DOCUMENT RESUME

ED 210 435 CE 030 511

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TITLE The Evaluation of a Job-Oriented Basic Skills Training Program--Interim Report, July 1979-July 1981.
INSTITUTION Navy Personnel Research and Development Center, San Diego, Calif.
REPORT NO NPRDC-TR-82-14
PUB DATE Nov 81
NOTE 29p.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Basic Skills; Curriculum Development; *Dropouts; *Educationally Disadvantaged; *Job Training; Learning Problems; *Military Training; Minority Groups; *Program Effectiveness; Program Evaluation; Student Attrition; Technical Education; Vocational Education; Vocational Schools
IDENTIFIERS *JOBS Program; Navy

ABSTRACT

The Job-Oriented Basic Skills (JOBS) program was evaluated to determine whether it could compensate for skill deficiencies of lower aptitude personnel so that they could successfully complete Navy technical schools and perform to standard in the fleet. JOBS curricula were developed for four content strands (aggregations of 12 Class "A" schools based on common content and prerequisite skill and knowledge requirements). Volunteer recruits (N=2212) were randomly assigned to two groups: JOBS direct-track, who entered JOBS training immediately following recruit training, and JOBS delayed-track, who first completed apprenticeship and time in the fleet. Data collected from the two groups were compared with that from a fleet control group with two "A" school-qualified groups who attended "A" school with the JOBS groups. The JOBS groups included twice as many minorities. There were no significant differences in test performance between JOBS direct- and delayed-track students. Overall attrition for JOBS groups from "A" schools was twice that for comparison groups. In general, JOBS students took longer to complete training and scored lower on end-of-course comprehensive tests. The JOBS program appeared to have potential for attenuating Navy technical manpower shortages and contributing to minority upward mobility. (YLB)

NPRDC TR 82-14

November 1981

THE EVALUATION OF A JOB-ORIENTED BASIC SKILLS TRAINING PROGRAM--INTERIM REPORT

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UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER NPRDC TR 82- 14	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) THE EVALUATION OF A JOB-ORIENTED BASIC SKILLS PROGRAM--INTERIM REPORT		5. TYPE OF REPORT & PERIOD COVERED Interim Report Jul 1979-Jul 1981
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) M. Baker K. Huff		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Navy Personnel Research and Development Center San Diego, California 92152		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS Z1176-PN.03
11. CONTROLLING OFFICE NAME AND ADDRESS Navy Personnel Research and Development Center San Diego, California 92152		12. REPORT DATE November 1981
		13. NUMBER OF PAGES 25
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Job-oriented
Basic/prerequisite skills
Class "A" school

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report describes the interim evaluation of four training courses for Navy personnel whose ASVAB scores were below the minimum required for entry into Navy Class "A" technical schools. The training courses were designed to increase their mastery of the skills and knowledge deemed to be prerequisites for success in selected Class "A" schools. Data indicate that the JOBS program has the potential for attenuating Navy technical manpower shortages and contributing to minority upward mobility.

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

FOREWORD

This research and development was conducted under advanced development task area Z1176-PN (Individual Technical Training), work unit Z1176-PN.03 (Improved Performance Through Instruction in "A" School Related Basic Skills), and was sponsored by the Chief of Naval Operations (OP-01). The objective of the work unit is to develop a job-oriented basic skills (JOBS) training program and to determine whether this program can compensate for the skill deficiencies of lower aptitude personnel such that they can successfully complete Navy technical schools and perform to standard in the fleet. The objective of the effort herein described was the interim evaluation of the JOBS training program. A previous report (NPRDC Tech. Rep. 81-24) described the program development activities. Future reports will include the final evaluation and cost/benefits analysis of the program.

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SUMMARY

Problem

Although recent improvements in compensation and benefits are reducing the problem, the Congressional Budget Office is still forecasting a shortfall of Navy high school accessions of about 5 percent per year through 1986. This is attributed to Congressionally mandated limits on entering recruits scoring in the lower mental aptitude categories on the Armed Services Vocational Aptitude Battery (ASVAB). Although this shortfall could be dealt with by seeking relief from these limits, this would result in a proportional decrease in recruits now eligible for Navy technical training.

Objective

The objective of this effort was to evaluate the job-oriented basic/prerequisite skills training program to determine whether it can compensate for the skill deficiencies of lower aptitude personnel such that they can successfully complete Navy technical schools and perform to standard in the fleet.

Approach

Job-oriented basic skills (JOBS) curricula were developed for four content strands covering preparatory training for 12 Class "A" schools. JOBS courses ranged in length from 4 to 8 weeks, each week consisting of 30 hours of lock-step instruction.

A total of 4,520 JOBS-eligible candidates were identified during recruit classification and briefed on the JOBS program. All candidates were below the allowable ASVAB waiver limit for the "A" school for which they were being considered, but within the range established for JOBS eligibility for a particular rating. Of those briefed, 2,212 volunteered for the JOBS program. These recruits were randomly assigned to two groups: (1) JOBS direct-track (N = 643), who were to enter JOBS training immediately following recruit training, and (2) JOBS delayed-track (N = 1,569), who were to complete apprenticeship training and spend some time in the fleet before commencing JOBS training. Data (demographic, performance, attrition, etc.) collected for the two JOBS groups were compared with that collected for three comparison groups: A fleet control group, comprised of the JOBS-qualified recruits who did not volunteer for the program (N = 2,308), and two "A" school-qualified groups who attended "A" school at the same time as did the JOBS groups. One group consisted of recruits who entered "A" school immediately after completion of recruit training; and the other, of those who completed apprenticeship training and spent some time in the fleet before entering "A" school.

Findings

1. Demographic data collected showed that the JOBS groups included twice as many minorities as did the "A" school groups.

2. The mean AFQT score of the "A" school qualified group was approximately 28 points higher than that of the JOBS group, even though approximately 25 percent more of the JOBS group had received high school diplomas.

