that there is a small problem with false positives (i.e., those identified as being able to successfully complete the course but who do not). The highest rate was experienced by MOS 12B followed closely by MOS 13B and MOS 11C in that order. The remainder of MOS in CMF 13 experienced considerably lower attrition rates. MOS 12B also had experienced the highest failure rate on the MOS Section of the screening test, but it contained 11 sets of problems as opposed to the two contained in the MOS Section for all other MOS.

Table 6-16

Attrition from BNCOC Academies

MOS Academy	N	Type of Attrition			N	Total Percent
		Academic	Disciplinary	Medical		
11C	105	12	0	0	12	11
12B	126	17	1	1	19	15
13B	183	22	1	2	25	14
13E	26	0	0	0	0	0
13F	84	4	1	0	5	6
All	524	55	3	3	61	12

The relationship between passing the screening test on the first and second trials and passing or failing the BNCOC academy are shown in Tables 6-17 through 6-20. First trial Common Section passes for MOS 13E correctly predicted passes in the academy but since no soldier failed during the period studied, the test incorrectly predicted academy performance for the few soldiers who failed the screening test. First trial test scores rather accurately predicted failures in the MOS 12B academy but did rather poorly in predicting academy success in that or other MOS academies. First trial MOS Section test scores more accurately predicted academy failures than they did success with the exception of MOS 13E as noted above.

Table 6-17

First Time BNCOC Screening Test Success Versus Academy
Success - Common Section

MOS Academy	Academy Success	BNCOC Screening Test Success		Percent Pass/Pass or Fail/Fail
		Fail	Pass	
11C	Pass	32	43	57
	Fail	2	4	33
12B	Pass	57	32	36
	Fail	12	1	92
13B	Pass	79	53	40
	Fail	17	8	68
13E	Pass	4	13	76
	Fail	0	0	0
13F	Pass	36	28	44
	Fail	2	3	40
All	Pass	211	169	44
	Fail	33	16	67

X = 2.543 p=.2805

Table 6-18

First Time BNCOC Screening Test Success Versus Academy Success - MOS Section

MOS Academy	Academy Success	BNCOC Screening Test Success		Percent Pass/Pass or Fail/Fail
		Fail	Pass	
11C	Pass	38	37	49
	Fail	4	2	66
12B	Pass	63	25	28
	Fail	11	2	85
13B	Pass	74	58	44
	Fail	19	6	76
13E	Pass	4	13	76
	Fail	0	0	0
13F	Pass	44	20	31
	Fail	3	2	60
All	Pass	226	153	40
	Fail	37	12	76

X = 4.64 p=.0984

Table 6-19

Second Time BNCOC Screening Test Success Versus Academy Success - Common Section

MOS Academy	Academy Success	<u>BNCOC Screening Test Success</u>		Percent Pass/Pass or Fail/Fail
		Fail	Pass	
11C	Pass	6	23	79
	Fail	0	1	0
12B	Pass	7	38	84
	Fail	5	5	50
13B	Pass	11	55	83
	Fail	7	10	41
13E	Pass	0	3	100
	Fail	0	0	0
13F	Pass	9	22	71
	Fail	0	3	0
All	Pass	34	141	81
	Fail	12	19	39

$\chi^2 = 10.85 \quad p = .004$

Table 6-20

Second Time BNCOC Screening Test Success Versus Academy Success - MOS Section

Academy	Success	BNCOC Screening Test Success		Percent Pass/Pass or Fail/Fail
		Fail	Pass	
11C	Pass	8	24	75
	Fail	1	2	33
12B	Pass	12	40	77
	Fail	6	4	60
13B	Pass	14	50	78
	Fail	6	12	33
13E	Pass	0	3	100
	Fail	0	0	0
13F	Pass	5	33	87
	Fail	0	3	0
All	Pass	40	150	79
	Fail	13	21	38

$\chi^2 = 10.66$ $p = .005$

Second trial test scores routinely predicted academy success fairly effectively except for the lengthy MOS Section for MOS 12B. For this MOS, the screening test predicted failures more effectively.

Task Performance Data

While pass/fail data give a gross measure of academy performance, number of task trials data provide a somewhat more detailed measure of academy performance. The frequencies with which attendees received NO GOs on task performance tests are shown in Table 6-21. Note that about 31 percent of the attendees passed all of the required task performance tests on the first trial. Approximately 80 percent of the attendees passed all required task performance tests on the first or second trial and all but a few soldiers passed after three trials. As shown in Table 6-22, 90 percent of the attendees successfully passed over two-thirds of the task performance tests on the first trial.

Table 6-21

Task Performance Failures in NCO Academies

Number of Tasks	Number of Soldiers		
	First Trial	Second Trial	Third Trial
0 (All Go's)	161	260	93
1-5	249	87	5
6-10	62	10	0
11-15	27	3	1
16-20	16	1	0
Over 20	10	1	0
No data	2	4	7

Table 6-22

Frequency of Correct First Trial Task Performance

MOS	Percent Correct			Total
	0-35	36-70	71-100	
11C	0	14	90	104
12B	0	2	123	125
13B	9	19	157	185
13E	0	1	22	23
13F	0	1	81	82
All	9	37	473	519

A correlational analysis of screening test scores and the composite index of all NO GOs produced statistically significant coefficients between .14 and .28. Thus, the empirical validity of the screening test for predicting task error performance at the academies was low, but positive, and beyond chance probabilities.

Summary

Attempts to ameliorate a problem of excessive attrition at BNCOC academies were focused on identifying soldiers' deficiencies in basic mathematical educational skills and on assigning remedial instruction to strengthen soldiers' proficiency in these skills. In FORSCOM, the remedial instruction consisted of modules from the MGA curriculum that were keyed to sets of

problems included on the screening tests. Some sets of problems applied to several MOS while others were specific to a single MOS or CMF.

Screening test and academy performance data were made available to the project staff for a sample of BNCOC candidates from FORSCOM. These data were analyzed to determine relationships between test scores, MGA remedial instruction, and performance at BNCOC.

Many BNCOC candidates passed both the Common and MOS Sections of the screening test on the first trial and therefore did not require any remedial instruction. Of those who did not pass on the first trial, most needed remediation in only one or two areas. Thus, about one-half of the candidates in the sample took no more than ten hours of remedial instruction and only about 15 percent of the candidates took over 30 hours.

The largest gains in test scores were made between the first and second trials of the screening test. The largest part of the remedial instruction took place during this intervening period. MGA remedial instruction thus seemed to be effective in helping soldiers to pass the screening tests. The fact that many soldiers passed subsequent trials of the test after initial failures without having any recorded remedial instruction indicates that MGA instruction was not the only mediating factor leading to later success. This was further corroborated by the lack of significant statistical relationships between the reported number of remedial hours taken and gains in percent correct test scores. Thus, it appears that while MGA modules increased soldiers' proficiency in basic mathematical educational skills sufficiently to

pass the screening test, other intervening variables also played a part. A low, positive, non-chance relationship between test scores and task error performance in BNCOC academies was established.

CHAPTER 7

SUMMARY

The American Institutes for Research (AIR) has provided evaluation support during the Army's development of BSEP programs; these evaluation activities have been described previously in 46 project reports. In this Final Report, we have described the following activities:

- The evaluation plan and activities
- BSEP English-as-a-second-language programs in the Army
- Review of BSEP curricula
- Effects of BSEP
- Quality control system
- BSEP preparation for NCOES participation

A complete description of the activities AIR engaged in during the evaluation period, with respect to the originally designated program components, is presented in Chapter 1. This chapter summarizes the activities presented in this Report.

BSEP-ESL in the Army

Our study of BSEP English-as-a-second-language (ESL) programs supports the view that Army ESL programs are likely to continue through this century. At the same time that the prime accession age group is expected to decrease, the minority populations are expected to increase. And, probably, increased pressure will be placed on the Army to recruit Spanish-speaking enlisted personnel as well as officers.

BSEP ESL Programs

Initial ESL programs. When AIR began its evaluation of BSEP ESL programs in 1981, five ESL programs were in existence:

- BSEP I ESL programs operating at TRADOC installations
- BSEP II ESL programs at permanent duty stations
- Puerto Rican Army National Guard (PRARNG) ESL program in Puerto Rico for National Guard trainees prior to BT and AIT training in the continental United States
- Six-month experimental ESL program at the Defense Language Institute English Language Center (DLIELC)
- Three-month experimental ESL program at DLIELC

Current programs. The Army is currently conducting three ESL programs for enlisted personnel and three for officers or officer candidates:

- DLIELC resident program for enlisted personnel
- BSEP II ESL
- PRARNG program for enlisted personnel
- University of Puerto Rico (UPR) on-campus ROTC program
- PRARNG-LC ROTC summer program
- DLI officers' program

Changes in BSEP I ESL

In Chapter 2, we noted the changes that have taken place in BSEP I programs over the five-year evaluation period. Our studies indicate that the content and conduct of the initial BSEP I ESL programs varied considerably from the definition of the programs found in Army Regulation 621-45. Not only were there variations in program size, management, and curriculum, but also in the use of ESL techniques to improve students' abilities to gain fluency in spoken English. We learned that lack of pre-service and in-service training of teachers, as well as the nature of the activities emphasized in each of the curricula, affected the quality of the programs.

Overall, the Army ESL programs have improved during the BSEP development period. As a result of changing from a decentralized program, and from multiple curricula to a common curriculum, the quality of the BSEP I ESL instruction has improved. The major difference between the current DLI program and the earlier programs is that the current program length varies based on an assessment of each student's language proficiency. In addition to the ECLT standard of 70, students now must achieve comprehension and speaking standards.

Program Effects

In Chapter 2, we reported effects as they related to immediate language gains and to training.

Immediate language gains. When program gains are calculated in terms of mean ECLT points gained per week, most programs show an ECLT gain between 2.0 and 2.5 points per week. Although the mean ECLT gain was 0.9 points per week for the officer's program at DLIELC, the gain is essentially meaningless; it is a function of the test ceiling.

Effects on training. Our data show a linear relationship between completing Basic Training (BT) and language proficiency as measured by the ECLT. Based on these data, we have estimated that the language gains resulting from the Pre-BT program should have reduced BT attrition of non-native speakers by nearly 40 percent.

Continuing Problems and Concerns

Our five years of study point to the need for the Army to focus on two areas: language standards and curriculum methods. To improve the ability of the ESL programs to teach soldiers the English skills they need to perform their jobs, the relationship between specific language skills and job skills must be identified. The Army must then assess whether or not the curriculum in use is teaching soldiers these critical language skills.

