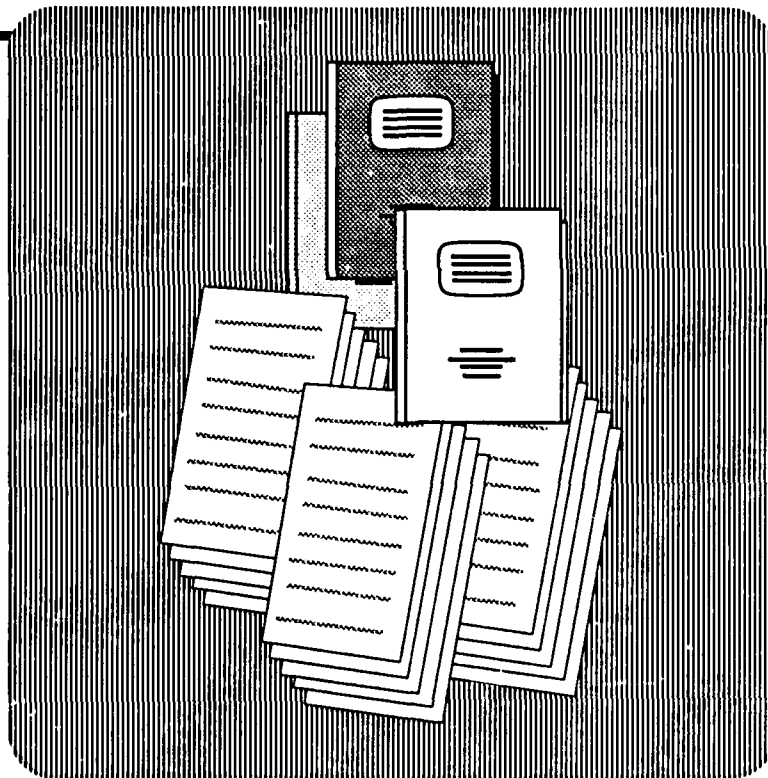




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Bibliography of Reports and Journal Articles Approved for Public Release: FY90

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**Bibliography of
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FY90**

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San Diego, California 92152-6800

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13. ABSTRACT (Maximum 200 words) This report lists all technical reports, journal articles, technical notes, and administrative publications that have been approved for public release in FY89. Publications in each category are listed in chronological order under the following areas: manpower, personnel, testing systems, education and training, organizational systems, and administrative publications.				
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Foreword

NPRDC is an applied research center, contributing to the personnel readiness of the Navy and Marine Corps. The Center develops better ways to attract qualified people to the naval services, to select the best, to assign them where they are most needed, to train each one effectively and efficiently, and to manage our personnel resources optimally. By combining a deep understanding of operational requirements with first-rate scientific and technical abilities, the Center is unique in being able both to develop new, useful knowledge and to refine technology to address people-related issues. This dual expertise permits the Center to develop the technology base for improving the use of human resources within Navy systems and to apply state-of-the-art technology to solve emerging problems.

The R&D methods used by NPRDC are derived from behavioral, cognitive, economic, and social sciences as well as from applied mathematics and statistics. The application of these methods results in tangible products of use to the Navy and Marine Corps. NPRDC constantly searches for technological opportunities to improve personnel readiness and to reduce manpower costs. We are accountable to Commander, Naval Military Personnel Command, our sponsors, and our users for high productivity, strict ethics, honesty, integrity, professionalism, and perspective.

NPRDC seeks to do as much of its work as possible in the operational setting where the final products of the effort are intended to be used. This helps to ensure that the needs and requirements of the users are met and that the users themselves become familiar with the operational capabilities of the particular products.

The R&D program at NPRDC addresses the five functional areas shown below:

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Manpower--develops new systems and methods for determining manpower requirements, allocating manpower resources, developing personnel inventories, and distributing/assigning those inventories to improve military readiness and control costs.

Personnel--develops systems and procedures for recruiting, selecting, classifying, and utilizing officer, enlisted, and civilian personnel to improve performance and retention. Serves as the Chief of Naval Operations' primary personnel survey resource to coordinate and conduct attitude surveys in the Navy and Marine Corps and to develop new survey technology.

Testing Systems--develops and evaluates systems for personnel selection and classification testing, performance measurement, and person-job matching. Serves as the lead DoD laboratory for the development of the Computerized Adaptive Testing version of the Armed Services Vocational Aptitude Battery (CAT-ASVAB) and the Adaptability Screening Profile (ASP) Program. Manages and performs R&D and scientific support for these and other selection and classification programs including the Navy portion of the Joint Service Job Performance Measurement Program.

Education and Training--develops training technologies to enhance personnel readiness. Employs existing and emerging technologies in the development and application of training systems to alleviate Navy training problems and improve the Navy's operational readiness.

Organizational Systems--conducts research, development, test and evaluation on Department of the Navy organizations. The principal criteria are effectiveness, quality of products and services provided, efficiency, timeliness, and cost.

This report contains an abstract of each report and journal article prepared by Navy Personnel Research and Development Center (NPRDC) personnel and published and approved for public release in FY90.

Publications are listed in chronological order under six areas: Manpower, Personnel, Testing Systems, Education and Training, Organizational Systems, and Administrative Publications.

Some publications overlap subject-matter areas and accordingly are listed in more than one area.

Qualified users may request copies of publications from the Defense Technical Information Center (DTIC), Cameron Station, Alexandria, Virginia 22314 (Telephone: Commercial (202) 274-7633 or Autovon 284-7633). General public may order from the National Technical Information Service, Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161 (Telephone: Commercial (703) 487-4650 (no Autovon)).

B. E. BACON
Captain, U.S. Navy
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FY90**

Manpower

Technical Notes

**TN-90-8
January 1990
(AD-A217 242)**

R. Buckley
J. W. Mosteller
S. J. Pinciario
D. R. Schurmeier
J. Silverman
Y-L. Su

Analysis of the Individuals Account for Officers.

Approved for public release; distribution is unlimited.

Naval Officers in the individuals account (IAO) consist of those in training, on temporary duty (TEM DU), or transients, patients, prisoners, and holdees (TPPH). These personnel are not available for operational duty. With a fixed ceiling for personnel, any increase in the size of the IAO results in fewer officers available to fill operational positions. This directly impacts the Navy's ability to fulfill its operational mission. The total IAO has remained fairly constant since the mid 1980s, but its proportions are changing. Increasing complexity in the practice of Naval Warfare has led to greater training requirements and the training portion of the IAO account has paralleled this growth. As a result, great care is needed in assessing the impact of training programs on the size of the IAO. Existing IAO monitoring units should be strengthened to provide more effective IAO management.