3. The number of discharges for the JOBS delayed-track group was over twice as high as that for the fleet control group.

4. The JOBS delayed-track group had a significantly higher number of attrites than did the JOBS direct-track group.

5. On the average, JOBS students, in all strands, gained about 42 points from pretest to posttest scores.

6. Of the 873 JOBS-qualified students who have attended JOBS school, 831 (95%) have graduated and 42 (5%) have attrited; the majority of attrites were for disciplinary reasons.

7. Of the 831 JOBS graduates, 655 subsequently attended "A" school. Of these 492 (75%) have graduated and 163 (25%) have attrited. Comparable figures for or the "A" school comparison group are 87 and 13 percent.

8. In all but two schools (AK and SK), JOBS students took 8 to 27 percent longer to complete training than did "A" school students. In all of the schools having end-of-course comprehensive test scores, their scores were 2 to 8 percent lower than those of "A" school students.

9. On six of the seven job performance criteria, no significant differences were found between performance of the JOBS and "A" school comparison groups as designated strikers in the fleet.

10. Eight months after the JOBS and "A" school comparison groups had graduated from "A" school, the "A" school group had approximately three times as many fleet discharges as did the JOBS group.

Conclusions

It appears that the JOBS program has the potential for attenuating Navy technical manpower shortages and contributing to minority upward mobility. However, in the absence of a true control group (JOBS-qualified students who would enter "A" schools without JOBS training), this conclusion must be considered tentative.

Recommendations

1. Determine how the selection of JOBS candidates can be improved (currently being done by NAVPERSRANDCEN).

2. Examine the effectiveness of JOBS as a remedial program for "A" school qualified attrites.

3. Form an appropriate control group to directly assess the contribution of JOBS training to success in "A" school.

4. Conduct cost/benefits analysis of the JOBS training program (currently being done by NAVPERSRANDCEN).

CONTENTS

LIST OF TABLES

INTRODUCTION

Problem

The job-oriented basic skills (JOBS) program described in this report was conceived in 1977 in response to the widely predicted shortfall in high quality accessions during the 1980s. A high quality accession is an individual with a high school diploma scoring in mental categories I, II, or upper III on the Armed Services Vocational Aptitude Battery (ASVAB). Although recent improvements in military compensation and benefits are reducing this problem, the Congressional Budget Office[1] still forecasts a shortfall in high quality accessions of about 5 percent per year through 1986. This is attributed to Congressionally mandated limits on the number of entering recruits scoring in the lower mental aptitude categories on the ASVAB.

One option for dealing with the shortfall would be to seek relief from these limits. This would, however, result in a proportional decrease in recruits now eligible for Navy technical training. Minimum ASVAB scores required for entry into Navy technical schools vary, based on the level of aptitude thought to be required to complete successfully each school curriculum. However, these scores serve as only general indicators of aptitude, which have been established by the Navy to minimize academic failure and/or setback. Indeed, in cases where the prospective student appears highly motivated or has performed particularly well in a fleet assignment, ASVAB entry requirements are lowered up to three points per subtest below minimum required levels. Given that these waivered students, as a group, have a lower technical school attrition rate than do their ASVAB qualified cohorts, some argument can be made for exploring the conditions that enable them to complete successfully the Navy's technical schools. Aside from the motivational and aptitude requirements that are somewhat inherent in most learning situations, it may be that these students score in the ASVAB lower mental aptitude categories because they are deficient in the necessary basic or prerequisite skills required to learn the higher order skills taught in the technical schools. Identification of these job-oriented basic/prerequisite skill deficits and the implementation of an instructional program that may enable these students to successfully complete the Navy's technical schools may help to diminish the shortage of technically trained personnel.

If recent and projected increases in compensation and benefits should succeed in eliminating the projected shortfall in quality recruits, the JOBS program could still be useful. For example, it could be used to train lower aptitude recruits during mobilization, when higher end strengths could well result in a proportionately larger number of such recruits. Also, it could be used as a Navy upward mobility initiative, in cases when ethnic minorities are disproportionately represented among lower aptitude personnel.

Background

The concept of prerequisite job-related skills training is not new to the military. The U.S. Army developed a job-oriented reading program called FLIT (functional literacy), which was designed to provide a level of functional literacy appropriate to minimal job/task reading requirements found in major clusters of common, high-density, Army military occupational specialties (Sticht, 1975). FLIT was the first major effort to move from a general remedial education approach to job-related training in basic/prerequisite

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[1]Resources for Defense: A Review of Key Issues for Fiscal Year 1982-1986. Congressional Budget Office Study, January 1981.

skills. However, it was used only to teach job-related reading skills. It was successful in improving job reading skills by approximately 2 reading grade levels (RGL).

The Army National Guard, which includes a substantial number of personnel with reading skills below the 7.0 grade level, implemented a modified version of the Army's Advanced Individual Preparatory Training Program, which included both job reading tasks and basic reading skills segments (Fox, McGuire, & Joyner, 1976). As with the Army's FLIT program, the Army National Guard program also succeeded in raising partcipant's RGL by 2 years.

The Air Force also developed a job-relevant reading program (Huff, Sticht, & Joyner, 1977) entitled JORP (Job-Oriented Reading Program). JORP was similar to FLIT except that it focused on personnel with somewhat higher RGLs, and trained for reading tasks found not only on the job but also in career development courses.

Aiken, Duffy, and Nugent (1977), in a study of the influence of reading skill on performance in Navy "A" schools, tested students in 10 Navy "A" schools and in the Basic Electricity and Electronics Preparatory course. Results showed wide ranges in the reading skill levels of entering students. The schools varied widely in the degree to which reading skill related to course performance, as well as in the amount and difficulty of the reading assigned. These results show that (1) significant numbers of Navy personnel who are deficient in reading skills are being assigned large amounts of reading and (2) reading skill is predictive of successful course performance. Later studies provided information on the nature and extent of reading in the Navy and the reading skills of Navy personnel (Sticht, Fox, Hauke, & Zapf, 1977a) and a general plan for the development of a job-oriented reading training program (Sticht et al., 1977b).