BSEP Curricula

In Chapter 3, we reviewed the major curricula developed, under development, or in use at the installations during the BSEP development period.

These included:

- Functional Basic Skills Education Program (FBSEP)
- Temple University BSEP II Curriculum
- Central Texas College (CTC) BSEP II Curriculum
- Murray State University BSEP II Curriculum
- Fort Lewis Experiment (FLX)
- McFann, Gray & Associates (MGA) BSEP II Curriculum
- FORSCOM Revision of the McFann, Gray & Associates BSEP II Curriculum
- Job Skills Education Program (JSEP)

We described each of the programs with respect to:

- program objectives and content
- curriculum
- materials
- military content
- teaching techniques
- testing

Program Content

Because they responded to Army requirements, the objectives of each of the programs were essentially the same. Each of the curricula taught the basic academic skills that were required for learning MOS job tasks.

Curriculum

Each of the curricula followed a systematic prescriptive approach. Students were assigned to a set of classroom activities based on their pre-test scores on a standardized test.

Materials

All of the curricula were paper-based and used workbooks or worksheets. Only the JSEP curriculum was taught primarily via computer.

Military Content

The programs varied in the amount of military content in the curriculum. FBSEP, the FLX, and the revised MGA used only military materials as resources.

Teaching Techniques and Testing

It was not possible to conduct an analysis of program effects due to a lack of data on each of the BSEP programs. And, no data were available that would provide the Army with information about the type of instruction that would be most effective in improving soldiers' job performance.

BSEP Program Effects

In Chapter 4, we presented data on seven BSEP courses on which AIR collected data during the evaluation period. We obtained access to data on twelve samples:

- Six-month resident ESL course at DLI
- Three-month resident ESL course at DLI
- New six-week Pre-BT ESL course at TRADOC installations
- Old six-week ESL courses at TRADOC installations
- TRADOC BSEP I literacy courses from 1979-1981
- BSEP II literacy courses for FY80
- BSEP II literacy courses for FY81
- BSEP II literacy courses for FY82
- Functional BSEP course for MOS 05C
- Functional BSEP course for MOS 31M
- Early implementation cycles of the MGA curriculum
- Later cycles of the MGA curriculum

Our purpose in analyzing these data was to assess the potential effects of BSEP participation on factors such as attrition, reenlistment, career progression, and occupational proficiency. Control samples were available for four of the samples studied. Comparison groups were generated from the existing data bases for the remaining eight samples.

For all of the samples studied, those who had participated in BSEP showed more favorable results on the measures studied than did the comparison groups.

First-Term Attrition

Students who attended the old Pre-BT ESL course had the lowest attrition rates of the BSEP I courses studied. Smaller, but favorable differences were shown for the new Pre-BT ESL course with respect to attrition. In BSEP I

literacy courses for which there were individually identified control groups, program participants showed a slightly lower attrition rate than did the control groups. However, when we compared a demographically selected control group with the participants, the matched group showed a lower attrition rate and a higher reenlistment rate than did the participants. Participants in all BSEP II literacy groups had significantly lower attrition rates than did their comparison groups.

First-Term Reenlistment

There were no statistically significant differences in the first-term reenlistment rates for BSEP I literacy or BSEP I ESL participants except for those participating in the new Pre-BT ESL course. All BSEP II literacy students, however, showed higher reenlistment rates than did the comparison groups.

Promotion Rates

In all cases, the program participants showed slightly higher promotion rates than did the control or matched groups.

SQT Scores

All samples, except the three-month resident ESL course, showed higher mean scores on the SQT for program participants.

Mental Ability Measures

Control groups were matched to participant groups on mental ability measures. Any initial differences favored the control groups. Nonetheless, all gains that were analyzed favored the participant groups.

Academic Competencies

We looked at two types of measures to analyze the effects on program objectives. One measure was the degree to which students learned the course material. Our analyses showed that the participants learned much but not all of the material presented to them in the courses. We also looked at two measures of general academic skills: the Tests of Adult Basic Education (TABE) and the Adult Basic Learning Examination (ABLE). Because of norming procedures, it was not possible to determine the equivalence between the two tests. All groups, however, showed gains on the academic competencies measured by these tests.

Quality Control System

In Chapter 5, we discussed AIR's development of a prototype Quality Control System for all ACES programs. The prototype required the system to include goal statements, BSEP-specific evaluation issues, locus of activities, and specific data requirements. The plan included a comprehensive management information database which was intended to provide the necessary empirical data to allow a central monitoring agency to monitor six major control functions:

- monitor the service member population being served
- monitor the extent to which BSEP courses teach what they set out to teach
- monitor the extent to which BSEP courses engender gains in educational competencies as measured by the TABE, ASVAB, Locator/diagnostic tests, the English Comprehension Level Test (ECLT), and the SelectABLE/ABLE
- monitor the extent to which various BSEP programs are carried out as they are intended to be
- decide which of several available BSEP programs to implement at the training base, at MACOMs, or Army-wide

AIR had two opportunities to use the data elements from the proposed quality control system. For the analysis of the MGA early implementation and the formal implementation, the feasibility of collecting data in the recommended fashion was tested. In another study of the effects of MGA lesson materials on soldiers' performance in Basic Non-Commissioned Officer's Course (BNCOC) academies, AIR collected data in the same fashion. Both studies demonstrated the feasibility of a central agency responsible for establishing and maintaining a quality control system.

BSEP Preparation for NCOES Participation

In response to reports from BNCOC academies that candidates frequently lacked the basic academic skills to pursue the course of studies, FORSCOM developed screening tests to be administered to all candidates. The tests consisted of a common portion to be given to all candidates, and an MOS specific portion. Those who failed the screening tests were then assigned to perform a set of MGA activity sheets to remediate the specific deficiencies that had been diagnosed on the screening test. Approximately half of the BNCOC candidates received 10 hours or fewer of MGA remedial instruction, and only about 15 percent took over 30 hours of instruction.

AIR evaluated a set of data on soldiers who had been tested on the screening test. Most soldiers passed the Common Section of the screening test on the first trial. Mean score differences for BNCOC Academy attendees and non-attendees in any MOS were not significant.

On the MOS Section, mean score differences between BNCOC Academy attendees and non-attendees were not significant. However, mean score differences between MOS were greater on the MOS Section than on the Common Section.

The data show that the MGA modules that were indexed to the sets of problems in the BNCOC screening tests were effective in remediating the deficiencies identified on the screening tests. However, because many soldiers successfully passed the screening test on the second and third trials after failing on the first trial, but did not receive any MGA instruction between trials, we can assume that factors other than the MGA materials probably affected their subsequent performance.

PROJECT REPORTS

1. Allen, B., Dory, S., Hahn, C., Rosenbaum, H., and Stoddart, S.C. Summary data concerning the need for and expected effects of developing and implementing the functional MOS oriented basic skills program (JSEP). Washington, D.C.: American Institutes for Research, April 1983. (AIR-89927-4/83-RP)
2. Hahn, C.P. BSEP I data base analyses in relation to the TRADOC BSEP I evaluation report. Status Report. Washington, D.C.: American Institutes for Research, February 1982. (AIR-89911)
3. Hahn, C.P. Survey procedures for FBSEP II/JSEP needs assessment. Memorandum. Washington, D.C.: American Institutes for Research, January 1983.
4. Hahn, C.P. Evaluation of the U.S. Army basic skills education program. Semi-Annual Technical Report No. 3. Washington, D.C.: American Institutes for Research, August 1983. (AIR-89900-8/83-TR(3))
5. Hahn, C.P. Review of the U.S. Army job skills education program. Interim Report. Washington, D.C.: American Institutes for Research, October 1984. (AIR-34511-10/84-IR)
6. Hahn, C.P. Review of the U.S. Army job skills education program. Interim Report (2). Washington, D.C.: American Institutes for Research, March 1985. (AIR-34511-3/85-IR(2))
7. Hahn, C.P. Support of the TRADOC MOS baseline skill project. Final Report. Washington, D.C.: American Institutes for Research, March 1985. (AIR-34515-3/85-FR)
8. Hahn, C.P. Review of the U.S. Army job skills education program. Interim Report (2). Washington, D.C.: American Institutes for Research, September 1985. (AIR-34511-9/85-IR(2))
9. Hahn, C.P. Review of the U.S. Army job skills education program. Final Report. Washington, D.C.: American Institutes for Research, May 1986.
10. Hahn, C.P. and Edwards, D.S. Interanalyst agreement in the assignment of prerequisite competencies for job task performance. Washington, D.C.: American Institutes for Research, October 1982. (AIR-89912-10/82-IR)
11. Hahn, C.P. and Krug, R.E. Development of a quality control system for ACES. Concept paper. Washington, D.C.: American Institutes for Research, November 1983. (AIR-89924-11/83-RP(1))
12. Hahn, C.P. and Krug, R.E. Design for a BSEP quality control system for HQDA (DAAG-ED). Washington, D.C.: American Institutes for Research, January 1984. (AIR-89924-1/84-RP(2))