**TN-90-12
March 1990
(AD-A220 787)
(Also listed under Personnel.)**

R. E. Chatfield
S. A. Gullett

Development of a USMC Officer Assignment Decision Support System: Data Requirements.

Approved for public release; distribution is unlimited.

This data requirements analysis was completed as part of the Life Cycle Management (LCM) process for development of an Officer Assignment Decision Support System (OADSS). This document provides general information about system development requirements, describes data elements required by OADSS in detail, and discusses data collection responsibilities. A data modeling approach was utilized to detail the

Manpower

Technical Notes

TN-90-26
August 1990
(AD-A225 314)

Meei-You Lee

logical organization of OADSS data elements in a normalized (i.e., non-redundant) form. This process was carried out by applying an entity level, or top down approach and included identifying data entities, their keys, and other data elements they describe. A complete data model diagram for the OADSS data bases is provided along with descriptions of the 19 major data entities. Data elements are identified as static system data, dynamic input data, dynamic output data, or internally generated data. The organizational, operational, and developmental impact of OADSS data base collection, maintenance, and utilization is also discussed. It is recommended that a Project Management Plan (PMP) be completed as the next phase in the development of OADSS.

Allocating Promotions to Year of Service (YOS) Cells in a Marine Corps Inventory Projection Model.

Approved for public release; distribution is unlimited.

This report describes the development of a preliminary method for allocating pay grade promotions to year of service (YOS) cells at the all Marine Corps (ALMAR) level in the prototype inventory projection model (IPM). For FY81 through FY86, historical promotion data by pay grade and YOS at the end of each fiscal year were used for the analysis. The analysis showed that for all pay grades, the distribution of promotions across YOS has changed. Two techniques were used to produce a promotion allocation table to be used in the IPM. In a comparison with the actual YOS distribution of ALMAR promotions in FY87, the naive method outperformed the IPM promotion allocation table. Further research is needed to explore a method that does not solely rely on the historical distributions.

Manpower

Journal Article

Computers and Mathematics
with Applications, 20(2),
67-80 (1990).

I. A. Krass

*Shadow Method for Convex Programming With
Application for Navy Credit Sea/Shore Rotation Problem.*

A method to solve convex nonlinear problems, which are standard for manpower management in the U.S. Navy, was developed. Those problems include balancing manpower between different manpower categories and providing equal credits for persons available to rotate from sea duty to shore duty. The method is an extension of "goal programming" by Charnes and Cooper.

Personnel

Technical Report

TR-90-1
October 1989

P. J. Thomas
J. E. Edwards

Pregnancy and Single Parenthood Among Enlisted Personnel in the Navy.

Approved for public release; distribution is unlimited.

Pregnant women and single parents are believed to have a negative impact upon mission accomplishment because of absences, lack of assignment flexibility, and the administrative burden they cause. As the number of women in the Navy increases, so will the number of pregnancies. Single parenthood, while not female exclusive, is five times more prevalent among women than men in the United States. Thus, facts, as opposed to perceptions, regarding both pregnant women and single parents need to be established so that effective policies can be developed.

This effort represents the first phase of a 3-year research project. The purpose of this initial phase was to establish the number of pregnant women and single parents in the Navy.

Women's and men's versions of a special purpose survey were designed and mailed to a sample of approximately 9,200 enlisted personnel under anonymous conditions. In the analysis, response frequencies were weighted to develop estimates that would be representative of the enlisted force of each gender. In addition, comparisons were made of the responses of subgroups of interest.

Personnel

Technical Notes

TN-90-1
October 1989
(AD-A216 568)

C. K. Ownes-Kurtz
W. C. Borman
K. A. Gialluca
N. M. Abrahams
J. D. Mattson

Refinement of the Naval Reserve Officer Training Corps (NROTC) Scholarship Selection Composite.

Approved for public release; distribution is unlimited.

The main purpose of the present study was to evaluate the Quality Index (QI), a weighted predictor composite intended to predict performance in the NROTC program. The QI utilizes high school rank, Scholastic Aptitude Test (SAT) scores for a Navy officer interview rating, and Strong Campbell Interest Inventory (SCII)/Background Questionnaire (BQ) keys to predict NROTC student performance. In previous research (Mattson, Neumann, & Abrahams, 1987), a linear composite of these five predictors was found to correlate to a useful degree with school performance as measured by grade point average (GPA), naval science grades (NSG), and ratings of aptitude for performing as a Navy officer (APT). The present study examined the original QI, developed on the 1979 and 1980 entering classes, and other composites of the five predictors on samples of NROTC students from the 1982 and 1985 entering classes. Results suggested that the QI's validity holds up quite well across the samples, with cross validities corrected for restriction-in-range reaching .30-.35 for some of the performance criteria. A second major research activity involved attempting to enhance the effectiveness of individual predictor components of the QI. Accordingly, first, we prepared a new conversion table for transforming ACT test scores to their SAT equivalents, resulting in less overall measurement error than when the existing table is employed. Second, the predictive validity of average and highest SAT or SAT-equivalent composites were compared. The highest composite was found to be slightly more predictive of NROTC performance. Third, we suggested alternative sources of the high school rank predictor in cases where these data are missing. Fourth, suggestions were made to explore new procedures for the officer interview. Finally, new empirical keys for the SCII and BQ were developed and then validated on a separate sample. Results showed that these keys improved prediction of NROTC performance when combined with SAT, high school rank, and officer interview predictors.

Personnel

Technical Notes

TN-90-2

October 1989

(AD-A214 984)

(Also listed under Education and Training.)

M. K. Nakada
W. Milczewsky
S. R. Wax

Enlisted Training Tracking File (TRAINTRACK).

Approved for public release; distribution is unlimited.

The Enlisted Training Tracking File (TRAINTRACK) is a longitudinal data base of individual enlisted training episodes. This report describes the data sources, layout, and elements.

TN-90-4

November 1989

(AD-A216 602)

G. J. Worst
G. J. Wright
H. G. Baker

Armed Services Vocational Interest Profile (ASVIP): Feasibility and Design Alternatives.

Approved for public release; distribution is unlimited.