Given the reading deficiencies found among Navy recruits and the possible Navy requirement for broader use of lower aptitude personnel to help alleviate manpower shortages in technical areas, it was judged potentially beneficial for the Navy to develop the JOBS program, which would further expand upon the Army/Air Force concept of job-oriented basic/prerequisite skills training.

Purpose

The objective of this effort was to evaluate the JOBS program to determine whether it can compensate for the skill deficiencies of lower aptitude personnel such that they can successfully complete Navy technical schools and perform to standard in the fleet.

APPROACH

JOBS Program Development

The Chief of Naval Education and Training (CNET) selected those Class "A" schools for which JOBS preparatory training would be prepared. As economic considerations prohibited the development of separate preparatory curricula for each Class "A" school, schools were aggregated based on common content and prerequisite skill and knowledge requirements. The result was four content "strands," which could feed 12 class "A" schools (see Table 1).

Instructional materials were developed for the four content strands in accordance with the Instructional Development System (IDS) approach described in Harding, Mogford, Melching, and Showel (1981). The length of the JOBS courses is 4 weeks for the propulsion

Table 1

JOBS Strands, Ratings Included, and Selection Criteria

Strand	Ratings Included	AFQT Score	Selection Criteria ASVAB Composite Scores[a]		Other[b]
Propulsion Engineering	Boiler Technician (BT) Engineman (EN) Machinist Mate (MM)	37 or less	Series 5/6/7: Series 8/9/10:	MK + AI = 77 to 87 MK + AS = 77 to 87	None
Operations	Operations Specialist (OS)	37 or less	Series 5/6/7: Series 8/9/10:	WK + AR = 87 to 97 VE + AR = 87 to 97	A,B,C,D,E
	Quartermaster (QM)	37 or less	Series 5/6/7: Series 8/9/10:	WK + AR = 81 to 91 VE + AR = 81 to 91	A,B,C,D,E
Administrative/ Clerical	Aviation Storekeeper (AK)	37 or less	Series 5/6/7: Series 8/9/10:	WK + AR = 87 to 97 VE + AR = 87 to 87	None
	Personnelman (PN)	37 or less	Series 5/6/7: Series 8/9/10:	WK + AR = 93 to 103 VE + AR = 93 to 103	None
	Storekeeper (SK)	37 or less	Series 5/6/7: Series 8/9/10:	WK + AR = 87 to 97 VE + AR = 87 to 97	None
	Yeoman (YN)	37 or less	Series 5/6/7: Series 8/9/10:	WK + NO + AD = 144 to 154 VE + NO + GS = 144 to 154	D,E
Electricity/ Electronics[c]	Aviation Antisubmarine Warfare Technician (AX) Aviation Electronics Technician (AT) Aviation Fire Control Technician (AQ)	37 or less	Series 5/6/7 and 8/9/10: MK + EI + GS = 145 to 155		A,D,E

[a] From ASVAB Subtests: MK = Mathematics Knowledge, AI = Automotive Information, AS = Automotive and Shop Information, WK = Word Knowledge, AR = Arithmetic Reasoning, VE = Verbal, NO = Numerical Operations, AD = Attention to Detail, GS = General Science, EI = Electronics Information.

[b] A = Have normal color perception (NCP), B = Have minimum auditory requirements in accordance with the Manual of the Medical Department (P117), C = Have vision correctible to 20/20, D = Be a U.S. citizen, and E = Be eligible for a security clearance.

[c] In this strand, materials were developed to prepare the student for the Basic Electronic and Electricity (BE/E) and Avionics (AV) courses, which are common to the AX, AT, and AQ ratings.

engineering and operations strands, 5 weeks for the administrative/clerical strand, and 8 weeks for the electricity/electronics strand. In all cases, training immediately preceded the technical course for which it was preparatory. The JOBS training week consisted of 30 hours of lock-step classroom instruction, with after-hours remediation.

During the period from 31 August 1979 to 3 April 1981, all JOBS training in all curriculum strands was conducted exclusively at the Naval Training Center (NTC), San Diego. On 6 April 1981, three additional JOBS training sites were established by the Chief of Naval Technical Training in accordance with the OPNAV JOBS transition plan (1980). These sites were at NTC, Great Lakes, Illinois and at the Naval Technical Training Centers at Meridian, Mississippi and Millington, Tennessee.

Training procedures were the same at each location. Contracted civilian instructors were obtained from local educational institutions. JOBS training materials were supplied to instructors along with detailed guides explaining the sequence, content, and procedures to be followed in the classrooms. The instructor/student ratio was approximately 1:10. The host training center supplied all instructional facilities, and was responsible for housing and boarding the students. The military retained control of all administrative functions and handled any disciplinary actions that arose.

Participants

JOBS Groups

Potential candidates for the JOBS program were identified during classification processing at recruit training. Classifiers at NTCs in San Diego, California, Great Lakes, Illinois, and Orlando, Florida interviewed incoming recruits for the JOBS program. Eligibility was established based on scores achieved on the Armed Forces Qualifying Test (AFQT) and the ASVAB composite tests required for entrance into a given Class "A" school. All candidates were below the maximum allowable ASVAB composite waiver limit for the "A" school for which they were being considered, but within the range established for JOBS eligibility for a particular rating (see Table 1).

During the period from May 1977 through 24 April 1981, a total of 4,520 JOBS-eligible candidates were identified and briefed on the purpose and potential benefits of the JOBS program. As a result, 2,212 persons volunteered for the program, and 2,308 did not. The latter group continued with the training sequence for nonschool-qualified recruits, ultimately to be part of the Navy's general detail (GENDET) force.

The 2,212 JOBS volunteers were then randomly assigned to one of two JOBS training sequences, referred to as direct- and delayed-track groups. Those candidates in the JOBS direct-track group (N = 643) were to be sent to the JOBS school immediately following recruit training. Upon successful completion of the JOBS school, these students would attend their selected Class "A" schools and, if successful there, would be assigned to the fleet as a designated striker. If they failed anywhere in the training pipeline, they would be sent to the GENDET force.