13. Hahn, C.P., Krug, R.E., McLaughlin, D.H., Russ-Eft, D.F., and Wise, L.L. Evaluation of the U.S. Army basic skills education program. Semi-Annual Technical Report No. 2. Washington, D.C.: American Institutes for Research, March 1982. (AIR-89900-8/82-TR(2))
14. Hahn, C.P., Krug, R.E. and Wise, L.L. Evaluation of the U.S. Army basic skills education program. Semi-Annual Technical Report No. 1. Washington, D.C.: American Institutes for Research, October 1981. (AIR-89900-10/81-TR(1))
15. Hahn, C.P., and Rosenbaum, Harvey. Evaluation of the U.S. Army basic skills education program. Semi-Annual Technical Report No. 4, Washington, D.C.: American Institutes for Research, March 1984. (AIR-89900-3/84-TR(4))
16. Hahn, C.P., Rosenbaum, H., and Stoddart, S.C. Evaluation of the U.S. Army basic skills education program. Semi-Annual Technical Report No. 6. Washington, D.C.: American Institutes for Research, March 1984. (AIR-89900-3/84-TR(6))
17. Hahn, C.P., Rosenbaum, H., and Stoddart, S.C. Evaluation of the U.S. Army basic skills education program. Semi-Annual Technical Report No. 7. Washington, D.C.: American Institutes for Research, October 1984. (AIR-34518-9/84-TR(7))
18. Hahn, C.P., and Stoddart, Susan C. Evaluation of the U.S. Army basic skills education program. Semi-Annual Technical Report No. 5. Washington, D.C.: American Institutes for Research, March 1984. (AIR-89900-3/84-TR(5))
19. Hahn, C.P. and Stoddart, S.C. Evaluation of the McFann Gray & Associates' BSEP II Curriculum. Final Report. Washington, D.C.: American Institutes for Research, August 1985. (AIR-34512-8/85-TR)
20. Hahn, C.P. and Stoddart, S.C. Evaluation of the McFann Gray & Associates' BSEP II Curriculum. Supplementary Report. Washington, D.C.: American Institutes for Research, November 1985. (AIR-34512-11/85-TR)
21. Holland, V.M. An audience assessment of MOS 11B language skills. Washington, D.C.: American Institutes for Research, March 1982. (AIR-89913-3/82-IP)
22. Holland, V.M., Rosenbaum, H., Stoddart, S.C. and Redish, J.C. BSEP I/ESL programs - Volume one: Findings. Washington, D.C.: American Institutes for Research, October 1982. (AIR-89913-10/82-IR)
23. Holland, V.M., Rosenbaum, H., Stoddart, S.C. and Redish, J.C. BSEP I/ESL programs - Appendix: Questionnaires and other data collection forms. Washington, D.C.: American Institutes for Research, October 1982. (AIR-89913-10/82-IR)
24. Holland, V.M., Rosenbaum, H., Stoddart, S.C. and Redish, J.C. BSEP I/ESL programs - Volume two: Program descriptions. Washington, D.C.: American Institutes for Research, October 1982. (AIR-89913-10/82-IR)
25. Krug, R.E. Army ESL training: Some issues. Memorandum. Washington, D.C.: American Institutes for Research, March 1982.

26. Krug, R.E. Analysis of BSEP I and BSEP II data files. Research Memorandum. Washington, D.C.: American Institutes for Research, July 1982.
27. Krug, R.E., and Hahn, C.P. Evaluation of the U.S. Army basic skills education program. Semi-Annual Technical Report No. 1. Washington, D.C.: American Institutes for Research, August 1981. (AIR-89900-8/81-TR)
28. Krug, R.E., and Hahn, C.P. Review of BSEP I and BSEP II programs: Task 1 report. Interim Report. Washington, D.C.: American Institutes for Research, September 1982. (AIR-89900-9/82-IR)
29. Krug, R.E., Hahn, C.P. and Wise, L.L. Review of BSEP I and BSEP II programs. Task One Report. Washington, D.C.: American Institutes for Research, July 1984. (AIR-89900-7/84-TR)
30. Krug, R.E. and Wise, L.L. Interim status report on ESL training. Washington, D.C.: American Institutes for Research, January 1982. (AIR-89913-1/82-IR)
31. Krug, R.E., and Wise, L.L. Analyses of BSEP I and II data files. Research Memorandum 82-1. Washington, D.C.: American Institutes for Research, July 1982. (AIR-89900-7/82-IR)
32. Krug, R.E., Wise, L.L., and Hahn, C.P. Consideration of regression effects in interpreting gain scores on pre/post tests. Research Note Number 1. Washington, D.C.: American Institutes for Research, June 1984. (AIR-34500-6/84-RP(1))
33. Redish, J.C. BSEP I/ESL programs: Executive summary. Washington, D.C.: American Institutes for Research, October 1982. (AIR-89913-10/82-IR)
34. Rosenbaum, H. Summary of initial impressions of BSEP in USASREUR. Memorandum. Washington, D.C.: American Institutes for Research, September 1982.
35. Rosenbaum, H. Evaluation of the functional pre-BT ESL course. Interim Report. Washington, D.C.: American Institutes for Research, October 1983. (AIR-89923-10/83-IR)
36. Rosenbaum, H. Testing the English language proficiency of soldiers who are not native English speakers. In proceedings of the meeting of the Military Testing Association, Gulf Shores, Alabama, October 1983.
37. Rosenbaum, H. Attrition and performance ratings of ESL soldiers in BT. In proceedings of the meeting of the Military Testing Association, San Diego, California, October 1985.
38. Rosenbaum, H. and Stoddart S.C. Evaluation of the functional pre-BT ESL course. Interim Report No. 2. Washington, D.C.: American Institutes for Research, February 1984. (AIR-89923-2/84-IR(2))
39. Rosenbaum, H., Stoddart, S.C., and Hahn, C.P. Evaluation of the functional pre-BT ESL course. Final Report. Washington, D.C.: American Institutes for Research, December 1984. (AIR-34513-12/84-FR)

40. Russ-Eft, D.F., and McLaughlin, D.H. Formative evaluation of the basic skills education program (BSEP II): Implementation of the Feuerstein instrumental enrichment program - Fort Knox. Palo Alto, CA: American Institutes for Research, February 1983. (AIR-89900-2/83-TR)
41. Stoddart, S.C. BT and AIT follow-up of three-month ESL course. Research Memorandum 82-2. Washington, D.C.: American Institutes for Research, August 1982. (AIR-89900-8/82-IR)
42. Stoddart, S.C. and Hahn, C.P. An analysis of responses to the survey questionnaire for commanders and key NCOs at Army posts in Germany and Panama. Washington, D.C.: American Institutes for Research, March 1983. (AIR-89911-3/83-IR)
43. Stoddart, S.C. and Hahn, C.P. A review of RCA's design specifications. Informal Report. Washington, D.C.: American Institutes for Research, August 1983.
44. Stoddart, S.C. and Hahn, C.P. Needs assessment for the job skills education program. Final Report. Washington, D.C.: American Institutes for Research, September 1983. (AIR 89927-9/83-FR)
45. Stoddart, S.C. and Hahn, C.P. Preliminary report on the initial implementation of the McFann, Gray & Associates' BSEP II curriculum. Interim Report. Washington, D.C.: American Institutes for Research, October 1984. (AIR-34512-10-84-IR)
46. Stoddart, S.C. and Hahn, C.P. Preliminary report of formal evaluation of the McFann, Gray & Associates' BSEP II curriculum. Interim Report. Washington, D.C.: American Institutes for Research, February 1985. (AIR-34512-2/85- IR(2))

In-Process Reviews and Briefings

- 17 December 1981: IPR at ARI, Alexandria, Virginia
- 27 January 1982: Special briefing on status of BSEP ESL at The Pentagon
- 3 March 1983: IPR at ARI, Alexandria, Virginia
- 16 January 1984: IPR at HQDA, Alexandria, Virginia
- 20 February 1985: IPR at ARI, Alexandria, Virginia
- 18 June 1986: IPR at HQDA, Alexandria, Virginia

REFERENCES

Barbosa, G.H., Gosnell, W., & Evans, C. (1986). The Latin American challenge and Army Hispanic soldier policy. Washington, D.C.: Secretary of the Army, Manpower and Reserve Affairs.

Berry, D.W., Oxford-Carpenter, R., Gendell, M., & Wheatley, G.A. (1985). Impacts of an increasing Hispanic population on selected U.S. Army policy options. Washington, D.C.: Miranda Associates, Inc.

APPENDIX

Subjects Taught in BSEP Curricula

FUNCTIONAL BASIC SKILLS EDUCATION PROGRAM (FBSEP)

05 C Course

- A-01 Understanding FBSEP
- A-06 Memorizing Meanings of Prowords
- A-07 Memorizing Meanings of Prosigns
- A-08 Identifying Relationships Between Prowords and Prosigns

- B-01 Using the Organizing System in the Soldiers Manual
- B-02 Using the Organizing System in the Soldiers Manual
- B-03 Using and Organizing the System in a Technical Manual
- B-05 Finding Information in a Table of Contents
- B-06 Finding Information in an Index
- B-07 Finding Information in Text
- B-08 Finding Information in an Illustration
- B-09 Finding Information in Tables
- B-10 Finding Information in Diagrams
- B-11 Finding Information in Manuals
- B-12 Matching Terms with Their Definitions
- B-13 Matching Terms with Their Definitions
- B-14 Matching Terms with Their Definitions
- B-15 Matching Terms with Their Definitions
- B-16 Matching Terms with Their Definitions
- B-18 Integrating Information to Form Concepts: Message, Radio Sets, Teletypewriter Sets
- B-19 Integrating Information to Form Concepts: Antenna, Generator
- B-20 Integrating Information to Form Concepts: Security, ECM/ECCM
- B-21 Integrating Information to Form Concepts: Operator and Maintenance MOS, Manuals
- B-23 Comprehending Reading Passages on Topics Related to Radio Teletype Communication
- B-24 Comprehending Reading Passages on Topics Related to Radio Teletype Communication
- B-25 Comprehending Reading Passages on Topics Related to Radio Teletype Communication
- B-26 Comprehending Reading Passages on Topics Related to Radio Teletype Communication
- B-27 Comprehending Reading Passages on Topics Related to Radio Teletype Communication
- B-28 Deciding if Information is Missing in a Message
- B-29 Deciding if Information in a Message is in Error
- B-30 Detecting Problems in Messages
- B-31 Finding Information in Illustration Using Text

- C-03 Arranging Single Letters in Alphabetical Order
- C-04 Arranging Letter-Number-Letter Groups in Alphanumeric Order
- C-05 Spelling Commonly Used Military Words
- C-06 Spelling Commonly Used Military Words
- C-07 Spelling Commonly Used Military Words

- C-08 Printing Text of Message Presented Orally
- D-01 Changing Civilian Time to Military Time
- D-02 Adding Hours to Military Time
- D-03 Subtracting Hours From Military Time
- D-04 Adding or Subtracting Hours Moving Across Days
- D-05 Adding Two Numbers which Contain Decimals
- D-06 Subtracting Two Numbers which Contain Decimals
- D-07 Finding 10% of a Number
- D-08 Finding Numbers which are 10% Above and Below a Given Number
- D-09 Multiplying a 5-digit Number by a 1-digit Number
- D-10 Subtracting 5 or 6-digit Numbers
- D-11 Dividing 7-digit Numbers by 6-digit Numbers
- D-12 Rounding off a Number Containing Two Decimal Places to the Nearest 10th
- D-13 Dividing 468 by a Number Containing a Decimal
- D-14 Dividing 468 by a Number Containing a Decimal and Rounding off the Answer to the Nearest 10th

31 M Course

Reading Comprehension

- 1-01 Vocabulary
- 1-02 Strategies for Understanding Sentences
- 1-03 Reading Negative Sentences
- 1-04 Reading Sentences with Dependent Clauses
- 1-05 Ordering One, Two, or Three Tasks
- 1-06 Determining the Order of Steps: Multiple Actions
- 1-07 Understanding Lists and Paragraphs

