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The Job Skills Education Program: Extended Tryout

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for

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<p>This research note deals with the Job Skills Education Program (JSEP), a standardized computer-based curriculum for soldiers who lack skills necessary for proper performance of their skill level 1 and 2 jobs. The lessons are based on a detailed analysis of the 94 most common military occupational specialties and on soldiers' common tasks. JSEP is being tried out at Forts Riley, Leonard Wood, Lewis, and Sill prior to its Army-wide implementation. This note covers the period of the Extended Tryout. It describes the activities that were conducted at the four sites in an effort to fine tune the JSEP curriculum, the Soldier Management System, and the computer and instructor operating procedures.</p> <p>The major findings during the Extended Tryout period were that soldiers were able to complete their lessons successfully, and that strong local command support is necessary in order for an innovative new program to succeed.</p>			
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JSEP EXTENDED TRYOUT REPORT

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THE JOB SKILLS EDUCATION PROGRAM

Background

The Job Skills Education Program (JSEP) is a large-scale, computer-based educational program designed for those soldiers who need instruction in the basic academic skills required for their jobs. The program is sponsored by the Education Division, Office of the Deputy Chief of Staff for Personnel and monitored by the U.S. Army Research Institute (ARI). Development was begun in 1982 by Florida State University, Center for Educational Technology, and its team member Ford Aerospace & Communications Corporation.

JSEP provides a standardized curriculum for soldiers who demonstrate deficiencies in the knowledge and skills required to successfully perform their Military Occupational Specialties (MOS) -- their jobs.

A unique aspect of JSEP is that it is built upon a very detailed front-end analysis of baseline academic skills related to job performance. This analysis covered tasks performed by soldiers in the 94 highest density MOSs, in addition to common tasks (those skills needed by all soldiers regardless of their MOS). A major product of the analysis was a taxonomy listing more than 200 prerequisite competencies (PC) for these MOSs. The competencies were derived from detailed reviews of Soldier Manuals and from extensive interviews with subject matter experts at Army schools.

JSEP is controlled by a computer-based management system that provides diagnosis, prescriptions, help, tracking, and reports. The program is self-paced and individualized and allows open entry and open exit. The computer-based lessons and the management system currently run on the MicroTICCIT and the PLATO computer-based training systems. The program is being tested at four sites (Fort Riley, Leonard Wood, Lewis and Sill) prior to Army-wide phased implementation.

EXTENDED TRYOUT

Objectives.

This report describes the activities performed during a period that was called the Extended Tryout. The purpose of the extended tryout was to fine-tune the operations aspects of the Job Skills Education program and to establish an ongoing mechanism for collecting those data that could be used to improve the lessons and the Soldier Management System. More specifically, the objectives of the extended tryout were:

- a. To provide orientation and training on the JSEP system to eligible soldiers and appropriate personnel; and
- b. To collect operations data and soldier performance data that can be used for program evaluation and revisions.
- c. In addition to the collection of evaluation and revision data,

another main purpose of the extended field tryout was to further the transfer of JSEP Center management and control to the local command.

Two key elements necessary for this are the emplacement of trained instructors and the orientation of local command to the JSEP. Each of the posts began the extended trails with two trained JSEP instructors in place, then dropped one. The instructor hosted numerous visitors to the JSEP Center, explaining and demonstrating the program. The instructor answered routine queries and presented formal briefings, in addition to the other duties described in the JSEP Instructor's Manual.

The Florida State University (FSU) approach to meeting the first objective focused on thorough training of the on-site JSEP instructors and responsive, expert support via telephone and on-line electronic consulting, as well as a detailed Instructor's Manual and letters of instruction. The second line of support involved the development of presentations, demonstrations, and written summaries regarding JSEP, to be delivered to commanding officers. As these COs would be tasked to provide soldiers as students for the evolving program, it was important to make them aware of the anticipated benefits of participation in JSEP. Great effort has been invested in making JSEP participation as painless as possible for commanding officers. JSEP orientation for the enlisted soldiers is provided by the JSEP instructors and by the structure and guidance built into the computerized soldier management system.

The true value of good instructor training and program support became obvious when several TRADOC sites adopted JSEP via the Fort Leavenworth PLATO system. Though they were using the same management system and courseware, they did not enjoy the benefit of contractor-provided training of on-site personnel, and most of their communication with the contractor was through the Army Research Institute (ARI) or via letters--clearly less timely and direct. The Fort Leavenworth-served sites had a great number of implementation and operations problems, some simple, others more serious. The soldier performance data collected from these sites was used cautiously in the development and revision of JSEP courseware because there was less rigor and fidelity in the operation and data collection procedures employed.