Students in the JOBS delayed-track group (N = 1,569) were those who, after being identified at classification, would attend apprenticeship training and spend time in the fleet (the majority between 5 and 8 months) prior to returning for JOBS training. Upon successful completion of the JOBS program, they would attend the follow-on technical school, and then be sent to the fleet as a designated striker. If they failed anywhere in the training sequence, they would be returned to the GENDET force.

Comparison Groups

Three groups were formed with whom JOBS student performance could be compared. The first group, called the fleet control group, consisted of the 2,308 JOBS-eligible recruits who did not volunteer for the program. The other two groups were to consist of "A" school students attending the "A" school during the same period as the JOBS students. The first "A" school group would consist of ASVAB-qualified recruits selected to enter "A" school immediately after completion of recruit training (direct-track). The second group would consist of ASVAB-qualified students selected to complete recruit and apprenticeship training and then serve some period of time in the fleet before attending "A" school (delayed-track). All students in the two "A" school groups were to be randomly selected from class rosters as attending the "A" school at the same time as the JOBS direct- and delayed-track students.

Data Collection Procedures and Variables

Data were collected for members of the various experimental and comparison groups at five collection points: (1) during recruit classification (all groups), (2) before they entered JOBS training (JOBS delayed-track and fleet control groups), (3) during JOBS training (JOBS direct-track and delayed-track groups), (4) during "A" school training (JOBS and "A" school groups), and (5) after they finished "A" school and had been assigned to the fleet (JOBS and "A" school groups.) Variables collected at each of these points are listed in Table 2; data collection procedures are discussed below.

1. Recruit Classification. During the first year of program operation, classifiers at the recruit training sites entered information from recruits' personnel records onto specially developed forms and then forwarded these forms to the Navy Personnel Research and Development Center (NAVPERSRANDCEN). During the second year, the classifiers, using computer programs developed by the Navy Military Personnel Command (NMPC), supplied recruit information directly to the Navy's COMPASS assignment system. A summary report (computer listing) was then produced and mailed to NAVPERS-RANDCEN. Data for the "A" school groups were obtained from the enlisted master tape (EMT) as the names and social security numbers of those randomly selected for these groups became available.

2. Pre-JOBS Training. Whenever members of JOB delayed-track and fleet control groups were discharged, the discharge date and reason for discharge were obtained from the Master Active Duty and Loss Files maintained by the Department of Defense Manpower Data Center (DMDC) in Monterey, California and from OPNAV's Survival Tracking File. Computer searches were made periodically to update discharge information.

3. During JOBS School. Civilian instructors administered and scored the pre- and postevaluation tests given at the beginning and end of JOBS training. Results were forwarded to NAVPERSRANDCEN on data forms developed for this purpose. Although data on individual segment and module tests were not included in the program evaluation, they were used for student and formative evaluation purposes.

4. During "A" Schools. Data collection forms were developed tailored to the type of information maintained at each "A" school. School administrators were then to complete these forms based on information obtained from student records. In the AK, PN, YN, SK, QM, BT, EN, and MM schools, this information was collected by NAVPERS-RANDCEN personnel.

Table 2

Variables Collected for Group Members at Data Collection Points

During Recruit Classification	Pre-JOBS Training	During JOBS School Training	During "A" School Training	Post "A" School Training
Social Security Number Years of education Education certificate Ethnic background Race ASVAB scores/series Date of birth Date of classification "A" School preferences AFQT score (renormal) Reading grade level Rate Group assignment (track) Classification site (all groups)	Discharge (Reason, Date) (JOBS delayed-track and fleet control groups)	Preevaluation test Postevaluation test Training site Date convened Date graduated Date attrited (Reason) Number discipline actions Curriculum revision (JOBS direct-track and delayed-track groups)	All Schools Rate School attended Date convened Date graduated Date Attrited (Reason) Number on Academic Review Board Last duty station Additional variables by school OS, QM: Number of setbacks Total length of schools Final school grade Class standing AK, PN, SK, YN: Number contract days to completion Number days to typing criterion BT, EN, MM: Final basic completion score Final "A" completion score Final overall average score Days to complete basic (PE) Days to complete "A" BE/E, AV "A": Predicted contact time Actual contact time Final comprehensive (JOBS and "A" school groups)	Type of tasks assigned Performance on tasks assigned Skill/knowledge required Amount of supervision required Military bearing/conduct PQS progress Time on station 3rd class exam scores Reenlistment recommendation Reenlistment rate (JOBS and "A" school groups)

5. After "A" School--Fleet Performance. This information was obtained from a questionnaire mailed to each subject's supervisor. Supervisors were asked to rate subjects on six areas (e.g., military bearing and conduct), using a 4-point scale ranging from "unacceptable" to "outstanding," and to indicate whether or not they would recommend that they be reenlisted. A copy of the survey questionnaire appears in the appendix.

RESULTS AND DISCUSSION

As of 24 April 1981, 873 JOBS-qualified recruits (451 direct-track and 422 delayed-track) had been enrolled in JOBS training.[2] Of these, 655 recruits (306 direct-track and 349 delayed-track) were subsequently enrolled in "A" school training. Variables collected for these subjects were compared with those collected for the 2,308 members of the fleet control group and "A" school-qualified students who attended "A" school at the same time as the JOBS students. A total of 714 "A" school students were identified for the "A" school direct-track group; and 260 students, for the "A" school delayed-track group.

Table 3, which presents the background characteristics of the experimental and comparison groups, shows that over half of the students in the JOBS groups were minorities, compared to less than 20 percent of the "A" school groups. Also, the mean AFQT score of the "A" school groups is approximately 28 points higher than that of the JOBS groups, in spite of the fact that about 89 percent of the JOBS students had high school diplomas, compared to about 67 percent of the "A" school students. This is not surprising, however, when one considers that lower aptitude individuals scoring relatively high on the ASVAB may be admitted to "A" school without a diploma.

