The ASVAB Career Exploration Program
Counselor Manual

RADAR

DRIVER

PHARMACIST

CARPENTER

SEAMEN

PHOTO

DRAFTER

DOCTOR

INTERPRETER

REPORTER

K H O
C K Z D
O Z N R H V C
R K C S Z H V D
S D K H O R C V
OPTOMETRIST

SCIENTIST

LAWYER

COMPUTERS

ASVAB Career Exploration Program

INFORMED CAREER EXPLORATION AND PLANNING

SKILLS

INTERESTS

WORK VALUES

OCCUPATIONAL INFORMATION

Students · Parents · Educators · Counselors

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Acknowledgments

The U.S. Department of Defense (DoD) has provided the Armed Services Vocational Aptitude Battery (ASVAB), a nationally-normed, multi-aptitude test battery, to high schools and post-secondary schools since 1968. The ASVAB Career Exploration Program has been designed to encourage students to increase their level of self-knowledge and to understand how that information could be linked to civilian and military occupational characteristics.

This manual, and all of the related ASVAB Program publications, presents a completely redesigned ASVAB Career Exploration Program. It is based on a three-factor model that is more appropriate and useful in connecting students with potentially satisfying occupations. Using the recently developed O*NET 3.1 database, a competency-based, three-dimensional occupational linkage system was developed that presents a full-spectrum of career opportunities to virtually all students, regardless of their gender, ethnicity, or ability level.

The ASVAB Program was redesigned to be helpful to virtually all students, whether they are planning on immediate employment after high school in civilian or military occupations, or further education at a university, community college, or vocational institution. The new ASVAB Program materials are visually inviting, future-oriented, empowering to students, and foster career exploration behaviors. The printed materials and the associated website—www.asvabprogram.com—emphasize the importance of career planning and decision making. Finally, we added a number of activities to help students plan for the transition from high school to their post-high school goals. The new ASVAB Program provides students with a more comprehensive career exploration and planning experience.

Dr. Harley Baker was the primary architect for the new model and directed the development of the new ASVAB Program materials. Dr. Baker, who holds advanced degrees in both education and developmental psychology, has recently left the DoD for an academic position.

Jane S. Styer, Ph.D.
Manager of the ASVAB Career Exploration Program

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Introduction to the ASVAB Career Exploration Program

The ASVAB Career Exploration Program is intended for use with students in the 10th, 11th, and 12th grades, as well as students in post-secondary schools. It is a comprehensive career exploration and planning program that includes a multiple aptitude test battery, an interest inventory, and an exercise designed to help students explore the world of work. Results of the aptitude test and the interest inventory enable students to evaluate their skills, estimate performance in academic and vocational endeavors, and identify potentially satisfying careers. These results are integrated with work values in *Exploring Careers: The ASVAB Career Exploration Guide* (U.S. Department of Defense [DoD], 2002) to help students identify and prioritize possible career choices. Two new products—My Educational and Career Plans and a Coursework Planner— help students organize the information they need to begin making coursework decisions in line with their tentative career choices. A college Major Finder is also available to assist students who are planning to continue their education at a post-secondary institution. Students are encouraged to consider their own work-related values and other important personal preferences as they explore the world of work and learn career exploration skills that will benefit them throughout their work lives.

Program Content

The major components of the ASVAB Career Exploration Program are the ASVAB, *Exploring Careers: The ASVAB Career Exploration Guide*, the *Interest-Finder*, the OCCU-FIND, and *Military Careers* (U.S. Department of Defense, 2001). These materials were developed to help schools meet the National Standards for School Counseling Programs set forth by the American School Counselors Association (ASCA) and the Career Development Competencies established by the National Career Development Association (NCDA). See Appendix A for a copy of these standards.

ASVAB

The ASVAB is the most widely used multiple aptitude test battery in the world. It was originally designed to predict future academic and occupational success in military occupations. Since its introduction in 1968, the ASVAB has been the subject of extensive research. Numerous validation studies indicate the ASVAB assesses academic ability and predicts success in a wide variety of military and civilian occupations. (These validation studies are described in Section 5 of this manual.)

Since its introduction, the ASVAB has been frequently updated. The current student versions (Forms 23 and 24) are interchangeable with previous ASVAB forms and use norms based on a large, nationally representative sample of American youth ages 16-23, known as the Profile of American Youth - 1980 (PAY80). This was part of the National Longitudinal Study of Youth (NLSY79) that is conducted approximately every twenty years by the U.S. Department of Labor. New data for an updated Profile of American Youth - 1997 have been collected as part of the U.S. Department of Labor's most recent National Longitudinal Study of Youth. DoD currently is conducting the research necessary to create and validate new norms for the ASVAB and *Interest-Finder* from this national data collection.