In line with the second objective, the contractor-served sites provided a constant flow of performance data and user comments and observations, serving both the courseware revision effort and providing a measure of overall effects on achievement. Data on actual performance of soldiers in the lessons was collected automatically by the soldier management system on PLATO, and was collected and recorded by the instructors on MicroTICCIT. Additional information on performance was noted and forwarded by the JSEP instructors. Specific comments and recommendations were captured in on-line notesfiles and in weekly reports sent to the Field-site Coordinator by the instructors. This information served as a main input, along with comments from ARI and FSU reviewers, to the quality control and revision operation maintained at FSU. Descriptions of the specific efforts employed at each site, and the resultant changes effected by FSU follow.

Methodology Used For The Trials.

The statement of work for this contract calls for the operation of two MicroTICCIT sites, two PLATO sites, and the maintenance of support staff at FSU. This section of the report details the operation of the sites, and following sections will describe the results obtained and the conclusions and recommendations drawn.

The extended trials followed the six-week trials at each site, and officially ran until the end of December, 1986. The actual extended trial start date varied from site to site--specific dates for each site are detailed later in this section.

With the exception of Fort Riley, each site already had trained JSEP instructors in place from the six-week trials and these personnel were retained for the extended trials. Consequently, most training provided by the FSU Field Site Director and the MicroTICCIT Systems Operator was of a continuing education nature. When turnover required the training of new instructors, they each received a standard 40 hour instruction course. The training covered such topics as the purpose of JSEP, the structure and function of the Soldier Management System and the lesson curriculum, maintenance and troubleshooting of equipment, management and procedures. Each instructor was issued a JSEP Instructor's Manual, and after May 1986 each new instructor had to pass a posttest based on the job's tasks. When feasible, outgoing instructors trained their replacements, with technical support provided by the Field Site Director and the PLATO and MicroTICCIT Systems Analysts via telephone and on-line consultation. Otherwise, either the JSEP Site Director or a Ford representative (depending upon whether the site was equipped for PLATO or MicroTICCIT) made an on-site visit and conducted the training in person. All Instructors were supported via telephone and written correspondence throughout the extended tryout period.

The soldiers that participated in the extended trials were primarily command referrals, with some walk-ins as well. Each soldier was enrolled in JSEP by the instructor, who created the soldier's file and acquainted the new student with the operation procedures for the computer. (During the latter part of the extended trials the file would be created directly in the Soldier Management System.) The soldier would then complete a battery of tests and questionnaires--some that are used for diagnosis of deficiencies and others that serve to provide baseline data for program revision and evaluation. A lesson prescription would then be generated for the soldier, and the lesson sequence would begin.

The lessons available steadily increased in number as the extended trials continued, until all lessons were incorporated into the JSEP curriculum. Soldier performance data was coupled with the subjective comments and observations of soldiers, instructors, and ARI reviewers to guide lesson revision efforts. The information was analyzed, and revision efforts prioritized, by the Quality Control staff at FSU - the people who responsibility for the final version of JSEP curriculum materials. Revised lessons were substituted for earlier versions as they were completed, so the formative evaluation of each lesson was

recursive during the duration of the trials.

Paper-based lessons as well as computer-based lessons were tried out and revised. In addition to the spontaneous comments of soldiers and reviewers, JSEP instructors were directed to make regular, systematic reports to FSU on a wide range of operations and revision concerns.

Fort Leonard Wood.

At Fort Leonard Wood the extended field trial began July 1985 and was concluded December 1986. During the first year of this effort lesson prescriptions were based upon the need for soldier comments and performance data regarding newly released lessons. As programming was completed on a lesson it was added to the queue of lessons to be reviewed. When a lesson had been reviewed by at least 10 soldiers it was released to Quality Control for analysis and possible revision, although it remained available to soldiers at the site.

In July of 1986, the review of lessons on an individual basis was substantially complete, and attention turned to implementing and fine tuning the Soldier Management System (SMS). Prescriptions were now generated on the basis of individual soldier MOS. Initially, this was done by the JSEP Instructor. The Soldier Management System assumed this task when it was fully implemented. A detailed description of the prescription function of the SMS will be in the JSEP technical report, "Soldier Management System: Features and Functions." Data and comments were focused on revising and validating the SMS, though individual lesson data were still collected and analyzed.

In addition to the Diagnostic Review Lessons and the Skill Development Lessons that make up the basic skills curriculum of JSEP, there are learning strategy lessons designed to help the soldier become a better student. One set of these learning strategies, the lessons on Time Management, were prescribed to soldiers participating in the field trials at Fort Sill and Fort Leonard Wood.