Interest measures are one of the most commonly used instruments by high school counselors. Currently, no measure of interest is offered by the military to high schools for use with Armed Services Vocational Aptitude Battery (ASVAB) results. This study involved a brief literature review of interest assessment and investigated the acceptance of a new interest measure by high school counselors and what design features counselors would like to have included.

TN-90-6

November 1989

D. A. Tyburski
J. L. Petrey
S. Wilson
B. Kewley

OCPM-CENSUS Bulletin Board System User's Manual.

Approved for public release; distribution is unlimited.

The OCPM-CENSUS Bulletin Board System (BBS) User's Manual provides detailed instructions concerning accessing and using the CENSUS BBS to conduct automated surveys. Points of contact at each activity to be surveyed use the BBS to download surveys and upload completed surveys back to NPRDC for analysis. The system is completely paperless and reduces the time to conduct surveys and reduces the possibility of data contamination or loss.

Personnel

Technical Notes

TN-90-7
November 1989
(AD-A216 621)

H. G. Baker
J. P. Wanous

Realistic Job Previews for a Sample of Navy and Marine Corps Occupations: Development of Prototypes.

Approved for public release; distribution is unlimited.

This research developed prototypic realistic job previews (RJPs) for a sample of entry-level Navy and Marine Corps occupations. The research reported here is expected to benefit the recruiting branches of the Navy and Marine Corps as well as the research community. In addition to their use in recruiting, RJPs such as those produced in this effort, have potential for a number of other uses (e.g., at schools, job fairs, armed forces exhibits, and in stand-alone systems at shopping malls, etc.).

TN-90-12
March 1990
(AD-A220 787)

R. E. Chatfield
S. A. Gullett

Development of a USMC Officer Assignment Decision Support System: Data Requirements.

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This data requirements analysis was completed as part of the Life Cycle Management (LCM) process for development of an Officer Assignment Decision Support System (OADSS). This document provides general information about system development requirements, describes data elements required by OADSS in detail, and discusses data collection responsibilities. A data modeling approach was utilized to detail the logical organization of OADSS data elements in a normalized (i.e., non-redundant) form. This process was carried out by applying an entity level, or top down approach and included identifying data entities, their keys, and other data elements they describe. A complete data model diagram for the OADSS data bases is provided along with descriptions of the 19 major data entities. Data elements are identified as static system data, dynamic input data, dynamic output data, or internally generated data. The organizational, operational, and developmental impact of OADSS data base collection, maintenance, and utilization is also discussed. It is recommended that a Project Management Plan (PMP) be completed as the next phase in the development of OADSS.

Personnel

Technical Notes

TN-90-13
March 1990
(AD-A220 906)

R. A. Giacalone
P. Rosenfeld

Family Separation and Petty Regulations as Dissatisfiers on the Navy Separation Questionnaires.

Approved for public release; distribution is unlimited.

A survey was conducted to help the Navy understand the family separation and "petty regulations" issues that have been cited as reasons for separation from the Navy.

Results showed that family separation was seen as a generally negative experience. Aspects of family separation related to physical separation and lack of communication with family were the most related to separation from the Navy. Most agreed that "petty regulations" referred to excessive, differentially enforced rules.

TN-90-14
March 1990

A. E. Aunins
K. E. Sander
P. W. Giannetto
S. J. Wilson

Navy Recruiter Survey: Content Analysis of Free Response Data.

Approved for public release; distribution is unlimited.

This report contains the analyses of free response data obtained in a Navy recruiter survey conducted by NPRDC in February 1989, at the direction of the Recruiting Long-Range Plan Study Group formed by the Commander, Navy Recruiting Command.

The survey was administered to all production Navy recruiters. Of the 3,498 recruiters available, 3,315 (94.8%) responded. Sixty percent (1,996) responded to the free response section. Of these, 1,935 were analyzed for content. Recruiter comments concerned working hours, quality of work life, goals, family conflict, management, supervision, stress, duty requirements, monthly quotas, and training. This report is the fourth in a series.

Personnel

Technical Notes

TN-90-20
May 1990
(AD-A221 989)

D. M. Bruce

Evaluating Quality of Life Programs: Summary of a Literature Review.

Approved for public release; distribution is unlimited.

This report summarizes the results of a literature review conducted to identify previous efforts to evaluate quality of life programs. Organized by program areas that correspond to Navy programs, identified studies are cited together with a brief discussion of their results and their applicability to Navy evaluation efforts. Program areas examined include compensation, health care and promotion, housing, personnel policies, education and training programs, recreation, child care, personal services, and religious support. A discussion of the role of measurement in evaluation and goals of evaluation research are included as background material.

It was concluded that there is a pervasive lack of research designed to evaluate quality of life programs and that evaluation efforts frequently suffer from an absence of methodological rigor. It is recommended that efforts to evaluate Navy programs should include attitude and satisfaction assessment and objective effectiveness data as a minimum, with cost-effectiveness analysis when feasible.

TN-90-24
June 1990
(AD-A223 857)

J. E. Edwards
P. Rosenfeld
P. J. Thomas

Hispanic and Anglo Males in the Navy's Blue-collar Civilian Work Force: A Comparison of New Hirees.

Approved for public release; distribution is unlimited.

This study examined potential differences between newly hired Hispanic and Anglo blue-collar Navy civilian employees. Thirty-one Navy activities were identified for participation in this phase of a 4-year Equal Employment Enhancement project. Each male Hispanic who entered a Department of the Navy Occupational Level (DONOL) Code 8 or 9 semi-skilled or journey person job at one of those activities was to be administered a questionnaire during the first week of his employment. A comparison Anglo male entering a similar job was surveyed whenever his accession followed

Personnel

Technical Notes

the accession of an Hispanic. Usable surveys were obtained from 76 Hispanics and 75 Anglos. Few statistically significant differences were detected among the groups. However, two areas of differences were found: the need for role clarity in the job and the belief that Hispanics are suspicious of the government. In both cases, less acculturated Hispanics (LAH) and Anglos differed. LAHs needed significantly more role clarity in their work and disagreed more strongly with statements suggesting that Hispanics do not trust the government. It is recommended that more formal methods of recruitment for DONOL Code 8 and 9 jobs be used to alleviate the Navy's Hispanic underrepresentation. Second, the relatively higher need for clarity of LAHs may be accommodated through training of supervisors.

TN-90-31
July 1990
(AD-A225 429)

H. G. Baker

Navy Recruiting Comprehensive Stress Management Program: I. The Stress of Recruiting Duty.