Forms 23 and 24 of the ASVAB consist of eight power tests. Power tests allow maximum performance with generous time limits. Figure 1-1 shows the number of items and time limits for each test, as well as composites to be used for career exploration. Sample items for each test are provided in Appendix B.

Several composite scores are formed from different combinations of ASVAB test scores. Three composites, or Career Exploration Scores, are provided specifically to help students engage in the career exploration process. These scores help students to get a good sense of their verbal, math, and science and technical skills compared to other students in the same grade. The Military Careers Score allows students to match their skills and abilities with the skills and abilities of job incumbents in various military careers. This score can be used with the publication *Military Careers*, which highlights the occupational characteristics of about 140 enlisted and officer careers available in the Military Services. Finally, students receive a Military Entrance Score. This score, also called the Armed Forces Qualification Test (AFQT) score, is the score that determines whether a student has scored high enough to meet the entrance requirements for military service.

ASVAB results are reported to students and counselors on the ASVAB Summary Results sheet. This report shows grade-specific standard scores and score bands for all eight tests and three Career Exploration Scores. It also provides students with percentile-based interpretations of those scores. The ASVAB Summary Results provides students with appropriate explanations of the scores, as well as suggestions for their use. Counselors also will receive a copy of the ASVAB Summary Results for each student. This copy will be useful for talking with students about their ASVAB results and can be placed in the student's file, if desired.

Figure 1-1. Description of Career Exploration Scores and ASVAB Tests

Career Exploration Scores	Description
VERBAL SKILLS	A general measure of language and reading skills which combines results from the Word Knowledge and Paragraph Comprehension tests.
MATH SKILLS	A general measure of mathematics skills which combines results from the Mathematics Knowledge and Arithmetic Reasoning tests.
SCIENCE AND TECHNICAL SKILLS	A general measure of science and technical skills which combines results from the General Science, Electronics Information, and Mechanical Comprehension tests.
MILITARY CAREERS SCORE	A composite of results from the Verbal, Math, Mechanical Comprehension, and Electronics Information tests. It compares skills in these areas to the skills of military personnel currently employed in a number of occupations.

Aptitude Tests	Description[1]	Test Time
GENERAL SCIENCE (GS)	A 25-item test measuring knowledge of life science, earth and space science, and physical science.	11 minutes
ARITHMETIC REASONING (AR)	A 30-item test measuring ability to solve basic arithmetic word problems.	36 minutes
WORD KNOWLEDGE (WK)	A 35-item test measuring ability to understand the meaning of words through synonyms.	11 minutes
PARAGRAPH COMPREHENSION (PC)	A 15-item test measuring ability to obtain information from written material.	13 minutes
MATHEMATICS KNOWLEDGE (MK)	A 25-item test measuring knowledge of mathematical concepts and applications.	24 minutes
ELECTRONICS INFORMATION (EI)	A 20-item test of knowledge of electrical current, circuits, devices, and electronic systems.	9 minutes
AUTO & SHOP INFORMATION (AS)	A 25-item test measuring knowledge of automotive maintenance and repair, and wood and metal shop practices.	11 minutes
MECHANICAL COMPREHENSION (MC)	A 25-item test measuring knowledge of the principles of mechanical devices, structural support, and properties of materials.	19 minutes
TOTALS	**200 ITEMS**	**134 minutes**
	ADMINISTRATION TIME	**36 minutes**
	TOTAL TESTING TIME	**170 minutes**

[1] For a complete description of each test, please see Figure 5-3 on page 52.

The technical underpinnings of the ASVAB and a summary of the research supporting its validity are reported in Section 5. The *Technical Manual for the 18/19 ASVAB Career Exploration Program* (U.S. Department of Defense, 1999) contains a thorough description and review of the important psychometric properties of the ASVAB and the *Interest-Finder*. In addition, the *Technical Manual* reports, in more detail, numerous studies of the relationship between the ASVAB and other aptitude and achievement measures. You may request a copy from your local military representative or Education Services Specialist, or by calling your local Military Entrance Processing Station (MEPS) toll-free at 1-800-323-0513.

Exploring Careers: The ASVAB Career Exploration Guide

Exploring Careers: The ASVAB Career Exploration Guide introduces students to career exploration and planning. It provides an appealing and engaging framework that helps students focus on their future, identify their career interests, and integrate these interests with their skills and work values. It culminates with an exercise designed to facilitate the identification of potential career choices for further exploration. A Coursework Planner and a college Major Finder are available on our website to help students plan a smooth transition from their high school to their post-high school goals.

Because flexibility is one of the most important goals of the *Guide*, it can be used in a number of ways. For example, counselors and teachers may want students to go through the *Guide* in class, in a small group setting, or even independently at home. A well-recognized strength of the ASVAB Career Exploration Program is that it provides trained personnel to help students interpret their results and make informed career-related decisions. The major components of the *Guide* include the *Interest-Finder* and the OCCU-FIND.