Using a Table of Contents

- 2-01 Chapters and Sections
- 2-02 Using a Task List to Find a Task Description
- 2-03 Tables with Paragraph Numbers and Page Numbers

Listening Skills

- 3-01 Remembering Information Heard in Lectures
- 3-02 Remembering Information Seen in Demonstrations
- 3-03 Recognizing When Important Information is Missing

Note-Taking for Demonstration

- 4-01 Basic Note-Taking Skills
- 4-02 Taking Notes to Show Sequence
- 4-03 Taking Notes to Show Relationships

Recognizing a Part of a Whole

- 5-01 Recognizing a Part of a Whole

Locating Information in Tables

- 6-01 The Structure of Tables and Diagrams
- 6-02 Interpreting Table Headings
- 6-03 Locating Information in 31M Tables

Reading Cabling Diagrams

- 7-01 The Structure of Tables and Diagrams (Same as Unit VI, Lesson 1)
- 7-02 Identifying Connections in Simple and Complex Cabling Diagrams

Diagnosing Equipment Malfunctions

- 8-01 Deciding Whether an Indication is Normal
- 8-02 Deciding Whether There is Something Wrong Based on 2 or More Indicators
- 9-03 Finding Descriptions of Symptoms: One Indicator
- 9-04 Finding Descriptions of Symptoms: Two or More Indicators

Scale Reading

- 10-01 Labeling Place Values
- 10-02 Numbering Scale Points
- 10-03 Scales Divided Into Tenths
- 10-04 Comparing Scale Settings

TEMPLE UNIVERSITY

MATH

WHOLE NUMBERS/FRACTIONS

A. Whole Numbers

- 1) Notation/relations
Compare
Round-off
- 2) Compute multi-digit
Addition
Subtraction
Multiplication
Division
- 3) Concepts
Open sentences
Substitutions
- 4) Use
Graphs, charts, tables
Problems

B. Fractions

- 1) Notation/relations
Equivalence
Comparison
- 2) Computation
Addition
Subtraction
Multiplication
Division
- 3) Concepts
Number line
Set
Ratio
Proportion
- 4) Use/Problems

DECIMALS/PERCENT

A. Decimals

- 1) Notation/relations
Written name
Place value
Equivalence
Round off
Compare
- 2) Computation
Addition

- Subtraction
- Multiplication
- Division
- 3) Concepts
 - "Parts" of numbers
- 4) Use
 - Word Problems

B. Percent

- 1) Notation/relations
 - Fractions--%
 - % - decimal
 - % - fractions
 - % - 1
 - % - 100
- 2) Concepts
 - Rate, base, percentage
- 3) Use
 - Problems
 - Circle graph

MEASUREMENT/GEOMETRY

A. Measurement

- 1) Notation/relations
 - Read ruler
 - Convert, non-metric
 - Estimate, metric
 - Convert, metric
- 2) Computation
 - Addition
 - Subtraction
 - Multiplication
- 3) Use
 - Problems

B. Geometry

- 1) Notation/relations
 - Symbols and terms
- 2) Concepts
 - Degrees
 - Pi
 - Perimeter
 - Area, polygon
 - Volume
 - Area
 - Circumference, Circle
 - Similar triangles

Additional Topics

1. Place value
2. Patterns
3. Mental Computation
4. Checking
5. Estimation
6. Number Theory
7. Properties of Numbers Prime/Composite
8. Formulas
9. Probability
10. Integers
11. Algebra

COMMUNICATIONS

A. ORGANIZATION AND DEVELOPMENT

1. Sequence and detail
2. Narrative Writing
3. Descriptive Writing
4. Support and Relevance
5. Persuasive Writing
6. Other Writing Assignments

B. SENTENCE STRUCTURE

1. Fragments
2. Run-on Sentences
3. Use of End Punctuation

C. GRAMMATICAL USAGE

1. Subject-Verb Agreement
2. Verb Tense
3. The Verb To Be
4. Adjective/Adverb Use
5. Comparative/Superlative Use
6. Articles
7. Negatives
8. Pronouns and Demonstratives

D. SPELLING LEVEL

E. MECHANICS

Capitals

1. Initial Capitals
2. Proper Nouns, Names, Titles
3. Pronoun I

Commas

4. Introductory Construction
5. Parenthetical Construction
6. Dates and Addresses
7. Items in a Series
8. Quotations

Apostrophes

9. Contractions
10. Possessives
11. Abbreviations
12. Quotation Marks

F. WORD USAGE

1. Homonyms
2. Troublesome Words

G. SPEAKING SKILLS

1. Directions and Instructions
2. Explanations and Briefings

H. LISTENING SKILLS

1. Main Idea and Detail
2. Summarizing
3. Following Directions

I. ADVANCED WRITING SKILLS

1. Sentence Variety
2. Unity and Coherence
3. Vocabulary and Word Choice
4. Military Writing

READING

A. Phonics Analysis

- 1 Consonants
 - 1a Beginning
 - 1a1 Single
 - 1a2 Blends/digraphs
 - 1b Final
 - 1b1 Single
 - 1b2 Blends/digraphs
- 2 Vowels
 - 2a Short
 - 2b Long

B. Structural Analysis

- 1 Syllabication
- 2 Root words
- 3 Prefixes
- 4 Suffixes
- 5 Inflections
- 5a Plurals
- 5b Possessives
- 5c Tense
- 5d Contractions

C. Vocabulary

- 1 Synonyms
- 2 Antonyms
- 3 Homonyms

D. Reference Skills

- 1 Alphabetizing
- 2 Table of Contents
- 3 Index

E. Comprehension Skills

- 1 Literal
- 1a Details
- 1b Main Idea
- 2 Interpretive
- Inference
- 3 Vocabulary

F. Higher Comprehension Skills

- 1 Literal
- 1a Sequence
- 1b Following directions
- 1c Cause and effect
- 2 Interpretive
- 2a Predicting outcomes
- 2b Author's purpose
- 2c Figurative language
- 3 Evaluative
- 3a Fact and opinion
- 3b Using knowledge to think critically

G. Oral Reading

- 1 Inflection
- 2 Attention to punctuation
- 3 Word attack

MURRAY STATE UNIVERSITY

MATHEMATICS

WHOLE NUMBERS

- 1-1 Place value
- 1-2 Place value

ADDITION OF WHOLE NUMBERS

- 1-3 Addition of one-digit whole numbers
- 1-4 Addition of one-digit whole numbers
- 1-5 Adding larger numbers
- 1-6 Adding and carrying
- 1-7 Word Problems

SUBTRACTION OF WHOLE NUMBERS

- 1-8 Subtraction of one-digit whole numbers
- 1-9 Subtracting larger numbers
- 1-10 Subtracting by borrowing
- 1-11 Subtracting by borrowing
- 1-12 Subtracting numbers written horizontally
- 1-13 Word problems

MULTIPLICATION OF WHOLE NUMBERS

- 1-4 Basic multiplication facts
- 1-15 Multiplying larger numbers
- 1-16 Multiplying and carrying
- 1-17 Multiplying by 10, 100, 1000
- 1-18 Word problems

DIVISION OF WHOLE NUMBERS

- 1-19 Basic Division facts
- 1-20 Division by one number
- 1-21 Division with remainders
- 1-22 Dividing by larger numbers
- 1-23 Word problems

COMPUTATIONAL SKILLS

CONCEPT OF FRACTIONS

- 1-1 Writing and naming fractions
- 1-2 Reducing fractions

ADDITION OF FRACTIONS

- 1-3 Adding fractions with like denominators
- 1-4 Adding fractions with unlike denominators
- 1-5 Word problems

SUBTRACTION OF FRACTIONS

- 1-6 Subtracting fractions with like denominators
- 1-7 Subtracting fractions with unlike denominators
- 1-8 Subtracting fractions from whole numbers
- 1-9 Word problems

MULTIPLICATION OF FRACTIONS

- 1-10 Multiplying fractions
- 1-11 Multiplying fractions with whole numbers and mixed numbers
- 1-12 Word problems

DIVISION OF FRACTIONS

- 1-13 Dividing proper fractions
- 1-14 Dividing fractions and whole numbers
- 1-15 Dividing whole numbers
- 1-16 Word problems

DECIMALS

CONCEPT OF DECIMALS

- 2-1 Reading decimals
- 2-2 Writing decimals
- 2-3 Changing decimals to fractions
- 2-4 Changing fractions to decimals
- 2-5 Comparing decimals

ADDITION OF DECIMALS

- 2-6 Addition of decimals
- 2-7 Word Problems

SUBTRACTION OF DECIMALS

- 2-8 Subtraction of decimals
- 2-9 Word problems

MULTIPLICATION OF DECIMALS

- 2-10 Multiplication of decimals**
- 2-11 Word problems**

DIVISION OF DECIMALS

- 3-12 Dividing decimals by whole numbers**
- 3-13 Division by decimals**
- 3-14 Repeating decimals**
- 3-15 Word problems**

PERCENTS

- 4-1 Interchanging fractions, decimals, and percents**
- 4-2 Applying percent**

MEASUREMENTS

- 5-1 Applying measurements**

READING GRAPHS

- 6-1 Reading bar graphs**

PERIMETER AND AREA

- 7-1 Perimeter**
- 7-2 Area**
- 7-3 Word problems**

MAP READING

- 8-1 Distance**
- 8-2 Grid coordinates**
- 8-3 Direction**
- 8-4 Intersection and resection**

READING SKILLS

USING REFERENCE SKILLS

TABLE OF CONTENTS

- 1-1 FM 21-15**
- 1-2 FM 21-22-100**
- 1-3 FM 22-101**

INDEX

- 1-4 FM 21-11
- 1-5 FM DA PAM 608-2
- 1-6 FM 22-5

READING CHARTS AND GRAPHS

- 1-7 Reading a Bar Graph
- 1-8 Reading a Line Graph
- 1-10 Reading a Chart - Pay Rates
- 1-11 Reading a Chart - Detail

RECALLING FACTS

- 2-1 Operating a M16A1 Rifle
- 2-2 Emergency First Aid
- 2-3 Code of the US Fighting Men
- 2-4 Camouflage, Cover, and Concealment
- 2-5 NBC hazards

UNDERSTANDING MAIN IDEAS

- 3-1 Your Personal Checking Account
- 3-2 Care and Use of Individual Clothing and Equipment
- 3-3 History of the Mascots of the 101st Airborne
- 3-4 Fighting and Living in the Field