Approved for public release; distribution is unlimited.

Job stress has become a pervasive problem in Navy recruiting, affecting personnel at all levels of the organization. While stress has many positive aspects, excessive job stress or an inept response to it is inimical to quality of personal and family life, individual and group performance, and organizational productivity. Ultimately, the effects will become manifest in military readiness.

Information for this study was drawn from several sources, including surveys of Navy health practitioners, interviews with recruiters and recruiting managers, and a survey of all Navy production recruiters. The evidence indicates that job stress in Navy recruiting is widespread and that potential contributors to it occur in almost every job area--personnel selection, training, organizational structure and development, and administration and performance management.

A stress management program of sufficient comprehensive-ness is needed to address the many sources of stress. Such a program should be developed using a team approach involving subject matter experts and Navy recruiting personnel.

Personnel

Technical Notes

TN-90-32
August 1990
(Also listed under Testing.)

C. H. Cory

Validity of the GRIP and ASVAB Test Batteries for Job Performance of Sonar Technician (Surface) Personnel.

Approved for public release; distribution is unlimited.

The validity of several aptitude tests for predicting the job performance of Navy Sonar Technicians (N = 138) was determined. The tests were the Armed Services Vocational Battery (ASVAB) and a set of six new computerized tests. The results indicate that while the ASVAB predicted Sonar Technician performance, better predictions were obtained when the ASVAB scores were supplemented by the Digit Span score from the computerized battery. Follow-on research with digit Span, both to improve the test and to verify its relationship to job performance is recommended.

Personnel

Journal Articles

Journal of Counseling Psychology, 37(3), 337-342 (1990).

J. L. Holland
G. D. Gottfredson
H. G. Baker

Validity of Vocational Aspirations and Interest Inventories: Extended, Replicated, and Reinterpreted.

Approved for public release; distribution is unlimited.

This study found that classified vocational aspirations of Navy recruits were superior to the Vocational Preference Inventory. Predictions for persons with coherent vocational aspirations were very predictive over a short time interval, but the hypothesized links between the coherence of vocational aspirations and the Identity Scale, NEO Personality Inventory scales, and scales of the Vocational Preference Inventory received only partial support. Implications for test development and practitioners are discussed.

Journal of Applied Psychology, 75(5) (1990).

C. J. Russell
J. D. Mattson
S. E. Devlin
D. Atwater

Predictive Validity of Biodata Items Generated From Retrospective Life Experience Essays.

Approved for public release; distribution is unlimited.

Biographical information was generated from retrospective life-history essays completed in the fall of 1986 by first-year students at the U.S. Naval Academy. Essays were targeted to aspects of four generic life experiences that might reflect the processes or outcomes of antecedent developmental episodes. Essays were coded to generate biodata items, which were then given to 917 midshipmen entering the Naval Academy in the summer of 1987. Scales were developed that predicted criteria of military performance, academic performance, and peer ratings of leadership in validation and cross-validation samples. Implications for item development and biodata construct validity are discussed.

Public Personnel Management, 19(1) (1990).

H. G. Baker
M. S. Spier

The Employment Interview: Guaranteed Improvement in Reliability.

Approved for public release; distribution is unlimited.

Much criticism is leveled at the nature and usefulness of the employment interview. Yet, there are continuous efforts made to refine and enhance interview procedures and techniques. Despite its shortcomings, despite the availability of more objective means of selection, classification, and placement, the personal interview is used pervasively.

Testing Systems

Technical Notes

TN-90-4
November 1989
(AD-A216 602)

(Also listed under Personnel.)

G. J. Worst
G. J. Wright
H. G. Baker

Armed Services Vocational Interest Profile (ASVIP): Feasibility and Design Alternatives.

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Interest measures are one of the most commonly used instruments by high school counselors. Currently, no measure of interest is offered by the military to high schools for use with Armed Services Vocational Aptitude Battery (ASVAB) results. This study involved a brief literature review of interest assessment and investigated the acceptance of a new interest measure by high school counselors and provided design features counselors would like to have included.

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Testing Systems

Journal Articles

Intelligence, 14, 235-238
(1990).

G. E. Larson

Novelty as "Representational Complexity": A Cognitive Interpretation of Sternberg and Gastel.

Approved for public release; distribution is unlimited.

A major principle of intelligence research is the ubiquitous relationship between a task's working memory demands and its sensitivity to individual differences in fluid intelligence and/or g. Sternberg and Gastel (1989) have provided yet another example of this well-known principle. There is no need to invoke additional constructs such as "novelty."

Book Chapter for Testing
Theoretical and Applied Per-
spectives, PRAEGER (1989)

P. Foley
L. S. Rucker

An Overview of the Armed Services Vocational Aptitude Battery (ASVAB).

Approved for public release; distribution is unlimited.

The Armed Services Vocational Aptitude Battery (ASVAB) is a joint service battery that, in conjunction with other criteria, is used for the selection of applicants for enlistment into the Armed Forces and the classification of those accepted as recruits. The ASVAB is a paper and pencil test that requires approximately 3 hours to administer. Chapter 4 entitled "Computerized Adaptive Testing of a Vocational Aptitude Battery," describes efforts directed toward the computerized administration of the ASVAB.

The Armed Forces Qualification Test (AFQT) formed of four of the ten ASVAB subtests, is the selection instrument used to determine an applicant's eligibility for enlistment. Applicants qualified for enlistment are classified into a military occupation by using various composites of ASVAB subtests that predict success in initial occupational training schools.

In fiscal year 1985, the ASVAB was administered to approximately 1.5 million high school students and recruit applicants, which made it the most widely used multiple aptitude battery in the United States. This review is intended to provide a background for researchers unfamiliar with the ASVAB.

Testing Systems

Journal Articles

Intelligence, 13, 361-369
(1989).

G. E. Larson

A Brief Note on "Coincidence Timing."

Approved for public release; distribution is unlimited.

One hundred and twenty-seven subjects were tested on coincidence timing (CT), reaction time, and inspection time tasks. The CT paradigm was modestly correlated with reaction time and inspection time; all three paradigms were, in turn, modestly correlated with intelligence. They did not, however, make independent contributions in a multiple regression to predict a psychometric intelligence score, suggesting that the three elementary paradigms share a common intellectual component.

Intelligence, 14, 309-325.
(1990)

G. E. Larson
D. L. Alderton

Reaction Time Variability and Intelligence: A "Worst Performance" Analysis of Individual Differences

Approved for public release; distribution is unlimited.