Interest-Finder

The *Interest-Finder* is a 240-item interest inventory based on John Holland's (1973, 1985a, 1997) widely accepted theory of career choice. Students respond to items by indicating a preference for the various activities, education and training, and occupations presented to them. Based on the answers to these questions, the inventory determines the student's resemblance to each of six interest types (RIASEC types). A brief introduction to the theory and a description of the RIASEC types can be found in Appendix C.

Students can complete the *Interest-Finder* in about 20 to 30 minutes with little or no assistance. Most students easily understand the instructions for scoring the *Interest-Finder* and for converting these scores into gender-based percentiles. After scoring the *Interest-Finder*, students identify their three highest RIASEC areas.

Students use their two or three highest Interest Codes along with their Career Exploration Scores to identify potentially satisfying occupations to explore.

A summary of the technical research supporting the *Interest-Finder* is presented in Section 5. Further detail is provided in the *Technical Manual*.

The OCCU-FIND

The OCCU-FIND organizes over 400 occupations by Interest Codes so students can quickly identify the occupations that match their own interests. It provides students with important occupational characteristics derived from the O*NET 3.1 database that informs students about occupations. For example, the importance of verbal, math, and science and technical skills for each of the occupations is listed (very important, moderately important, less important) so students can determine the degree to which these broad skills are needed for that occupation.

The OCCU-FIND also provides information about whether or not each occupation exists in a particular employment sector (private, government, and military). Finally, the OCCU-FIND invites students to further investigate their tentative career choices. Students are referred to appropriate printed materials and Internet websites for more information about their selections. Three of these primary sources include the *Occupational Outlook Handbook* (U.S. Department of Labor, 2002), *Military Careers*, and O*NET OnLine.

The technical underpinnings of the OCCU-FIND and a summary of the research supporting the validity of the OCCU-FIND are reported in Section 5. Further detail is provided in the *Supplement to the Technical Manual for the ASVAB 18/19 Career Exploration Program* (U.S. Department of Defense, 2002).

Military Careers

Military Careers is the leading career information resource for the military world of work. The publication describes approximately 140 enlisted and officer occupations. It contains information about the type of work performed, training, advancement opportunities, and employment for a number of Army, Navy, Air Force, Marine Corps, and Coast Guard careers.

Even if a student is not interested in joining the military, he or she can use *Military Careers* to learn more about occupations of interest. Each occupational description in *Military Careers* provides extensive information that would be helpful to all job seekers. Additionally, *Military Careers* provides a list of similar civilian positions for the many military occupations that have comparable counterparts in the civilian sector.

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What's New in the ASVAB Program

For many young adults, the prospect of embarking on a career, at times, can be daunting. While many high school students are confident about their futures and their career choices, many others may need help and support as they make these important life transitions. Since students probably are aware of the current realities of the world of work, they may question what the future holds for them. We have endeavored to produce career exploration and planning materials that are future-oriented and empowering to all students. We have emphasized the importance of planning and decision making, believing these skills will serve students not only in realizing their post-high school goals and subsequent career transitions, but also in other areas of their lives.

Overview of Program Changes

We have made substantial changes to the ASVAB Career Exploration Program that resulted in a more comprehensive program. The program was redesigned to be helpful to virtually all students, whether they are planning on immediate employment after high school in civilian or military occupations, or further education at a university, community college, or vocational institution. We revised the ASVAB Program to meet the career development needs of 21st century high school students in two ways. First, we incorporated relevant occupational information from the U.S. Department of Labor's newly established Occupational Information Network—O*NET—for use in the program. Using the O*NET 3.1 database allowed us to include a large number of diverse occupations for high school students to consider in their career searches. Second, to provide students with more relevant opportunities, we incorporated three broad skill areas—Verbal Skills, Math Skills, and Science and Technical Skills—into the career search process. In doing so, we developed a new skill-based occupational linkage to suggest occupations to students that are in line with their interests and specific skills (instead of general ability levels). With the specific skill-based occupational linkage, the ASVAB Program presents a full-spectrum of career opportunities to all students, regardless of their gender, ethnicity, or ability level.

We are very excited about the changes we have made and hope that you will share our enthusiasm. Next, we highlight the more substantial changes we have made to the ASVAB Program.

Adopting a Model that Fosters Career Exploration

Previously, the ASVAB Program used a one-factor model to relate academic ability to the world of work. The model relied on general intelligence—*g*—to determine the likelihood that a student would be able to meet the cognitive demands of a job. It attempted to find occupations with cognitive demands that matched the intelligence level of the student based on one composite score from the ASVAB test battery.