MAKING INFERENCES

- 4-1 DA PAM 608-2
- 4-2 The Screaming Eagles - Part 1
- 4-3 The Screaming Eagles - Part 2

PARAGRAPH WRITING

Focus: Capitalization
General

RECOGNIZING TOPIC SENTENCES

- 1-1 What is a Paragraph?
- 1-2 Recognizing the Topic Sentence
- 1-3 Recognizing the Topic Sentence

CAPITALIZATION

- 1-4 Capitalization
- 1-5 Capitalization
- 1-6 Capitalization
- 1-7 Capitalization

WRITING TOPIC SENTENCES

- 1-8 Writing the Topic Sentence
- 1-9 Writing the Topic Sentence
- 1-10 Writing the Topic Sentence
- 1-11 Paragraph Unity

PARAGRAPH DEVELOPMENT

- 1-12 Developing the Paragraph
- 1-13 Writing the Paragraph
- 1-14 Writing a Paragraph Ending

THE "HOW-TO" PARAGRAPH

Focus: End Punctuation/Commas

THE "HOW-TO" Paragraph

- 2-1 Chronological Order

TRANSITIONS

- 2-2 Transitional Words
- 2-3 Transitional Words

PUNCTUATION (End Punctuation/Commas)

- 2-4 End Punctuation
- 2-5 Commas
- 2-6 End Punctuation/Commas
- 2-7 End Punctuation/Commas

WRITING A "HOW-TO" PARAGRAPH

- 2-8 Writing a "How-To" Paragraph

EXPOSITORY WRITING

Focus: Standard Military Language Expression

EXPOSITORY WRITING-FORMAL REQUEST

- 3-1 A Formal Request for Available Military Schools

STANDARD MILITARY LANGUAGE EXPRESSION

- 3-2 Standard Military Language Expression

- 3-3 Standard Military Language Expression
- 3-4 Standard Military Language Expression
- 3-5 Standard Military Language Expression
- 3-6 Standard Military Language Expression
- 3-7 Standard Military Language Expression
- 3-8 Standard Military Language Expression
- 3-9 Standard Military Language Expression
- 3-10 Standard Military Language Expression
- 3-11 Standard Military Language Expression
- 3-12 Standard Military Language Expression
- 3-13 Standard Military Language Expression

EXPOSITORY WRITING - THE SUGGESTION

- 3-14 The Military Suggestion Form
- 3-15 The Military Suggestion Form

PERSONAL AFFAIRS CORRESPONDENCE

Focus: Punctuation (Apostrophes, Quotation Marks, Commas)

PERSONAL AFFAIRS CORRESPONDENCE

- 4-1 Personal Affairs Correspondence - The Inquiry
- 4-2 Writing the Personal Affairs Inquiry

PUNCTUATION (APOSTROPHES, QUOTATION MARKS, COMMAS)

- 4-3 Apostrophes, Quotation Marks, Commas
- 4-4 Apostrophes, Quotation Marks, Commas

PERSONAL AFFAIRS CORRESPONDENCE - INFORMAL LETTER

- 4-6 Writing the Informal Letter

CENTRAL TEXAS COLLEGE

DEVELOPMENTAL MATHEMATICS

1. Whole Numbers
2. Fractions
3. Decimals
4. Ratio and Proportion
5. Percents
6. The Metric System
7. Comparison of the English and Metric Systems
8. Identification of Geometric Figures
9. Perimeter
10. Area
11. Volume
12. Similar Figures
13. Pythagorean Theorem
14. Directed Numbers
15. Language of Algebra
16. Solving Equations
17. Using Equations to Solve Word Problems
18. Ordered Pairs and Graphing
19. Computing Averages
20. Graphs, Tables, Maps, and Diagrams
21. Budgeting
22. Balancing a Checkbook
23. Comparison Shopping
24. Map Reading

BASIC MATHEMATICS I

1. Adding and Subtracting Whole Numbers
2. Multiplying Whole Numbers
3. Dividing Whole Numbers
4. Adding and Subtracting Decimals
5. Multiplying and Dividing Decimals
6. Fraction Fundamentals
7. Multiplying and Dividing Fractions
8. Adding and Subtracting Fractions
9. Percent Fundamentals
10. Simple Ratio and Proportion
11. Simple Percent Problems
12. Percent Word Problems

BASIC MATHEMATICS II

1. Measures
2. Perimeter
3. Circumference
4. Area
5. Volume

6. Practical Ratio and Proportion Problems
7. Graphs and Charts
8. Introduction to Algebra
9. Set Theory
10. Test-Taking Techniques

DEVELOPMENTAL READING

1. Context Clue
2. Cause and Effect
3. Main Idea
4. Conclusions
5. Inferences
6. Character
7. Literacy Devices
8. Literary Forms
9. Graphs, Tables, Maps, and Diagrams
10. Fact and Opinion
11. Vocabulary Development
12. Following Directions
13. Parts of a Book
14. Note-Taking
15. Test-Taking Techniques
16. Dictionary Usage
17. Word Elements
18. Improving your Vocabulary
19. Reading Technical Material

READING ESSENTIALS I AND II

1. Sounds of One Consonant
2. Consonant Blends
3. Consonant Digraphs
4. Sight Vocabulary
5. VC Word Patterns
6. Long VOWEL word Patterns
7. Broad A Word Patterns
8. VV--More Than One Sound
9. Hearing Syllables
10. Vowel R Word Patterns
11. Prefix/Suffix Rule
12. VC/CV Rule
13. V/CV VC/V Rule
14. Exceptions and Observations
15. Putting It All Together
16. Context: Direct Definitions
17. Dictionary Usage
18. Prefixes
19. Root Words
20. Context: Comparison & Contrast
21. Context: Information
22. Homophones
23. Homographs
24. Facts

25. Sequence
26. Cause & Effect
27. Main Idea
28. Conclusions
29. Inferences
30. Character

ENGLISH ESSENTIALS

1. Dictionary Usage
2. Identifying Nouns
3. Spell it Right
4. Identifying Pronouns
5. Identifying Verbs
6. Noun Endings
7. Plurals and Possessives
8. Subject-Verb Combinations
9. Linking Verbs
10. Standard English Verb Forms
11. Adjectives
12. Adverbs
13. Word Element
14. Punctuation and Capitalization
15. Identifying Complete Sentences
16. Word Power

SPEAKING AND LISTENING SKILLS

1. Using the Dictionary to Determine Pronunciation
2. Voice Analysis
3. Listening and Notetaking
4. Choosing a Subject and Planning a Speech
5. Preparing the Body of the Speech
6. Introductions and Conclusions
7. Practicing and Delivering Your Speech
8. Additional speech assignment
9. Additional speech assignment
10. Additional speech assignment

Supplementary Material MOS Specific Mathematics Activities

I. BASIC MATHEMATICS REVIEW

- I-1 Whole Numbers
- I-3 Whole Number Word Problems
- I-4 Fractions
- I-5 Fraction Word Problems
- I-7 Comparing Decimals I
- I-8 Comparing Decimals II
- I-9 Decimals
- I-10 Percent Conversions
- I-11 Percents
- I-12 Word Records

II. MILITARY-RELATED MATHEMATICS

- II-1 Completing the Inventory of Household Goods
- II-3 24 Hour Clock
- II-5 Time Zones
- II-8 Reading Tables
- II-15 Finding Direction by the Sun
- II-18 Finding Direction by the Stars
- II-21 Finding Time by the Sun
- II-25 Determining Steam Width
- II-26 Determining Steam Velocity
- II-28 Determining Slope
- II-31 Identifying Limiting Curves
- II-36 Classifying Vehicles Using Expedient Methods
- II-38 XMI vs. M60A3

III. CONSUMER-RELATED MATHEMATICS

- III-1 Using your Check Register
- III-2 Reconciling your Bank Statement
- III-5 Classified Advertisements
- III-6 Buying Meat
- III-7 Eating Out
- III-8 Buying Tires
- III-9 Comparison Shopping
- III-11 Percent of Increase (Decrease)
- III-13 Buying at Sales
- III-15 Layaway Purchases
- III-18 Ordering from a Catalog
- III-24 Simple Interest
- III-26 Buying a Car
- III-28 Amortizing a Loan
- III-30 Reading Road Maps
- III-32 Renting a Car

Supplementary Materials MOS Specific Reading Activities

CONSONANT SOUNDS

- 1-1 Single Consonants
- 1-6 Blends
- 1-9 Digraphs

VOWEL PATTERNS

- 2-13 VC Pattern
- 2-18 Long Vowel Pattern
- 2-22 Broad A Pattern
- 2-25 VV Patterns
- 2-28 Vowel-r Pattern

VOCABULARY

- 3-31 Sight Vocabulary
- 3-36 Homophones
- 3-43 Homographs
- 3-49 Advanced Vocabulary

SYLLABICATION

- 4-65 Hearing Syllables
- 4-71 Prefix/Suffix Rule
- 4-73 V/VC, VC/V rule
- 4-78 Compounds, LE, ED

PUTTING IT ALL TOGETHER

- 5-81 Review of Sections 1-4

WORD ELEMENTS

- 6-89 Prefixes
- 6-94 Roots

DICTIONARY USE

- 7-99 Alphabetizing
- 7-100 Guide Words
- 7-101 Phonetic Entry
- 7-103 Correct Spelling
- 7-104 Review

COMPREHENSION

- 8-105 Content Clues
- 8-111 Recalling Facts
- 8-122 Sequence
- 8-127 Main Idea
- 8-133 Cause and Effect

COMPREHENSION II

- 9-137 Conclusions
- 9-144 Inference
- 9-150 Character
- 9-155 Fact and Opinion

SPECIAL PROJECTS

- 10-159 Reading Advertisements
- 10-160 Map Reading
- 10-166 Money Orders
- 10-169 Serviceman's Group Life
- 10-176 Understanding a Leave and Earnings Statement

Supplementary Materials
MOS Specific Writing Activities

- 1-1 Military Language
- 1-5 Abbreviations and Brevity Codes

- 2-11 World Maps
- 2-15 NBC Spell
- 2-19 Legal World Elements

- 3-25 Nouns in Camouflage
- 3-26 Physically Fit Nouns

- 4-35 Pronoun Award

- 5-39 Plurals and Possessives

- 6-43 Accident Verbs
- 6-51 Linking Equals
- 6-55 VERB-alize

- 7-61 Get It Together
- 7-67 Your Mark
- 7-73 Sentence Combat
- 8-81 Color it White
- 8-85 Rating Verbs