Reaction time distributions from 303 subjects were partitioned into 16 fast-to-slow latency bands. Average latencies for the 16 bands were then correlated separately with various indices of mental ability. The slowest bands (or "worst trials") were by far the best predictors of intelligence and working memory performance. The slowest bands also drove the individual differences in variability, and the variability/intelligence correlation. An error-based production model for worst trials was tried and abandoned.

Education and Training

Technical Reports

TR-90-2
October 1989
(AD-A215 924)
(Also listed under Personnel.)

R. E. Main
G. E. Seymour
B. A. Morris

Job-oriented Basic Skills (JOBS) Training: A Long-term Evaluation.

Approved for public release; distribution is unlimited.

An evaluation of the Navy's Job Oriented Basic Skills (JOBS) training program was conducted for the period from 1979 through 1987. Through examination of TRAIN-TRACK and Survival Tracking File data bases, demographic characteristics and attrition rates in "A" and basic electricity and electronics (BE/E) schools and in the fleet were compared for nearly 7,000 JOBS and over 200,000 non-JOBS students (those qualified to attend Navy technical schools based on their Armed Services Vocational Aptitude Battery (ASVAB) scores). The study involved 30 "A" schools, 12 BE/E schools, and 7 JOBS schools. Minority participation in Navy "A" schools was found to be 30 percent higher for JOBS than for non-JOBS students. Although average Armed Forces Qualification Test (AFQT) scores of JOBS students were only half as high as those of non-JOBS students, 93 percent of JOBS students graduated from JOBS schools; 83 percent, from "A" schools; and 74 percent, from BE/E schools. Attrition rates from "A" and BE/E schools averaged 7 percent higher for JOBS than for non-JOBS students. Differences in attrition varied greatly from one school to another, but were fairly stable over time. Fleet attrition of "A" school graduates was approximately 8 percent higher for JOBS than for non-JOBS students.

TR-90-5
September 1990
(AD-A226 734)

H. Simpson
H. L. Pugh
S. W. Parchman

A Two-point Videoteletraining System: Design, Development, and Evaluation.

Approved for public release; distribution is unlimited.

The objective of the work was to design, develop, and evaluate an experimental two-point videoteletraining (VTT) system consisting of two classrooms equipped with audio and video equipment and communication links to enable two-way communication between the classrooms. The approach involved a survey of VTT systems; development of system

Education and Training

Technical Reports

design guidelines; definition of personnel, training, and logistics requirements; system design and development; and system evaluation. Findings were that student attitudes and performance on examinations were comparable in originating and receiving classrooms. Students at the remote site were more likely to comment on deficiencies of the VTT system and were particularly sensitive to audio problems. Instructor acceptance of the VTT system was high. Several types of technical difficulties occurred during the field test. Most of these problems were resolved, though audio quality was never fully satisfactory. A preliminary cost analysis indicated that conducting training with a T1-based, two-way VTT system is more costly than sending an instructor to a remote site but that VTT can be less costly than having students travel to the instructor.

TR-90-6
September 1990
(AD-A227 922)

H. Simpson
H. L. Pugh

A Computer-based Instructional Support Network: Design, Development, and Evaluation.

Approved for public release; distribution is unlimited.

The objective of the work was to design, develop, and evaluate an experimental, computer-based Instructional Support Network (ISN) consisting of an electronic communication network linking students to instructional resources such as instructors and instructional materials. A key element of the ISN concept was to provide very simple, easy to use workstations for instructor and students, enabling effective system use with minimal training and technical support. Without outside support, users were successfully able to set up and operate prototype workstations in less than two hours. During a field test, the ISN was used to link continuing education calculus students with a tutor at the Naval Postgraduate School. The majority of ISN messages during this test were administrative (72.9%), 17.3 percent were technical, and 9.8 percent were motivational. Students initiated 40.9 percent of messages, and the tutor initiated the remainder.

Some evidence shows that use of the ISN reduced student attrition and helped students with weak mathematics background.

Education and Training

Technical Notes

TN-90-2
October 1989
(AD-A214 984)
(Also listed under Personnel.)

M. K. Nakada
W. Milczewsky
S. R. Wax

Enlisted Training Tracking File (TRAINTRACK).

Approved for public release; distribution is unlimited.

The Enlisted Training Tracking File (TRAINTRACK) is a longitudinal data base of individual enlisted training episodes. This report describes the data sources, layout, and elements.

TN-90-5
November 1989

A. Moranville

Training Requirements Analysis: Light Armored Vehicle 25 (LAV-25) Training for Officers and Staff Non-commissioned Officers in Maintenance, Driving, and Gunnery.

Approved for public release; distribution is unlimited.

The School of Infantry (SOI), Camp Pendleton is the sole institution in the Marine Corps that instructs Marines on the LAVs. Presently only a Basic Crewman Course for the LAV-25 is available. The purpose of this effort was to conduct a requirements analysis to support future LAV-25 training in supervisory maintenance, driving, and gunnery tasks for Marine Corps officers and staff non-commissioned officers (SNCOs). Existing programs of instruction were also reviewed to determine if any of them incorporate the training requirements identified.

TN-90-9
January 1990
(AD-A217 207)

L. J. Trejo
G. W. Lewis
M. H. Blankenship

Brain Activity During Tactical Decision-making: III. Relationships Between Probe-evoked Potentials, Simulation Performance, and On-job Performance.

Approved for public release; distribution is unlimited.

This report, the third in a series, addresses the use of event-related potentials (ERPs) to predict the decision-making performance of combat system operators. It describes the relationships between individual measures of probe-ERP amplitude, and both task and on-job performance in 30 military subjects.

Education and Training

Technical Notes

TN-90-11
March 1990
(AD-A222 797)

B. Thomason
B. Van de Wetering
R. Booth

A Portable Courseware Architecture.

Approved for public release; distribution is unlimited.