As of 30 September 1980, discharge data were available for 487 (31%) members of the JOBS delayed-track group and for 2,301 (98%) members of the fleet control group. As shown in Table 4, 30 percent of the JOBS delayed-track group had attrited, compared to 13 percent of the fleet control group. This is an unexpected outcome; however, it may be due, at least in part, to the low return rate of delayed-track JOBS-qualified candidates from the fleet. Currently, over 400 of the 1,569 JOBS-qualified recruits assigned to the JOBS-delayed track have not returned to attend "A" school, even though they have spent a sufficient amount of time in the fleet.[3] These individuals could quite understandably become disenchanted with the Navy, as they were promised training that they have not received. Another reason for the higher attrition rate of the delayed-track group may be that their high motivation level, as evidenced by their volunteering for the JOBS program, may lead them to be less accepting of GENDET work.

Table 5 presents the overall attrition and graduation rates of JOBS school students by strand and by track. As shown, of the 873 students who have attended JOBS school since July 1979, 831 (95%) have graduated and 42 (5%) have attrited. Six (14%) of the attrites were for academic reasons; 32 (76%), for nonacademic reasons; and 4 (10%), for other reasons. It is interesting to note that the majority of the nonacademic actions

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[2]At this point in time, 192 members of the direct-track group were still in recruit training, and 1,147 members of the delayed-track group were either still in recruit/apprentice training or were serving at sea.

[3]NMPC is currently investigating this problem.

Table 3

Background Characteristics of Experimental and Comparison Groups

Variable	Group: JOBS Direct-track (N = 451)	JOBS Delayed-track (N = 422)	Fleet Control (N = 2308)	"A" School Direct-track (N = 714)	Delayed-track (N = 260)
Race/Ethnic					
Caucasian	42.0	43.2	51.2	80.9	85.9
Black	45.0	52.0	41.6	14.3	12.0
Hispanic	7.3	2.1	3.7	3.4	0.8
Other Minority	5.7	2.6	3.5	1.5	1.2
	100.0	99.9	100.0	100.1	99.9
Mental Category					
I	-	-	0.2	2.4	1.5
II	-	-	-	26.3	23.1
III upper	-	-	0.3	22.6	25.1
III lower	15.9	4.3	4.0	28.7	28.1
IV upper	40.0	44.9	45.8	12.4	14.6
IV lower	43.9	50.5	49.6	7.2	5.0
V	0.2	0.2	0.1	0.3	2.5
	100.0	99.9	100.0	99.9	99.9
Mean AFQT	23.0	21.0	21.2	50.7	49.4
Education					
No diploma	6.8	8.4	11.3	24.5	16.9
GED	3.2	1.8	3.1	11.4	9.6
HS diploma	88.9	89.7	85.6	62.4	72.3
Post HS degree	1.1	-	-	1.7	1.2
	100.0	99.9	100.0	100.0	100.0

Note. All percentages do not equal 100 because of rounding.

Table 4

Duty Status for the JOBS Delayed-Track and Fleet Control Groups Prior to JOBS Training

Item	JOBS Delayed-Track Group N	(%)	Fleet Control Group N	(%)
Status:				
Active duty	343	70	2007	87
Discharged	144	30	294	13
Total	487	100	2301	100
Discharge Reason:				
Deserter	15	10	36	12
Early release	0	0	14	5
Medical	4	3	19	6
Failed behavior standards	110	77	199	68
Other/Error	15	10	26	9
Total	144	100	294	100

Note. Data as of 30 September 1980.

Table 5

Attrition in JOBS School

Item	Total N	Graduates N	(%)	Attrites N	(%)
By Strand					
Propulsion Engineering	373	358	96.0	15	4.0
Operations	207	196	94.7	11	5.3
Administrative/Clerical	237	229	96.6	8	3.4
Electricity/Electronics	56	48	85.7	8	14.3
Total	873	831	95.2	42	4.8
By Track					
Direct-track	451	443	92.2	8	1.8
Delayed-track	422	388	91.9	34	8.1
	873	831	95.2	42	4.8

involved the delayed-track group. Not surprisingly, students who have spent 5 to 8 months on board ship appear to be less manageable than those coming directly from the more disciplined recruit training environment.

Table 6 presents data obtained from the results of the course evaluation tests administered to JOBS school graduates (both direct- and delayed-track) before and after JOBS training. As shown, pretest results ranged from a low of 26 percent correct for those in the electronics strand to a high of 51 percent for those in the engineering strand. In all strands, mean posttest scores were significantly higher than pretest scores. In three of the four strands (all but electronics), mean posttest scores were above the 80 percent criterion established for passing in the JOBS school. The overall average percent gain across all strands from pretest to posttest was 42.

Table 6

Pretest to Posttest Gain Scores By JOBS Curriculum Strand

Jobs Strand	Graduates[a] N	Pretest (%) Mean	Pretest (%) S.D.	Posttest (%) Mean	Posttest (%) S.D.	Gain Score (%)	t Value
Propulsion Engineering	344	51.6	13.5	90.0	7.7	38.4	53.6*
Operations	195	40.3	11.8	85.3	9.4	45.0	55.5*
Administrative/ Clerical	229	45.3	12.6	91.2	5.6	46.0	60.1*
Electronics/ Electricity	48	26.5	9.7	79.0	10.6	52.5	29.4*
Total	816						

[a]Incomplete test data for 15 of the 831 graduates--14 from propulsion engineering strand and 1 from operations strand.

*$p < .0001$.

There were no significant differences in test performance between the JOBS direct-track and delayed-track students. However, as shown in Table 5, the JOBS delayed-track group did have a significantly higher number of attrites. It is possible that, with some tighter controls, such as the screening board used for "A" school-qualified fleet returnees, the delayed track could prove to be a more viable option.