FORT LEWIS EXPERIMENT (FLX)

READING

Reading comprehension
Word identification and recognition
Military usage of terms
Setting a purpose for reading
Survey for reading (the index, the illustrations, and the introduction)
Skimming
Scanning
Study reading
Word trends and comprehension cues
Problems and solutions
Sequence of events
Subject/verb agreement
Time signal cues
Spatial cues
Sentence structure
Context guide
SQ3R (Survey, Question, Read, Recite, and Review)

LANGUAGE/COMPOSITION

Keeping a journal
Writing prompts (writing military reports, forms, incidences)
Completing military forms
Notetaking

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VOCABULARY

- 1A. Context: Antonyms
- 2A. Context: Synonyms
- 3A. Context: Common Sense
- 4A. Context: Combination Sheet
- 5A. Negative and Positive Results
- 6A. Prefixes
- 7A. Root Word
- 8A. Suffixes and Derivatives
- 9A. Homonyms
- 10A. Combination Sheet

TEXT

- 1A. Getting the Main Idea
- 2A. Understanding: Context
- 3A. Understanding: Imagery
- 4A. Understanding: Restatement
- 5A. Understanding: Summaries
- 6A. Order and Sequence
- 7A. Finding Facts
- 8A. Inference
- 9A. Practice Sheet
- 10A. Logic: Figuring Out Order Statements from Order Diagrams
- 11A. Logic: Figuring Out Order Diagrams from Order Statements

LOCATORS AND VISUALS

- 1A. Table of Contents
- 2A. Index
- 3A. Tables
- 4A. Bar Graphs
- 5A. Line Graphs
- 6A. Pie Graphs
- 7A. Meters and Dials
- 8A. Interpolation
- 9A. Vernier Scales

MATH CONCEPTS

- 1A. Mathematical Symbols
- 2A. Geographic Shape Recognition
- 3A. Commutation
- 4A. Length and Perimeters
- 5A. Roman Numerals
- 6A. Areas
- 7A. Adding and Subtracting Negative and Positive Numbers
- 8A. Multiplying and Dividing Negative and Positive Numbers
- 9A. Ratios

WHOLE NUMBERS

Addition

- 1A. Introduction to Numbers
- 2A. Adding Two One-Digit Numbers: Columns
- 3A. Adding Two One-Digit Numbers: Rows
- 4A. Adding Two-Digit Numbers: Columns
- 5A. Adding Two-Digit Numbers: Rows
- 6A. Carrying: Numbers in a Column
- 7A. Carrying: Numbers in a Row
- 8A. Adding Two Three-Digit Numbers in a Column
- 9A. Adding Two Three-Digit Numbers in a Row
- 10A. Practice Numbers in Columns: Addition
- 11A. Practice Numbers in Rows: Addition

Subtraction

- 12A. Subtracting Two One-Digit Numbers: Columns
- 13A. Subtracting Two One-Digit Numbers: Rows
- 14A. Subtracting Two-Digit Numbers: Columns
- 15A. Subtracting Two-Digit Numbers: Rows
- 16A. Borrowing: Numbers in a Column
- 17A. Borrowing: Numbers in a Row
- 18A. Subtracting Two Three-Digit Numbers in a Column
- 19A. Checking Subtraction by Adding
- 20A. Practice Numbers in Rows: Subtraction
- 21A. Practice Numbers in Columns: Subtraction

Multiplication

- 22A. Multiplying Two One-Digit Numbers: Columns
- 23A. Multiplying Two One-Digit Numbers: Rows
- 24A. Multiplying One-Digit Times Two-Digits: Columns
- 25A. Multiplying One-Digit Times Two-Digits: Rows
- 26A. Carrying: Numbers in a Column
- 27A. Multiplying Two-Digit Numbers
- 28A. Carrying: Two-Digit Numbers

Division

- 30A. Dividing and Multiplying Are Related
- 31A. Dividing One Digit Into One or Two Digits
- 32A. Converting from to /
- 33A. Dividing One Digit Into Two Digits
- 34A. Dividing One Digit Into Two Digits
- 35A. Dividing Two Digits Into Three Digits
- 36A. Dividing Three Digits Into Four Digits

Algebra

- 37A. Introduction to Algebra
- 38A. Solving Algebraic Equations

39A. Understanding Powers and Roots

FRACTIONS

- 1A. What is a Fraction?
- 2A. Types of Fractions
- 3A. Changing Mixed Numbers to Fractions
- 4A. Reducing Proper Fractions
- 5A. Reducing Improper Fractions
- 6A. Finding Common Denominators
- 7A. Adding Fractions with Common Denominators
- 8A. Adding Fractions with Different Denominators
- 9A. Adding Mixed Numbers
- 10A. Subtracting Fractions with Common Denominators
- 11A. Subtracting Fractions with Different Denominators
- 12A. Subtracting Mixed Numbers
- 13A. Cancelling
- 14A. Multiplying Fractions Times Fractions
- 15A. Multiplying Whole Numbers Times Fractions
- 16A. Multiplying Mixed Numbers
- 17A. Dividing Fractions by Fractions
- 18A. Dividing Whole Numbers by Fractions or Fractions by Whole Numbers
- 19A. Dividing Mixed Numbers by Mixed Numbers
- 20A. Converting Fractions to Decimals

DECIMALS

- 1A. Names of Decimal Places and Fractional Equivalents
- 2A. Adding Decimals to Decimals
- 3A. Adding Decimals to Whole Numbers
- 4A. Adding Decimals and Decimal Mixed Numbers
- 5A. Subtracting Decimals from Decimals
- 6A. Subtracting Decimals from Whole Numbers
- 7A. Subtracting Decimals and Decimal Mixed Numbers
- 8A. Multiplying Decimals Times Decimals
- 9A. Multiplying Decimals and Whole Numbers
- 10A. Multiplying Decimals and Mixed Numbers
- 11A. Dividing Decimals Into Decimals
- 12A. Performing Division With Decimals and Whole Numbers
- 13A. Dividing Mixed Decimals Into Each Other

PERCENTS

- 1A. What are Percents?
- 2A. Percent and Fractions
- 3A. Changing Percents to Decimals, and Decimals to Percents
- 4A. Finding Percents of Numbers
- 5A. Adding or Subtracting Percents
- 6A. Multiplying Percents
- 7A. Dividing Percents

MEASURES

- 1A. Dollars and Cents
- 2A. Meters and Centimeters
- 3A. Yards, Feet, and Inches
- 4A. Units of Time
- 5A. Gallons, Quarts, Pints and Cups

STORY PROBLEMS

- 1A. Key Words
- 2A. Understanding Story Problems
- 3A. Addition Problems
- 4A. Subtraction Problems
- 5A. Multiplication Problems
- 6A. Division Problems
- 7A. Two-Step Problems
- 8A. Three-Step Problems
- 9A. Problems with Fractions
- 10A. Problems with Percents
- 11A. Problems with Interest
- 12A. Problems with Measures
- 13A. Mixed Problems

LANGUAGE

SPELLING

- 1A. Pronunciation and Syllables
- 2A. Sounding Out Words
- 3A. Silent Letters-Vowels
- 4A. Silent Letters-Consonants, Double Letters
- 5A. Suffixes: Silent E Rule
- 6A. Suffixes: Exceptions to the Silent E Rule
- 7A. Suffixes: Y Rule
- 8A. Doubling Rule-One Syllable Words
- 9A. Doubling Rule-Two Syllable Words
- 10A. CK Rule and Spelling Practice Sheet
- 11A. Plurals: Regular
- 12A. Irregular Plurals
- 13A. IE-EI Rule

CAPITALIZATION

- 1A. Initial Capitals
- 2A. Proper Names and Proper Nouns
- 3A. Days, Months, and Holidays
- 4A. Special Groups, Events, Religions, and Races
- 5A. Languages and Specific Courses
- 6A. Honorifics
- 7A. Books and Magazine Titles
- 8A. Lines and Titles of Poetry

PUNCTUATION

- 1A. End Punctuation
- 2A. Commas in Series
- 3A. Commas: Appositives
- 4A. Commas: Direct Address
- 5A. Commas: Introductory Words and Parenthetical Expressions
- 6A. Commas: Dates and Addresses
- 7A. Commas: Phrases, Clauses, and Compound Sentences
- 8A. Commas: Quotes
- 9A. Quotations
- 10A. Apostrophes: Ownership
- 11A. Apostrophes: Contractions
- 12A. Abbreviations
- 13A. Punctuation Practice

GRAMMAR

- 1A. Subjects: Number
- 2A. Action Verbs
- 3A. Linking Verbs
- 4A. Verbs: Number
- 5A. Finding a Hidden Subject
- 6A. Agreement: Special Subjects
- 7A. Helping Verbs
- 8A. Action and Linking Verbs
- 9A. Verbs: Person
- 10A. Verbs: Tense
- 11A. Regular Past Participle
- 12A. Irregular Past and Past Participles
- 13A. Verbs: Changing from Past Tense to Past Participle
- 14A. Confusing Verbs
- 15A. Subject and Verb Agreement
- 16A. Agreement: "There and "Here"
- 17A. Pronouns: Person, Number, Antecedent
- 18A. Verb Agreement with Indefinite Pronouns
- 19A. Indefinite Pronouns as Antecedents
- 20A. Collective Nouns as Antecedents
- 21A. Practice on Pronouns Agreeing with Antecedents
- 22A. Pronouns Used as Subjects
- 23A. Pronouns Used as Objects
- 24A. Practice on Subject and Object Pronouns
- 25A. Pronouns After Prepositions
- 26A. Possessive Pronouns
- 27A. Indefinite Pronouns: Who, That, Which
- 28A. Pronouns: Agreement
- 29A. Using Adjectives for Comparison
- 30A. Adjectives: This/That, These/Those
- 31A. Using Adverbs for Comparison
- 32A. Confusing Adverbs and Adjectives
- 33A. Using Prepositions Correctly
- 34A. Blunders: Fragments