Many vendors produce high-performance, low-cost training hardware, but bundle their products with proprietary software interfaces. Because these interfaces are proprietary, courseware and authoring systems written to operate on one set of hardware will not run on a competitor's hardware. Expensive reprogramming is needed to adapt to new hardware. These reprogramming costs can be eliminated by adopting standard software interfaces. The objectives of this effort were to describe and develop a standard software interface that will allow training systems to be assembled from separate "plug-and-play" components in the same way that stereo systems can be assembled from separate speakers, amplifiers, and other components. The Portable Courseware (PORTCO) architecture consists of two interfaces, the Device Services Interface and the Device Handler Interface. It also contains three layers: application, routing and configuration, and device handler. This architecture should allow applications software to run on any compliant set of hardware components. The series of reports describing the PORTCO architecture should direct development of portable MS-DOS applications and standard peripheral device handlers. This report provides an overview of the PORTCO architecture and should be of interest to all who are concerned with computer-based training. See also TNs 90-15, 90-16, and 90-17.

TN-90-15
April 1990
(AD-A223 902)

B. Van de Wetering
B. Thomason

The MS-DOS Device Services Interface.

Approved for public release; distribution is unlimited.

Many vendors produce high-performance, low-cost training hardware, but bundle their products with proprietary software interfaces. Because these interfaces are proprietary, courseware and authoring systems written to operate on one set of hardware will not run on a competitor's hardware. Expensive reprogramming is needed to adapt to new hardware. These reprogramming costs can be eliminated by adopting

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standard software interfaces. The objectives of this effort were to describe and develop a standard software interface that will allow training systems to be assembled from separate "plug-and-play" components in the same way that stereo systems can be assembled from separate speakers, amplifiers, and other components. The Portable Courseware (PORTCO) architecture consists of two interfaces, the Device Services Interface and the Device Handler Interface. It also contains three layers: application, routing and configuration, and the device handler. This architecture should allow applications software to run on any compliant set of hardware components. The series of reports describing the PORTCO architecture should direct development of portable MS-DOS applications and standard peripheral device handlers. This report describes the MS-DOS Device Services Interface, and is intended primarily for programmers who want to develop portable application software. See also TNs 90-11, 90-16, and 90-17.

TN-90-16
April 1990
(AD-A223 856)

B. Van de Wetering
B. Thomason

The MS-DOS Device Handler Interface.

Approved for public release; distribution is unlimited.

Many vendors produce high-performance, low-cost training hardware, but bundle their products with proprietary software interfaces. Because these interfaces are proprietary, courseware and authoring systems written to operate on one set of hardware will not run on a competitor's hardware. Expensive reprogramming is needed to adapt to new hardware. These reprogramming costs can be eliminated by adopting standard software interfaces. The objectives of this effort were to describe and develop a standard software interface that will allow training systems to be assembled from separate "plug-and-play" components in the same way that stereo systems can be assembled from separate speakers, amplifiers, and other components. The Portable Courseware (PORTCO) architecture consists of two interfaces, the Device Services Interface and the Device Handler Interface. It also contains three layers: application, routing and configuration, and device handler. This architecture should allow

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TN-90-17
April 1990
(AD-A223 858)

B. Van de Wetering
B. Thomason

applications software to run on any compliant set of hardware components. The series of reports describing the PORTCO architecture should direct development of portable MS-DOS applications and standard peripheral device handlers. This report describes the Device Handler Interface and should be of primary interest to device manufacturers and system vendors who must develop device handler software. See also TNs 90-11, 90-15, and 90-17.

The MS-DOS Routing and Configuration Program Design.

Approved for public release; distribution is unlimited.

Many vendors produce high-performance, low-cost training hardware, but bundle their products with proprietary software interfaces. Because these interfaces are proprietary, courseware and authoring systems written to operate on one set of hardware will not run on a competitor's hardware. Expensive reprogramming is needed to adapt to new hardware. These reprogramming costs can be eliminated by adopting standard software interfaces. The objectives of this effort were to describe and develop a standard software interface that will allow training systems to be assembled from separate "plug-and-play" components in the same way that stereo systems can be assembled from separate speakers, amplifiers, and other components. The Portable Courseware (PORTCO) architecture consists of two interfaces, the Device Services Interface and the Device Handler Interface. It also contains three layers: application, routing and configuration, and device handler layer. This architecture should allow applications software to run on any compliant set of hardware components. The series of reports describing the PORTCO architecture should direct development of portable MS-DOS applications and standard peripheral device handlers. This report is intended for system vendors, and describes the design of the first PORTCO routing and configuration program. See also TNs 90-11, 90-15, and 90-16.

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TN-90-18
April 1990
(AD-A221 462)

D. Humphrey
E. Sirevaag
A. F. Kramer
A. Mecklinger

Real-time Measurement of Mental Workload Using Psychophysiological Measures.

Approved for public release; distribution is unlimited.

The primary goal of the research was to explore the utility of event-related potentials (ERPs) as real-time measures of mental workload. Subjects performed a six-gauge monitoring task and a mental arithmetic task concurrently and at several difficulty levels. Difficulty was varied in terms of gauge predictability and by using two or three column arithmetic problems. A bootstrapping approach was adopted in which 1,000 samples of n trials ($n = 1, 3, 5, \dots 65$ single trials) were classified as to mental workload level using ERP measures (P300 and slow wave amplitude). Classification accuracies of 85 percent were achieved with 25 trials. Results are discussed in terms of potential enhancements for real-time recording of performance monitoring.

TN-90-21
May 1990
(Also listed under Organizational Systems.)

B. Tarker
A. Rybowiak
M. R. Flaningam
V. Hulton

Lessons Learned in Converting Residential Courseware to Transportable Courseware.

Approved for public release; distribution is unlimited.

This report documents one phase of the Guidelines for Transportable Education and Training (GTET) project, a Joint Services effort. The report presents recommendations to guide training managers and instructional development teams through an instructional design and training materials. Lessons learned address such topics as team assignments, lesson specifications, authoring aids for computer-based instruction, and evaluation of student performance. The appendices include sections on the Instructional Systems Development (ISD) process, the Systems Engineering for Instructional Development (SEID) process, as well as examples of forms and procedures used in the instructional development phase of the GTET project.

Education and Training

Technical Notes

TN-90-22
June 1990
(AD-A223 159)

H. Simpson

The Evolution of Communication Technology: Implications of Remote-site Training in the Navy.

Approved for public release; distribution is unlimited.

The overall objective of the project is to find more cost effective ways to train personnel who are geographically remote from instructional resources. Three surveys were conducted and, based on the findings, conceptual designs of Navy remote-site training systems were developed. By extrapolating from developments in communication technology, it is possible to envision a workstation of the future that integrates a computer, high-definition television display, facsimile machine, telephone, and other communication devices and that allows interactive two-way communication. The same developments in communication technology that make advanced multimedia workstations possible open up new possibilities for videoteletraining. Such classrooms will supplant a significant percentage of present day "live" classrooms and will be used by groups of people for the same purposes as live classrooms. The widespread use of videoteletraining has significant implications for the future mission and organization of the Navy training establishment.