Since the purpose of the JOBS program is to prepare lower-aptitude students for class "A" school technical training, the real indicator of JOBS program success is the number of JOBS students who successfully complete the class "A" schools for which JOBS training is preparatory. Preliminary analyses showed that the background characteristics of the two

JOBS groups were nearly identical, and their performance and attrition comparisons in class "A" school showed no significant differences. Thus, for purposes of data analysis, the two groups were combined to increase the relatively low sample sizes for each "A" school.[4] The direct- and delayed-track "A" school comparison groups were also combined for the same reason.

Table 7 presents the "A" school graduation and attrition rates of the JOBS and "A" school groups. Of the 831 JOBS graduates, 655 subsequently enrolled in "A" school. Of this number, 492 (75%) have graduated and 163 (25%) have attrited. Of the attrites, 109 (67%) left for academic reasons; 48 (29%), for nonacademic reasons; and 6 (4%), for other reasons. Of the 971 students in the "A" school comparison groups, 849 (87%) have graduated and 122 (13%) have attrited. Of the attrites, 38 (31%) left for academic reasons; 76 (62%) for nonacademic reasons; and 8 (7%) for other reasons.

Attrition varied considerably across "A" schools. For the JOBS group, it ranged from a low of 6 percent in the SK course to a high of 58 percent in the BE/E school. In every instance, the attrition of the JOBS group exceeded that of the "A" school comparison group. Except for the SK, MM, and PN schools, all differences were statistically significant (see Table 7). The overall attrition for the JOBS groups was approximately twice that for the "A" school comparison groups--25 vs. 13 percent. However, this result was quite promising considering the massive aptitude differences between the groups. As was expected, JOBS graduates attrited from "A" school primarily for academic reasons. The converse was true for the "A" school comparison groups.

In addition to attrition data, information was collected on "A" school comprehensive end-of-course exams and/or time to complete the course. Table 8, which compares the JOBS and "A" school groups on these measures, shows that, in all but two schools (AK and SK), JOBS students took 8 to 25 percent longer to complete training than did "A" school students. Also, in the schools having end-of-course comprehensive test scores, their scores were significantly lower than those of "A" school students.

The aforementioned data provided information on the success of JOBS training in preparing lower aptitude students to enter and complete class "A" schools. However, the issue of whether lower aptitude students could successfully complete Class "A" school without JOBS training has not yet been addressed. Due to constraints applied by the Chief of Naval Personnel (OP-13), the formation of a true control group (JOBS-qualified students who would enter the "A" schools without benefit of JOBS training) was not permitted. Hence, an attempt was made to estimate the affects of JOBS training through regression discontinuity; that is, by comparing "A" school performance of JOBS students to that predicted based on their ASVAB composite scores.[5] Criterion measures included comprehensive test scores, course completion times, and attrition. Results in every comparison showed no significant differences between actual and predicted performance. However, no empirical data are available on actual "A" school performance of students scoring in the lower ranges of the ASVAB who did not attend JOBS. Predictions resulting

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[4] The lack of performance and attrition differences in the class "A" schools between the direct- and delayed-track JOBS groups sharply contrasts with the large attrition differences found for these groups at the JOBS school. This may be due, at least in part, to the fact that to most of the problem cases in this group had already attrited during JOBS training.

[5] Composite scores used were those required for the "A" schools for which the student was eligible and had selected at classification.

Table 7

"A" School Graduation and Attrition Rates for JOBS and "A" School Groups

"A" School[a]	JOBS Group (Direct and Delayed) N	Grad. (%)	Attr. (%)	"A" School Group (Direct and Delayed) N	Grad. (%)	Attr. (%)	t-value
Aviation Storekeeper (AK)	20	70	30	37	95	5	2.66**
Basic Electronics/Electricity (BE/E)[a]	12	42	58	25	88	12	2.85**
Boiler Technician (BT)	87	61	39	190	76	24	2.59**
Engineman (EN)	72	81	19	122	92	8	2.24*
Machinist Mate (MM)	115	68	32	184	77	23	1.74
Operations Specialist (OS)	107	76	24	82	96	4	4.05**
Personnelman (PN)	89	82	18	99	90	10	1.56
Quartermaster (QM)	50	78	22	90	100	0	5.11**
Storekeeper (SK)	51	94	6	59	96	4	.18
Yeoman (YN)	52	81	19	83	95	5	2.43*
Overall	655	75 (N = 492)	25 (N = 163)	971[b]	87 (N = 849)	13 (N = 122)	6.11**

Reason for attrition	(%)	N	(%)	N
Academic	67	109	31	38
Nonacademic	29	48	62	76
Medical/other	4	6	7	8
	100	163	100	122

[a] All "A" schools except BE/E prerequisite school, which is common to the AT, AQ, and AX ratings.

[b] Incomplete data for three direct-track "A" school students.

*p < .05.
**p < .01.

Table 8

"A" School Criterion Measures for JOBS and "A" School Groups

"A" School	Mean # of Days to Completion			End-of-Course Test Scores		
	"A" School Group	JOBS Group	t-value	"A" School Group	JOBS Group	t-value
Aviation Storekeeper (AK)	40.6	40.0	.86	-	-	-
Boiler Technician (BT)	17.7	20.6	3.72*	87.8	85.8	3.45*
Engineman (EM)	20.3	23.1	2.46*	90.4	87.4	4.33*
Machinist Mate (MM)	18.9	21.4	2.34*	87.3	85.7	2.78*
Operations Specialist (OS)	-	-	-	87.5	82.5	5.86*
Personnelman (PN)	26.2	33.7	5.58*	-	-	-
Quartermaster (QM)	-	-	-	83.0	74.9	5.59*
Storekeeper (SK)	36.8	40.8	1.60	-	-	-
Yeoman (YN)	41.4	56.1	5.65*	-	-	-

Notes.

1. Sample sizes appear in Table 7.

2. The BE/E school, a prerequisite course common to the AT, AQ, and AX ratings, was not included in these analyses as sufficient data were not yet available.