35A. Blunders: Run-ons
36A. Good Usage of English

**McFANN, GRAY & ASSOCIATES
REVISED CURRICULUM**

MATH

WHOLE NUMBERS

1. Adding, subtracting, multiplying, and dividing whole numbers
2. Place names and concept of place value
3. Digit, plus, sum, total, equals, column, row, checking, set-up
4. Applying the carrying rule: two digit or larger whole numbers in columns or rows or as word problems
5. Difference, minus, checking
6. Applying the borrowing rule: subtracting two digit whole numbers in columns or rows
7. Subtracting three or more digit numbers in a column, row, and as word problems
8. Using addition and subtraction to solve problems in word statement, column and row form
9. Multiply, product, times, set-up: solving one digit whole number multiplication problems in column, row, and word problem format
10. Carrying: solving multiplication problems in which a two digit whole number is multiplied by a one digit whole number
11. Using partial product: solving multi-format multiplication problems using two digit whole numbers
12. Using multiplication rules: (set-up, carrying, partial product) to solve three and four digit whole number multi-format problems.
13. Adding, subtracting, and multiplying to solve problems in word statement, column, and row form
14. Dividing one digit whole numbers into one or two digit whole numbers
15. Remainder: solving problems with one digit whole numbers divided into one or two digit whole numbers
16. Solving problems of division of two digit whole numbers into three digit whole numbers
17. Dividing multi-format division problems with three or more digit whole numbers with four or more digits
18. Using addition, subtraction, multiplication and division to set-up and solve combination problems in word statement, column, and row form

FRACTIONS

1. Fractions
2. Solving problems
3. Reducing or raising a proper fraction to its lowest or highest terms
4. Reducing an improper fraction
5. Changing a mixed number to an improper fraction
6. Finding the common denominator of two fractions
7. Adding fractions with the same denominators
8. Adding fractions with different denominators
9. Adding mixed numbers
10. Solving multi-format problems
11. Subtracting fractions with the same denominators
12. Subtracting fractions with different denominators

13. Subtracting mixed numbers
14. Adding and subtracting fractions to solve multi-format problems
15. Canceling: multiplying fractions
16. Multiplying proper fractions times whole numbers, using canceling
17. Multiplying mixed numbers times mixed numbers
18. Dividing proper fractions by proper fractions, using the inversion rule
19. Dividing proper functions by whole numbers, and whole numbers by proper fractions
20. Dividing mixed numbers by mixed numbers
21. Solving multi-format, combined problems requiring the addition, subtraction, division and multiplication of whole numbers and fractions

DECIMALS

1. Changing fractions to decimals and vice-versa
2. Mixed decimals
3. Setting-up and adding two decimal numbers
4. Setting-up and adding decimals, mixed decimals and whole numbers
5. Setting-up and subtracting decimal numbers
6. Setting-up and subtracting decimals, mixed decimals and whole numbers
7. Setting-up and multiplying decimal numbers
8. Setting-up and multiplying decimals, mixed decimals, and whole numbers
9. Setting-up and dividing decimal numbers
10. Setting-up and dividing mixed decimals into mixed decimals
11. Setting-up and dividing mixed decimals into mixed decimals
12. Solving combined whole number, fraction and decimals problems

PERCENTS

1. Demonstrating the relationship between decimals and percents
2. Converting fractions to percents
3. Converting percents to fractions
4. Finding the percent of a number
5. Adding and subtracting percents
6. Multiplying percents times percents, mixed decimals, and whole numbers
7. Dividing percents by percents, mixed decimals, and whole numbers
8. Solving problems with dollars and cents
9. Figuring interest
10. Answering combined, multi-format questions made up of whole numbers, fractions, decimals, and percents

CONCEPTS

1. Using math symbols: equals, addition, subtraction, multiplication, division, percents, not equal, square root, pi, greater than and less than
2. Recognizing geometric shapes: trapezoid, quadrilateral, parallelogram, rectangle, square, pentagon, triangle and circle
3. Solving problems using the commutative rule
4. Finding the length and distance of a straight line and of different geometric shapes
5. Using Arabic and Roman numerals
6. Applying known formulas to find the areas of geometric shapes

READING COURSE

VOCABULARY Structural Analysis

1. Using prefixes as a clue for defining the meaning of words
2. Using roots as a clue for defining the meaning of selected words
3. Identifying the effects of suffixes upon words

Contextual Clues

1. Unlocking the meaning of unfamiliar words
2. Using synonyms and antonyms as a way of studying context
3. Defining words as a way of studying context
4. Homonyms
5. Identifying common military acronyms
6. Reading sentences to determine the meaning of common words and Army task-related technical terms when:
 - a. The context of sentence gives the meaning of a word by defining it
 - b. The context of sentence gives the meaning of a word by a restatement using a synonym for a word
 - c. The context of sentence gives the meaning of a word by using an example for the word
 - d. The context of sentence gives the meaning of a word by using a comparison/contrast for defining the word
 - e. The context of sentence gives the meaning of a word by description
 - f. The context of sentence gives the meaning of a word by giving a synonym/antonyms for a word
 - g. The context of sentence gives the meaning of a word by using familiar experience of language
 - h. The context of sentence gives the meaning of a word by making an association
 - i. The context of sentence gives the meaning of a word by reflection of mood
 - j. the context of sentence gives the meaning of a word summarizing the word
7. Identifying common
 - a. acronyms
 - b. oxymorons
 - c. homonyms
 - d. heteronyms
 - e. coined words

Skimming and Scanning

1. Skimming a paragraph for the main idea within a specified time frame
2. Skimming an article or a chapter for the main idea within a specific time frame

3. Scanning a book or manual using the table of contents, index, appendix, and glossary to locate specific requested information within a specified time frame
4. Scanning documents for code name and title within a specified time frame
5. Scanning a paragraph, article, chapter for key words related to specified facts within a specified time frame

Order and Sequence

1. Rearranging directions into a series of logical steps
2. Rearranging paragraph in sequence
3. Outlining a short passage
4. Determining positive and negative statements from ordered diagrams
5. Determining the sequence of ordered diagrams

Sentence Reading

1. Using punctuation marks to facilitate comprehension by converting the intonation speech patterns to discover author's pause, pitch, and stress
2. Interpreting the signals and directions given by key qualifying words

Comprehension

1. Establishing a purpose for reading Army task-related and non-military materials
2. Identifying sentences in relationship to the main idea
3. Classifying types of sentences (e.g. introductory, definition, explanation, etc.) which form the main idea
4. Identifying the relationship of sentences and the organizational pattern of a paragraph

Main Idea

1. Finding the main idea of a paragraph
2. Identifying the location of the sentence containing the main idea in the paragraph
3. Identifying the unstated main idea of a paragraph
4. Identifying the details that support (or develop) the main idea
5. Recognizing the structure of paragraphs in relation to details provided about the main idea
6. Making inferences from statements presented

Summary

1. Recognizing sentences and paragraphs that summarize the information provided in a passage

Locational Skills

1. Using a table of contents from a soldier's manual to locate information in that manual
2. Using a table of contents from a book to locate information in that

- manual
3. Using an index from a soldier's manual to locate information in that manual
 4. Using an index from a book to locate information in that book
 5. Using a glossary from a soldier's manual to locate the meaning of technical terms relating to the military
 6. Using a glossary from a book to locate the meaning of words which relate to the subject matter in that particular book

Following Directions

1. Reading written directions from the beginning to end before attempting the task
2. Identifying the sequence within directions
3. Selecting the essential information (main ideas and details) required for executing directions
4. Using key signal words to identify the sequential process for executing directions
5. Using visual aids which accompany directions to aid in executing the task
6. Identifying materials/equipment needed to execute the task
7. Executing directions by performing the tasks in the proper order

Outlining

1. Selecting the main idea(s) in a paragraph or passage
2. Identifying the details that support the main idea
3. Identifying the organizational patterns of outlining
4. Selecting important ideas in a paragraph and supporting details with an outline format

Writing

1. Identifying correct and incorrect common grammar usage
2. Demonstrating common usage of grammar, by writing simple sentences, compound sentences, and complex sentences
3. Completing various types of forms using correct: (1) choice and spelling of common army task-related words, and (2) sentence structure
4. Writing short descriptive paragraphs which show correct spelling, sentence structure, and organization using nonmilitary and military tasks
5. Writing brief reports which show correct spelling, sentence structure and organization using nonmilitary and military tasks

Spelling

1. Vowels and consonants
2. Separating a list of words into syllables
3. Separating syllables and place the accent mark at the end of the stressed syllable
4. Sounding out words and choose the correctly spelled word
5. Indicating silent vowels
6. Indicating silent vowels

7. Applying the silent "e" rule, adding the suffix, and correctly spelling each word
8. Applying the silent "e" rule and its exceptions, adding the suffix, and correctly spelling each word
9. Using the Y rule to correctly spell each word after dropping the suffix
10. Applying the doubling rule and adding the suffix correctly
11. Applying the "ck" rule and correctly spelling each word
12. Writing the irregular plural form for singular nouns, compound nouns, and hyphenated nouns
13. Spelling "ie" or "ei" words

Capitalization

1. Capitalizing proper names and proper nouns
2. Capitalizing the first word of each sentence
3. Capitalizing sentences containing days, months, and holidays
4. Capitalizing special groups, events, religions, and races
5. Capitalizing languages and specific courses
6. Capitalizing book and magazine titles

Punctuation

1. Writing the correct punctuation mark to end each sentence
2. Indicating where commas belong in text containing appositives
3. Indicating where commas belong in sentences containing a direct address
4. Indicating where commas belong in text containing introductory words and parenthetical expressions
5. Indicating where commas belong in text containing dates and addresses
6. Indicating where commas belong in sentences containing a phrase, clause, or compound form
7. Indicating where commas belong in text containing quotations
8. Inserting quotation marks in the correct locations and correct capitalization
9. Identifying and writing the words that show ownership and correctly punctuating those words in sentences each containing a word that shows ownership
10. Writing down pairs of words that make up each contraction and combining the pairs of words to form contractions using an apostrophe
11. Writing abbreviated letters inserting periods for punctuation

JSEP PREREQUISITE COMPETENCIES

NUMBERING AND COUNTING

- 1a. Match numerals with word names and models
- 1b. Write numerals in sequence from any starting point
- 1c. Identify the number that comes before, after or between any two given numbers
- 1d. Identify a number which is greater or lesser from a set of numbers
- 1e. Identify an object with a specified ordinal position
- 1f. Write or state the place value of a particular digit, whole or decimal
- 1g. Round a whole or decimal number to a specified place
- 1h. Count by ones, twos, fives, tens, etc., backward or forward (skip counting)
- 1i. Match numbers or points with intervals on scales that can be represented as a number line (with or without numbers)

LINEAR, WEIGHT, AND VOLUME MEASURES

- 2a. Interpret the markings on a linear scale
- 2b. Identify units of measure in the US standard and Metric System and classify units according to type of measure
- 2c. Measure lengths of objects or distances using a ruler, yard stick, meter stick, or scale
- 2d. Identify measures of weight (ounces, pounds, grams), pressure (pounds per square inch), and torque (foot pounds)
- 2e. Identify measures of volume in pints, quarts, liters, and parts of them
- 2f. Measure with a non-numerically calibrated scale
- 2g. Use existing objects or concepts to measure or estimate size or distance