TN-90-23
June 1990
(AD-A223 701)

A. F. Kramer

Physiological Metrics of Mental Workload: A Review of Recent Progress.

Approved for public release; distribution is unlimited.

This report reviews research on physiological metrics of mental workload performed in the last decade. The focus of the review is on measurement techniques that have potential for fundamental explanation of mental workload and for use in operational environments. The techniques are examined within a framework of measurement criteria. These criteria include: sensitivity, diagnosticity, intrusiveness, reliability, and generality of application. Over 200 articles are covered by the review. Measures reviewed include: electroencephalograms, event-related potentials, magnetoencephalograms, positron emission tomography, electro-oculograms, cardiovascular measures, pupillometry, respiratory measures, and electrodermal measures.

Education and Training

Technical Notes

TN-90-27
July 1990
(AD-A226 132)

K. Johnson
V. N. Hulton
R. Olson
C. Durfee
M. Lyon
W. White

Computer-based Instruction Authoring Tools System (CATS): User's Manual.

Approved for public release; distribution is unlimited.

This technical note provides a user's manual for the Computer-based Instruction Authoring Tools System (CATS). Storyboards, which control the courseware, can be written on various computers using various text editors and presented to students on other computers. Lessons can include graphics, animation, and video.

TN-90-28
July 1990
(AD-A223 701)

V. N. Hulton
M. R. Flaningam
B. Tarker
R. Rybowskiak
S. Sulzbach
M. Lyon
B. Thomason

Computer-based Instruction Authoring Tools System (CATS): Lesson Presentation.

Approved for public release; distribution is unlimited.

This publication is one of three technical notes that supplement the CATS (Computer-based Instruction Authoring Tools System) user's manual. This document describes the lesson presentation system using a prototype software program called Lesson Manager and details procedures for its use. Intended readers are courseware authors and developers. See also TNs 90-29 and 90-30.

TN-90-29
July 1990
(AD-A225 782)

V. N. Hulton
M. R. Flaningam
B. Tarker
R. Rybowskiak
S. Sulzbach
M. Lyon
B. Thomason

Computer-based Instruction Authoring Tools System (CATS): Student Guide.

Approved for public release; distribution is unlimited.

This publication is one of three technical notes that supplement the CATS (Computer-based Instruction Authoring Tools System) user's manual. This guide is intended for students who are taking the computer-based version of the Defense Systems Management College's Funds Management and Tools for Program Management lessons. The objective of this effort was to provide instructions for the use of the disks that the students are given to run each lesson. See also TNs 90-28 and 90-30.

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TN-90-30
July 1990
(AD-A225 706)

V. N. Hulton
M. R. Flaningam
B. Tarker
R. Rybowskiak
S. Sulzbach
M. Lyon
B. Thomason

*Computer-based Instruction Authoring Tools System
(CATS): Lesson Maintenance.*

Approved for public release; distribution is unlimited.

This publication is one of three technical notes that supplement the CATS (Computer-based Instruction Authoring Tools System) user's manual. This document describes the lesson maintenance system and details procedures for its use. Intended readers are CATS authors and instructional developers who update CATS courseware. See also TNs 90-28 and 90-29.

TN-90-33
September 1990
(Also listed under Organizational Systems.)

A. Rybowskiak
M. R. Flaningam
B. Tarker

The Effectiveness of Transportable Acquisition Management Lessons.

Approved for public release; distribution is unlimited.

This report documents one phase of a joint services effort--the Guidelines for Transportable Education and Training (GTET) project. The ultimate goal of the GTET project is to provide guidelines for the training manager responsible for converting residential courses into transportable ones. In this report, the authors document the effectiveness of prototype transportable lessons by looking at student performance. The most important finding within the constraints of the study was that transportable courseware is at least as effective as residential courseware in teaching students nontechnical material and is a far more cost-effective approach.

Organizational Systems

Technical Notes

TN-90-3
October 1989

H. H. Rosen
T. D. Pope

Interim Plan for the Department of the Navy Quality Support Center.

Approved for public release; distribution is unlimited.

This technical note presents a design plan for a quality support center (QSC) to sustain Total Quality Management (TQM) efforts within the Department of the Navy (DoN). In FY89, NPRDC was tasked by the DoN to develop and operate a prototype QSC and to draw up a plan for its future operation. In August 1989, the DoN's Executive Steering Group for TQM chartered the QSC and approved the plan described here. The plan describes the QSC's primary functions--to operate as a clearing house, to offer education and training, and to provide consultation services to selected DoN organizations. The QSC is co-located at NPRDC in San Diego and in Washington, DC.

TN-90-10
February 1990

D. M. McDaniel
L. M. Doherty

Total Quality Management Case Study in a Navy Headquarters Organization.

Approved for public release; distribution is unlimited.

This report documents the efforts of Fleet Support and Field Activity Management (AIR-04), Naval Air Systems Command, to implement TQM. It describes AIR-04's TQM implementation plan and its selection of the engineering change proposal (ECP) as the first process to undergo continuous improvement using TQM methodology. The report chronicles the development of a TQM Executive Steering Committee and Quality Management Board (QMB), the education and training process, and the selection of the ECP process for analysis. Results of data analyses by the QMB are presented along with a description of continuing efforts. Recommendations concern process definition, work prioritization, Just-in-Time training, emphasis on immediate results, and documentation of future actions.

Organizational Systems

Technical Notes

TN-90-19
May 1990

N. Bachaitis
H. H. Rosen

Readings on Managing Organizational Quality

Approved for public release; distribution is unlimited.

This volume of readings has been compiled for those interested in learning about new management philosophies that are helping to bring about the transformation of American industry and that are enabling firms to meet competitive challenges successfully with novel strategies. The new management philosophy is based on assumptions that better reflect the ground rules of today's global economy than do the assumptions upon which much of current management practice is based. This set of readings emphasizes the role of leadership at various levels of the organization in bringing about effective organizational response to the new competitive challenge. It describes changes in policies, in organizational structure, in the management of relationships with customers and suppliers, and in the management of relationships within organizations that will help them to create and sustain competitive advantage. Several articles make explicit old working assumptions and suggest new ones to replace them.