*p < .01.

from the aforementioned regression discontinuity procedure have been extrapolated based on "A" school-qualified student performance data. Hence, the issue of whether the lower aptitude student could successfully complete "A" school without JOBS training has not been adequately addressed.

As of 21 August 1981, surveys had been returned for 132 JOBS students and 313 "A" school comparison students who had graduated from "A" school and had been assigned to the fleet. As shown in Table 9, the "A" school group received slightly higher mean ratings on all criteria. However, only one--that on skill and knowledge required--was significant and, in even in that case, JOBS personnel ratings were within the acceptable range. Apparently, first-line supervisors feel there is little difference between the groups in performing as designated strikers. In fact, the mean ratings given to both groups as to reenlistment recommendations ranged between "probably yes" to "definitely yes."

Although the fleet performance of the JOBS group was rated a bit lower than that of the "A" school comparison group, the attrition data for the two groups presents quite a different picture. As shown in Figure 1, 8 months after graduating from "A" school, the "A" school groups had approximately three times as many discharges as did the JOBS group. If this trend continues, the percentage difference between the "A" school and JOBS groups losses in the fleet may begin to equalize the attrition differences found between these two groups in the "A" schools. The significantly lower number of discharges from the JOBS group may be the result of unexpected job satisfaction

experienced by these lower aptitude personnel. Also, they may feel that, although they are working successfully as technicians in the Navy, they may not be as well accepted in the civilian world where, in most cases, they have experienced a long history of failure.

Table 9

Mean Supervisory Ratings for JOBS and "A" School Groups During First Year Fleet Performance as Designated Strikers

Variable	JOBS Group Mean[a]	S.D.	N	"A" School Qual. Group Mean[a]	S.D.	N	t-value
1. Types of tasks assigned to rating	2.96	.57	132	3.09	.66	311	1.95
2. Work quality on assigned tasks	3.04	.66	132	3.14	.76	313	1.31
3. Skill and knowledge required to perform in this rating	2.85	.73	131	3.02	.74	312	2.24*
4. Supervision required to complete assigned task	3.08	.83	132	3.14	.85	313	.74
5. Military bearing and conduct	2.95	.79	132	2.96	.85	313	.24
6. PQS progress (watch status)	2.79	.82	128	2.91	.83	283	1.47
7. Reenlistment recommendation	3.20	.92	130	3.26	.92	310	.64

Note. Data as of 21 August 1981.

[a]For variables 1-6, means are based on responses to a 4-point scale, where 1 = unacceptable and 4 = outstanding. For variable 7, means are based on responses to a 4-point scale, where 1 = definitely not and 4 = definitely yes.

*$p < .05$.

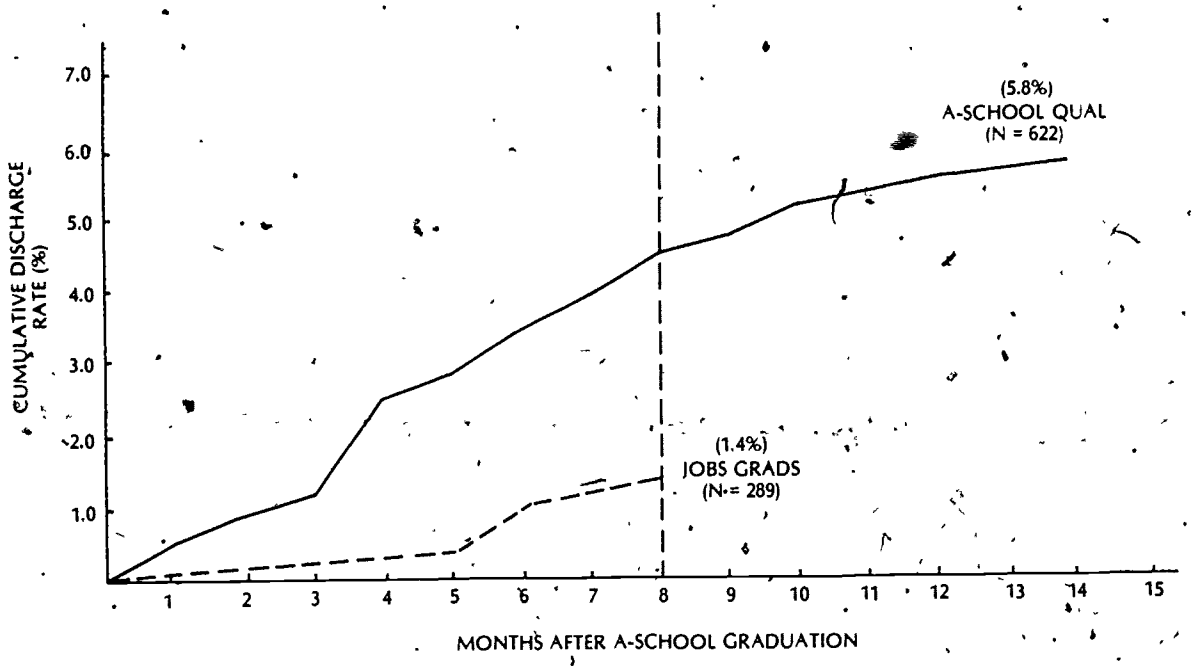

Figure 1. Cumulative dischage rates of JOBS and "A" school groups who have been in the fleet at least 8 months afteer "A" school graduation.

CONCLUSIONS

It appears that the JOBS program has the potential for attenuating Navy technical manpower shortages and contributing to minority upward mobility. However, in the absence of a true control group (JOBS-qualified recruits who enter "A" school without JOBS training), this conclusion must be considered tentative.