DEGREE MEASURES

- 3a. Identify degrees and mils as units in determining angular measurement or temperature
- 3b. Estimate the measure of a given angle not greater than 180 degrees
- 3c. Interpret bearings, azimuths, and other contexts in which the measure of an angle may range 0 degrees to 360 degrees or 0 to 6400 mils

TIME-TELLING MEASURES

- 4a. Tell the time using digital, analog, and 24 hour clocks
- 4b. Use the positions on a clock face to indicate direction
- 4c. Estimate time in seconds, minutes, and parts of an hour
- 4d. Determine equivalent dates from one calendar form to another using Gregorian and Julian calendars
- 4e. Convert time to hours and tenths of hours
- 4f. Compute Zulu (Greenwich Mean Time)

GAGE MEASURES

- 5a. Read and interpret a gage (numbered, meter, caliber, or feeler)
- 5b. Read and interpret a display read-out
- 5c. Read and interpret a gage with color divisions
- 5d. Read and interpret scales with (+) and (-) demarcations
- 5e. Read and interpret bands on a multiscale gage
- 5f. Match a gage reading to a specification
- 5g. Read and interpret unnumbered or unmarked gage type instruments
- 5h. Read and interpret a gage which is fluctuating or momentarily sustained
- 5i. Match specifications of required measures by manipulation, alinement, or maintenance

SPATIAL

- 6a. Identify directions that tools, hardware, or components may be moved
- 6b. Manipulate objects to aline, make parallel, be perpendicular, or be at an angle
- 6c. Interpret distance and directional relationships of figures and objects from two dimensional drawings
- 6d. Relate symbols and graphic representations to actual systems, subsystems, and components

LINES

- 7a. Identify, draw, and label points, lines, parts of lines (segments) and rays
- 7b. Identify, draw, aline, and label parallel, vertical, horizontal and diagonal lines, laterals, and rays
- 7c. Identify and draw intersecting and perpendicular lines
- 7d. Aline lines so they are superimposed

PLANES

- 8a. Identify and match plane geometric shapes and plane common shapes
- 8b. Identify characteristics of geometric shapes
- 8c. Apply shape terms to objects and plane figures
- 8d. Match patterns of figures both actual size and model drawings
- 8e. Identify orientation of figures

ANGLES AND TRIANGLES

- 9a. Identify angles
- 9b. Identify vertical and horizontal angles
- 9c. Identify types of triangles
- 9d. Draw altitudes and bisectors of angles and triangles
- 9e. Name angles by using letters and numbers

SOLIDS

- 10a. Recognize and match the names of solids with their corresponding figures

TERMINOLOGY

- 11a. Identify shape and position terms
- 11b. Identify spatial orientation terms with positions

ADDITION AND SUBTRACTION

- 12a. Add or subtract whole numbers without carrying or borrowing
- 12b. Add or subtract whole numbers with carrying and borrowing
- 12c. Add and subtract decimals with borrowing and carrying
- 12d. Add or subtract positive and negative numbers
- 12e. Add or subtract time
- 12f. Add or subtract increments on gages, dials, and other measuring instruments
- 12g. Add or subtract linear, dry, liquid, or degree measures
- 12h. Estimate sum or difference

MULTIPLICATION AND DIVISION

- 13a. Multiply and divide whole numbers
- 13b. Multiply and divide whole and decimal numbers
- 13c. Divide numbers with decimals in both divisor and dividend
- 13d. Estimate a product or quotient

FRACTIONS/DECIMALS

- 14a. Estimate fractional length, distance, area, and volume
- 14b. Reduce fractions to lowest terms
- 14c. Convert fractions (proper and improper) to decimal equivalents, and vice versa, using a table, chart or gage
- 14d. Convert decimals and percentages to fractions and vice versa
- 14e. Add and subtract fractions, with same or different denominators
- 14f. Multiply and divide fractions with and without whole numbers
- 14g. Estimate a fractional sum, product, or quotient

GEOMETRY

- 15a. Draw plane geometric figures
- 15b. Match geometric figures with word names
- 15c. Label specified objects and figures
- 15d. Use a protractor and a straightedge
- 15e. Construct or draw perpendicular lines using a compass or protractor
- 15f. Compute the area and perimeter of a circle or rectangle
- 15g. Measure radius and calculate area and circumference of a circle

- 15h. Measure rectangular shaped solids
- 15i. Use formulas to solve problems involving geometric figures
- 15j. Solve problems involving oscilloscope readouts

COMBINATION OF PROCESSES

- 16a. Locate the center of an object
- 16b. Compute averages
- 16c. Solve problems combining all processes, using whole numbers, mixed numbers, and fractions
- 16d. Solve problems combining all processes involving units of measurement
- 16e. Identify and interpret information from charts, number lines, scales and graphs to solve arithmetic problems
- 16f. Solve conversion problems
- 16g. Solve problems involving ratio and proportion
- 16h. Solve word problems involving any mathematical process

GRAPHING IN THE COORDINATE PLANE

- 17a. Identify grid coordinates on a military map
- 17b. Specify the 8 digit coordinates of any intersection of lines on a military map
- 17c. Plot a point at an intersection of a grid when distance and direction are specified

ALGEBRA

- 18a. Solve simple algebraic equations with one unknown
- 18b. Derive equivalent algebraic equations
- 18c. Calculate power and square root with the aid of a pocket calculator and use formulas to solve problems

TRIGONOMETRY

- 19a. Use tables of trigonometric functions
- 19b. Use tables of logarithms to solve multiplication and division problems
- 19c. Calculate the length of a side of a triangle using trigonometric functions
- 19d. Use trigonometric functions to solve geometric problems

PROCEDURAL DIRECTIONS

- 25a. Follow directions to complete a task activity which involves reading, observation, identification and/or comparison
- 25b. Select parts of text and visual materials to complete a task activity
- 25c. Follow highly-detailed, step-by-step directions in order to accomplish a sequence of task activities
- 25d. Determine the essential message (main idea) of job-related material
- 25e. Select appropriate decision or course of action in a specified situation

- 25f. Synthesize information from written to oral sources in order to complete a task or activity

VOCABULARY

- 27a. Locate documents by code number and title
27b. Locate and file information alphabetically and alphanumerically
27c. Locate information in a book or manual by using the table of contents, index, appendix, and glossary
27d. Locate the title, page, paragraph, figure, or chart needed to answer a question or to solve a problem
27e. Skim or scan for relevant information
27f. Use cross references to locate information
27g. Organize information from multiple sources

TABLES/CHARTS

- 28a. Obtain a fact or specification from a two column table or chart
28b. Obtain a fact or specification from an intersection of a row-by-row column table or chart
28c. Use a complex table or chart requiring cross-referencing within or in combination with text material outside the chart
28d. Use information from tables and charts to locate malfunctions or select a course of action

ILLUSTRATIONS

29

- a-1. Identify details, labels, numbers, and parts of an illustration
a-2. Use a map to identify and communicate details of terrain or layout
29b. Identify details, labels, numbers, and parts according to a key, legend, or list
29c. Use a cross-sectional view of an object for decisions and assembly or disassembly
29d. Use a three dimensional projection or exploded view of objects to perform an action or complete a procedure
29e. Use an illustration or sequence of illustrations to follow directions
29f. Integrate visual information from various sources to select a course of action

FLOW CHARTS

- 30a. Identify the meanings of symbols on a flow chart
30b. Use a flow chart to make a procedural decision
30c. Use a chart to identify organization members

SEMANTICS

- 31a. Identify and locate subsystems of block, schematic, and wiring diagrams

- 31b. Identify components and signal paths of a symbolic configuration
- 31c. Trace circuit connections from one designated point to another within a schematic diagram
- 31d. Identify symbols that indicate components, signal paths, and test points on a schematic or wiring diagram

FORMS

- 32a. Locate the block on a form to enter appropriate information
- 32b. Transfer a number, code, date, figure, or related data from equipment or written sources onto an appropriate section of a form
- 32c. Write the names of the organization, responsible personnel, disposition of the part of equipment, and nomenclature, in appropriate sections of a form
- 32d. Write a descriptive account of an activity or transaction performed
- 32e. Use a completed form to locate or compare information

NOTE-TAKING

- 33a. Record essential information
- 33b. Assure accuracy and precision when recording information
- 33c. Record information in sentence form
- 33d. Record information that involves more than one sentence

OUTLINING (topic or sentence)

- 34a. Identify the main ideas in a situation or event
- 34b. Select appropriate details to support the main topic
- 34c. Generate titles for each section of the outline
- 34d. Use numbers and letters to label topics in an outline

REPORT WRITING

- 35a. Generate the title, objectives, report intent, target audience, and all essential and supporting details of a written report
- 35b. Summarize the essential details of a report by answering the questions who, what, when, where, and how, as appropriate
- 35c. Write a report which includes only relevant details
- 35d. Generate a written report, arranging the events sequentially
- 35e. State general impressions of an event or situation as they relate to specific reporting goals
- 35f. Write a report including necessary support documentation or classification
- 35g. Summarize events and precise dialogue in an accurate, complete, and objective manner
- 35h. Summarize the major points presented in a written report
- 35i. Write a report that justifies actions taken and provides good reasons for rejecting alternative actions

EDITING

- 36a. Spell frequently used words correctly**
- 36b. Spell task-related words correctly**
- 36c. Identify words that need to be capitalized**
- 36d. Use a reference source to correct misspellings**
- 36e. Apply all rules for endmarks, commas, and apostrophes**
- 36f. Apply common rules of grammar**
- 36g. Rewrite a paragraph by stating the main idea, supporting details, and concluding statement**
- 36h. Appraise a written communication and make adjustments to improve clarity**

PRECAUTIONS

- 40a. Use common knowledge to prevent injury to people or equipment**
- 40b. Apply preventive measures to minimize potential safety or security problems**
- 40c. Identify appropriate course or action in specific emergency situations**

RECOGNITION

- 41a. Identify and label objects by the descriptive name and use**
- 41b. Use and interpret hand and arm signals**
- 41c. Identify damage to or defects in equipment**
- 41d. Move, align, and connect objects**
- 41e. Identify objects by size, shape, color and markings**
- 41f. Identify stimuli**
- 41g. Use sight, hearing, or touch to determine a course of action**
- 41g. Interpret and use symbols and codes**