The JSEP Attitude Questionnaire was administered to the soldiers at Fort Leonard Wood. This instrument queried soldiers regarding their experiences in JSEP, from which attitudes toward the lessons, working with computers, and towards this unique type of continuing education in the Army can be inferred. The questionnaire also requested final comments and suggestions as the soldiers prepared to exit the program.

Of the four field sites used for the extended trial, Fort Leonard Wood experienced the lowest overall use rate, with an average of four students per day, at an average of four hours each per day. The site had eight terminals available during the trial, and the JSEP classes were scheduled in two daily four-hour blocks. Thus, capacity at the site was 16 soldiers per day, at four hours each session, for a total of 64 student-hours per day.

Fort Riley.

The extended field trial at Fort Riley ran on the same schedule as at Fort Leonard Wood-- July 1985 to December 1986, beginning with individual lesson prescriptions and changing to MOS-based prescriptions in July 1986. Programming of the learning strategies lessons was not yet complete, so none of them were used. The Education Center did offer BSEP instruction concurrently with JSEP, as well as practice on simulated General Technical (GT) portions of the ASVAB. While this did not affect the use of student performance data for revision purposes, it rendered the use of gain scores indefensible. Accordingly, while the Locator Instruments were used at the site, the 300 item JSEP Math and Verbal Test, which is a test of math and verbal abilities related to JSEP, was not administered. The Locator Tests, 30-item tests of general math and verbal ability developed by RCA Service Corp. as part of an earlier contract were used in an attempt to diagnose soldiers skill deficiencies. The other instrument used at Fort Riley was the Attitude Questionnaire described earlier.

As in the situation described at Fort Leonard Wood, Fort Riley also started with two instructors working 20 hours per week and then went to a single, full-time instructor. The JSEP Center had 14 terminals available through each of two daily four-hour sessions. The mean use rate for the extended trial was eight students per day, at an average of four hours per day per student.

Fort Lewis.

The extended trial at Fort Lewis began two months later than at the two sites previously described, running from September 1985 to December 1986. Unlike the Fort Leonard Wood and Fort Riley trials, the extended trial at Fort Lewis was conducted using only prescriptions based upon individual lessons. Soldiers reviewed new lessons that required comments and performance data as they were released to the field by FSU. As at Fort Riley, the Fort Lewis Education Center offered the JSEP students other instruction concurrently with JSEP, namely BSEP and instruction aimed at GT improvement. And again, as at Fort Riley, this uncontrolled variable of additional instruction rendered the use of the JSEP Math and Verbal Pretests and Posttests ill-advised. Thus the only instruments used at this site were the Locator Tests and the JSEP Attitude Questionnaire.

Again as at the two sites previously discussed, Fort Lewis began with two JSEP instructors each working 20 hours per week and then went to one working full-time. The JSEP Center had 15 terminals available, and ran two four-hour sessions each day. Ft. Lewis averaged 23 soldiers per day, at four hours per day per soldier.

Fort Sill.

While soldier comments and data from the three sites discussed previously were valuable for finding programming flaws and errors--one of the quality control objectives of the extended trials, the data most useful for determining what the soldiers learn from JSEP was collected at Fort Sill. The Fort Sill extended trial was the last to begin and was the best controlled. Beginning in August 1986 and concluding in December 1986, this trial enjoyed the lowest rate of technical and logistical complications. During the five months the trial was in operation, the Fort Sill Education Center did not offer BSEP or GT improvement instruction to the soldiers assigned to the JSEP. In addition, the full complement of JSEP tests and surveys was employed, consisting of the following: a) Post Instruction Practice GT Test; b) Locator Math and Verbal Pre- & Post- Tests; c) JSEP Math and Verbal Pre- & post Tests; d) Background Survey; and e) Attitude Questionnaire.

All soldier lesson prescriptions for this trial were based upon individual MOS. These personalized prescriptions were augmented by assignment to all soldiers of the Time Management Lesson from the Learning Strategies group. At this trial, the Soldier Management System was fully implemented, controlling prescriptions and lesson sequencing, and routing soldiers to appropriate Skill Development Lessons (SDLs) when they did not pass the corresponding Diagnostic Review Lesson (DRL).

Fort Sill had the same instructor arrangement as the other three sites, beginning with two JSEP Instructors working 20 hours per week and then going to just one instructor. The JSEP Center was open for two four-hour sessions per day. The student-use rate at Fort Sill during the extended trial saw an average of 16 soldiers each day.

Supporting effort at FSU.