RECOMMENDATIONS

1. Determine how the selection of JOBS candidates can be improved (currently being done by NAVPERSRANDCEN).

2. Examine the effectiveness of JOBS as a remedial program for "A" school-qualified attrites.

3. Form an appropriate control group to assess directly the contribution of JOBS training to success in "A" school.

4. Conduct a cost/benefit analysis of the JOBS training program (currently being done by NAVPERSRANDCEN).

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Request this report be completed and returned within two weeks after receipt. Forward completed form in the envelope provided. Mail to:

Commanding Officer
Navy Personnel Research and Development Center
San Diego, CA 92152
(Autovon 933-2371) ATTN: Marc Hamovitch (Code 15)

EVALUATION

Evaluate member identified above on the following characteristics. Compare him or her with others of the same rating and rate. Evaluate member based on typical performance. Circle only one response per item.

Characteristic	1 Unacceptable	2 Marginal	3 Satisfactory	4 Outstanding	For NPRDC use only
1. Type of tasks assigned in rating	Given menial tasks outside rate/rating	Given tasks at the lowest level in this rating and rate	Given tasks typical of this rating and rate	Given tasks at the highest level in this rating and rate.	1.XA=____(1)
2. Work quality on assigned tasks	1 Unacceptable Work has to be re-done	2 Marginal Work is below normal expectations	3 Satisfactory Work meets normal expectations	4 Outstanding Work exceeds normal expectations	2.XB=____(1)
3. Skill and knowledge required to perform in this rating	1 Unacceptable Demonstrates definite lack of skills and knowledge	2 Marginal Demonstrates marginally acceptable skills and knowledge	3 Satisfactory Demonstrates a typical grasp of skills and knowledge	4 Outstanding Demonstrates exceptional skills and knowledge	3.XC=____(1)
4. Supervision required to complete assigned tasks	1 Constant Must be supervised at all times	2 Excessive Requires more than normal amount of supervision	3 Average Requires the usual amount of supervision	4 Minimum Rarely requires supervision	4.XD=____(1)
5. Military bearing and conduct	1 Unacceptable Often violates expected standards in appearance and military behavior	2 Marginal Sometimes lax in conforming to expected standards in appearance and military behavior	3 Satisfactory Conforms to expected standards in appearance and military behavior	4 Outstanding Exemplar in appearance and military behavior	5.XE=____(1)
6. PQS Progress (Watch Station)	1 Unacceptable Far below minimum points assigned	2 Marginal Slightly below minimum points assigned	3 Satisfactory Meeting minimum points assigned	4 Outstanding Exceeds minimum points assigned	6.XF=____(1)

7. Considering this member's overall record of performance and conduct, would you recommend him or her for reenlistment?

1 Definitely not	2 Probably not	3 Probably yes	4 Definitely yes

7.XG=____(1)

ADDITIONAL INFORMATION

8. Today's Date MM / DD / YY — 8.XH=__/__/__(6) MM DD YY

9. Member's time at this duty station _____ Days — 9.XI=____(3)

10. Has member taken 3rd class exam? NO 1 YES 2 — 10.XJ=____(1)

If YES provide: 11. Final multiple score ___-/___.__ — 11.XK=____(5)

12. Minimum Multiple Required to advance ___-___.__ — 12.XL=____(5)

13. Standard Score ___ — 13.XM=____(2)

14. Has member been transferred? NO 1 YES 2

If YES provide 15. Date transferred MM / DD / YY

16. New Command address _____

17. Has member been discharged? NO 1 YES 2 — 17.XN=____(1)

If YES provide 18. Date discharged MM / DD / YY — 18.XO=__/__/__(6) MM DD YY

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1. Type of tasks assigned in rating	Given menial tasks outside rate/rating	Given tasks at the lowest level in this rating and rate	Given tasks typical of this rating and rate	Given tasks at the highest level in this rating and rate.	1.XA= ____ (1)
2. Work quality on assigned tasks	1 Unacceptable Work has to be re-done	2 Marginal Work is below normal expectations	3 Satisfactory Work meets normal expectations	4 Outstanding Work exceeds normal expectations	2.XB= ____ (1)
3. Skill and knowledge required to perform in this rating	1 Unacceptable Demonstrates definite lack of skills and knowledge	2 Marginal Demonstrates marginally acceptable skills and knowledge	3 Satisfactory Demonstrates a typical grasp of skills and knowledge	4 Outstanding Demonstrates exceptional skills and knowledge	3.XC= ____ (1)
4. Supervision required to complete assigned tasks	1 Constant Must be supervised at all times	2 Excessive Requires more than normal amount of supervision	3 Average Requires the usual amount of supervision	4 Minimum Rarely requires supervision	4.XD= ____ (1)
5. Military bearing and conduct	1 Unacceptable Often violates expected standards in appearance and military behavior	2 Marginal Sometimes lax in conforming to expected standards in appearance and military behavior	3 Satisfactory Conforms to expected standards in appearance and military behavior	4 Outstanding Exemplar in appearance and military behavior	5.XE= ____ (1)
6. PQS Progress (Watch Station)	1 Unacceptable Far below minimum points assigned	2 Marginal Slightly below minimum points assigned	3 Satisfactory Meeting minimum points assigned	4 Outstanding Exceeds minimum points assigned	6.XF= ____ (1)

7. Considering this member's overall record of performance and conduct, would you recommend him or her for reenlistment?

1 Definitely not	2 Probably not	3 Probably yes	4 Definitely yes

7.XG= ____ (1)

ADDITIONAL INFORMATION

8. Today's Date MM / DD / YY — 8.XH= / / (6) MM DD YY

9. Member's time at this duty station _____ Days — 9.XI= ____ (3)

10. Has member taken 3rd class exam? NO 1 YES 2 — 10.XJ= ____ (1)

If YES provide: 11. Final multiple score — 11.XK= ____ (5)

12. Minimum Multiple Required to advance — 12.XL= ____ (5)

13. Standard Score — 13.XM= ____ (2)

14. Has member been transferred? NO 1 YES 2

If YES provide 15. Date transferred MM / DD / YY

16. New Command address

17. Has member been discharged? NO 1 YES 2 — 17.XN= ____ (1)

If YES provide 18. Date discharged MM / DD / YY — 18.XO= / / (6) MM DD YY

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