TN-90-21
May 1990
(Also listed under Education and Training.)

B. Tarker
A. Rybowskiak
M. R. Flaningam
V. Hulton

Lessons Learned in Converting Residential Courseware to Transportable Courseware.

Approved for public release; distribution is unlimited.

This report documents one phase of the Guidelines for Transportable Education and Training (GTET) project, a Joint Services effort. The report presents recommendations to guide training managers and instructional development teams through an instructional design and training materials. Lessons learned address such topics as team assignments, lesson specifications, authoring aids for computer-based instruction, and evaluation of student performance. The appendices include sections on the Instructional Systems Development (ISD) process, the Systems Engineering for Instructional Development (SEID) process, as well as examples of forms and procedures used in the instructional development phase of the GTET project.

Organizational Systems

Technical Notes

TN-90-25
June 1990
(AD-A225 040)

N. Backaitis
H. H. Rosen

Managing for Organizational Quality--Theory and Implementation: An Annotated Bibliography.

Approved for public release; distribution is unlimited.

This annotated bibliography is being published under the auspices of the DoNs QSC at NPRDC. The QSC was chartered by the DoN Executive Steering Group for Total Quality Management in April 1990. One primary function of the QSC is to serve as a DoN clearinghouse for TQM information.

The aim of this volume is to provide a resource to those interested in learning about managing organizations for quality improvement. The materials examine the organizational improvement effort from many different angles: the crucial role of the quality philosophy in the guidance of improvement efforts, the role of top management and of quality professionals in organizational improvement efforts, the effect of reward systems on the process of improvement, the use of the scientific method and of statistical thinking in the definition and improvement of organizational processes, and the development of accounting figures that will be more useful in making strategic decisions. Major sections cover the competitive position of U.S. industry; the quality philosophy and management principles for improving quality, productivity, and competitive position; management of organizational change and transformation; roles of management and leadership; tools for improving work processes; the effect of reward systems on behavior and motivation; teamwork and quality circles; customer-supplier relationships; strategic accounting practices; and statistical education. Materials describing implementation efforts and case histories are included.

Organizational Systems

Technical Notes

TN-90-27

July 1990

(AD-A226 132)

(Also listed under Education and Training.)

K. Johnson

V. N. Hulton

R. Olson

C. Durfee

M. Lyon

W. White

Computer-based Instruction Authoring Tools System (CATS): User's Manual.

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TN-90-28

July 1990

(AD-A223 701)

(Also listed under Education and Training.)

V. N. Hulton

M. R. Flaningam

B. Tarker

A. Rybowskiak

S. Sulzbach

M. Lyon

B. Thomason

Computer-based Instruction Authoring Tools System (CATS): Lesson Presentation.

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This publication is one of three technical notes that supplement the CATS (Computer-based Instruction Authoring Tools System) user's manual. This document describes the lesson presentation system using a prototype software program called Lesson Manager and details procedures for its use. Intended readers are courseware authors and developers. See also TNs 90-29 and 90-30.

TN-90-29

July 1990

(AD-225 782)

(Also listed under Education and Training.)

V. N. Hulton

M. R. Flaningam

B. Tarker

A. Rybowskiak

S. Sulzbach

M. Lyon

B. Thomason

Computer-based Instruction Authoring Tools System (CATS): Student Guide.

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This publication is one of three technical notes that supplement the CATS (Computer-based Instruction Authoring Tools System) user's manual. This guide is intended for students who are taking the computer-based version of the Defense Systems Management College's Funds Management and Tools for Program Management lessons. The objective of this effort was to provide instructions for the use of the disks that the students are given to run each lesson. See also TNs 90-28 and 90-30.

Organizational Systems

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TN-90-30

July 1990

(AD-A225 706)

(Also listed under Education and Training.)

V. N. Hulton

M. R. Flaningam

B. Tarker

A. Rybowskiak

S. Sulzbach

M. Lyon

B. Thomason

Computer-based Instruction Authoring Tools System (CATS): Lesson Maintenance.

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TN-90-33

September 1990

A. Rybowskiak

M. R. Flaningam

B. Tarker

The Effectiveness of Transportable Acquisition Management Lessons.

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This report documents one phase of a joint services effort--the Guidelines for Transportable Education and Training (GTET) project. The ultimate goal of the GTET project is to provide guidelines for the training manager responsible for converting residential courses into transportable ones. In this report, the authors document the effectiveness of prototype transportable lessons by looking at student performance. The most important finding within the constraints of the study was that transportable courseware is at least as effective as residential courseware in teaching students nontechnical material and is a far more cost-effective approach.

Administrative Publications

AP-90-3
December 1989

NAVPERSRANDCEN Directory of Military Personnel.

Approved for public release; distribution is unlimited.

This directory provides background information on all officer/enlisted military personnel assigned to NAVPERS-RANDCEN. It includes definition for the Officer Designator/Subspecialty Codes, NECs, and ratings held by these members. It is provided as a tool to assist in meeting research requirements using the military personnel assigned.

AP-90-4
February 1990

Bibliography of Reports and Journal Articles Approved for Public Release: FY89.

R. G. Dalton

Approved for public release; distribution is unlimited.

This report lists all technical reports, journal articles, administrative publications, and technical notes that have been approved for public release in FY89. Publications in each category are listed in chronological order under the following areas: manpower, personnel, testing systems, education and training, organizational systems, and administrative publications.

AP-90-6
March 1990
(AD-A222 690)

Independent Research and Independent Exploratory Development Programs: FY89 Annual Report.

W. E. Montague
C. C. Scheifers
(Editors)

Approved for public release; distribution is unlimited.

This report documents the activities and accomplishments of the Independent Research (IR) and Independent Exploratory Development (IED) programs at NPRDC for FY89. In addition to the technical presentations, program administrative information is provided.

Administrative Publications

AP-90-10
September 1990

A. Stout
C. C. Scheifers

Command History for 1989.

Approved for public release; distribution is unlimited.

This report lists NPRDC's mission, functions, organization, CO/TD biographies, key personnel, chronology of 1989 events, history of the Center, resources (financial, personnel, facilities), R&D program, and publications and presentations.

AP-90-11
September 1990

E. Thomas

Equal Employment Opportunity Handbook.

Approved for public release; distribution is unlimited.

This handbook is intended as a convenient reference to the regulations governing EEO and the various components of our EEO program. As such, it supplements the EEO documents required by law. In no way does it supersede these legal requirements.

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