The JSEP Field Site Coordinator and support staff were available for consultation via telephone or electronic mailbox during the entire trial. When necessary, the chief programmers and systems analysts were placed in contact with the field site personnel. FSU supported both the day-to-day tryout operation and the conduct of special meetings and demonstrations.

RESULTS

Findings.

Three main points were derived from the extended tryouts. First, the soldiers were able to perform well in the JSEP environment. They adapted to working in a CBI environment quickly-- even those soldiers who were initially intimidated by the computers. This is due in part to the successful implementation of the Soldier Management System, which was designed to anticipate soldier needs and difficulties and to present options in a menu-format whenever appropriate. In addition, the SMS has effectively assumed many of the more onerous classroom management duties, which frees the JSEP instructors to attend to the soldiers needing individual help.

The second main finding was that the Learning Strategies (LS) Lessons are more time consuming than initially realized. A harsh reality of soldier basic skills education, including the JSEP trials, is that soldiers cannot be released from their regular duty assignments for long periods of time. One result is that some soldiers may have their participation in JSEP curtailed before they can take full advantage of the lessons in their prescription. When soldiers were given the full range of Learning Strategies Lessons at the front end of their JSEP "tour," many did not complete all of the PC lessons before their time expired. They may have become better learners, but may have returned to regular duty with the same basic skill deficiencies. An equally awkward alternative was to bypass the LS Lessons and route the soldiers straight into the PC lessons, with the result that many face the instructional materials they require armed only with the same poor habits, anxieties, and strategy weaknesses that hindered them in high school. Our solution was to prescribe the Time Management lessons for all soldiers at the beginning of their JSEP experience, followed by the first lessons in their PC prescription. Assignment of other LS Lessons was left to the discretion of the JSEP instructors on an "as needed" basis. This is a proper component of the instructor's role in JSEP, and assures that the soldiers with learning deficiencies get the instruction they need without squandering the brief time available for basic skills instruction.

The third major finding relates to local command support for JSEP. In every case JSEP is competing with other site education center programs for students, and in some cases JSEP appeared to the perceived as a threat to established programs. If JSEP is to succeed in bringing quality individualized CBI to Army education, it will require strong support from both ACES and local commanders, at least during the early stages of transfer when educational computing is still novel. CBI programs such as JSEP are not labor intensive in the classroom. While the JSEP Instructors are a vital part of the educational setting, they are generalists and they are relatively few in number. This can be threatening to some other programs that are instructor-intensive (given the same number of soldier-students), especially if the instructors tend to have only one area of expertise. Sites with such programs can be expected to have problems adopting JSEP unless local command has the vision to weather the change.

Accomplishments.

Throughout the extended tryouts FSU collected performance data and comments from soldiers as well as observations and recommendations from JSEP instructors and ARI personnel. All of this information was used to revise lessons and to solve problems such as the LS Lessons vs. the time available conflict described earlier.

In addition, the Soldier Management System was implemented during the extended tryouts. It too was revised as a result of user comments and observations. If the lessons in the curriculum are the body of JSEP, then the SMS is the central nervous system that controls it. If future lessons added to the curriculum have faults, they can be worked around by the JSEP instructor. But if the SMS has defects, the whole system will be weakened. We now have an SMS that works exactly as envisioned; it is effective, efficient, and is usually transparent to the soldier using it.

Other Activities.

During the extended tryouts the field sites hosted, and FSU supported, various demonstrations of the JSEP for visiting VIPs. In addition, FSU hosted visitors from ARI and evaluators from the American Institutes for Research (AIR), and FSU personnel made JSEP-related presentations at professional conferences.

Recommendations for Future Implementation Plans.

First and most important, local commands should be encouraged to support JSEP during the getting familiar stage, especially where other programs have existing personnel who might feel threatened by a new program. The Education Centers will need to provide the appropriate physical support needed for computer operations. Also Commanding Officers should be encouraged to release soldiers for participation in JSEP. While the Army benefits from a JSEP-improved soldier, CO's will be shorthanded by sending the soldier to JSEP. Efforts must be made to make sure that the CO who encourages participation in JSEP isn't indirectly penalized.

Our other major recommendation centers on the addition of lessons to the JSEP curriculum. New lessons may be added to those already in the program, or more MOS may be added to those already receiving specific prescriptions. When this day arrives, the greatest discipline must be exercised by the programmers to adapt their lesson code to the SMS and to resist the temptation to instead alter the SMS. Every lesson in the JSEP curriculum could have been programmed dozens of different ways, if the lesson were to stand alone. But the SMS coordinates them all. It must be maintained as designed until it no longer meets system needs.