The new model consists of three factors or composites: Verbal Skills, Math Skills, and Science and Technical Skills (with students, we refer to these as their Career Exploration Scores.) A three-factor approach is a more appropriate and useful model to connect students with occupations than one that relies on general ability.

We relied on the ASVAB's well-established capacity to assess the ability to learn new skills and to predict success in a wide variety of jobs. The Verbal Skills composite combines results from the Word Knowledge and Paragraph Comprehension tests to provide an overall measure of verbal skill. The Math Skills composite combines results from the Arithmetic Reasoning and Mathematics Knowledge tests to yield a measure of overall mathematical skill. The third factor—Science and Technical Skills composite—combines results from the General Science, Mechanical Comprehension, and Electronic Information tests to provide an overall measure of technical skill. The Science and Technical Skills composite was added to reflect the central role technology has in the world of work today.

Students' scores on these three ASVAB composites can be viewed as snapshots of their current knowledge, skills, and abilities (KSAs) in the verbal, math, and science and technical domains. These KSAs, in turn, can be linked to the KSAs required for successful performance of tasks in different occupations. The recently developed O*NET includes information on the relative importance of a wide variety of KSAs for each occupation in the database. We have used the O*NET KSA importance ratings to establish linkages with the three ASVAB composites, Verbal Skills, Math Skills, and Science and Technical Skills. Each occupation in the OCCU-FIND includes the relative importance (very important, moderately important, less important) of each composite for successful task performance. This occupational linkage system allows students to identify occupations that are in line with their assessed skills and abilities.

With this model, students are able to compare their skills profiles (i.e., Verbal Skills, Math Skills, and Science and Technical Skills Career Exploration Scores) with the corresponding OCCU-FIND skill importance profiles for various occupations. This approach is particularly helpful for students with differing levels of skills in these three areas, and provides a flexible approach to career exploration.

For example, a student can use his or her Math Skills score from the ASVAB to facilitate career exploration by using the score as feedback about the current level of preparation and skill in mathematics. Suppose a student is interested in a particular occupation that places high importance on mathematics, yet the student has a relatively low Math Skills score. Rather than eliminating this occupation as a potential career choice, a low Math Skills score implies only that the student has yet to gain the appropriate skills for the occupation. Because *Exploring Careers: The ASVAB Career Exploration Guide* (U.S. Department of Defense, 2002) provides suggestions to students about how to improve their skills now and over the next few years, students need not abandon potentially interesting and satisfying career choices simply because of low test scores.

New Exploration and Planning Tools

We have included new activities and tools to make the career exploration and planning process a richer experience for students. After students have identified tentative occupational choices based on their interests and skills, we encourage them to explore these choices further, by planning the remainder of their high school courses and clarifying their post-high school goals. We provide them with the following activities and tools:

- **My Educational and Career Plans:** an activity and worksheet designed to help students make future educational and career plans.
- **Coursework Planner:** an activity to help students determine, based on the requirements for occupations that interest them, what remaining high school courses they should take.
- **Major Finder:** an activity for college-bound students to help them identify potential programs of study.
- www.asvabprogram.com Our website will allow students to explore occupations on-line. An expanded version of the OCCU-FIND will have links to occupational information resources, to review descriptions of occupations and other pertinent information (e.g., employment outlook, training). These on-line resources include the *Occupational Outlook Handbook* (U.S. Department of Labor, 2002)*, Military Careers* (U.S. Department of Defense, 2001)*,* and O*NET OnLine.

3

Administering the ASVAB in Your School

This section contains information that can help you promote and administer the ASVAB Career Exploration Program in your school. A number of practical suggestions for implementing the ASVAB Program are presented. These activities can help to stimulate student, parent, and faculty interest in the ASVAB Program.

In addition to this manual, there are a number of other resources and publications to support implementation of the ASVAB Program in your school. These resources are described next.

People Resources

One of the strengths of the ASVAB Program is the extensive support network that is available to you. Appendix D lists key organizations and resource people involved in the ASVAB Program. The ASVAB Program employs both civilian and military personnel to assist you. Education Services Specialists are civilian U.S. Department of Defense (DoD) employees with training and experience in education and testing. These educational professionals work with schools and counselors to help ensure that schools and students get the most out of the ASVAB Program. These specialists provide training in explaining ASVAB and *Interest-Finder* scores, assist with the mechanics of the testing arrangements, and support counselors who use the ASVAB Program in their schools. These specialists are the primary local contacts.

Other local resource people include Military Education Specialists and Military Recruiters. Military Education Specialists have similar training and experience in education and testing and perform similar functions as DoD Education Services Specialists. Recruiters may assist in the testing situation as proctors, talk with students about military opportunities, and/or help in the explanation of the ASVAB and *Interest-Finder* results.

Education Services Specialists and recruiters are available to speak at school functions such as assemblies, career fairs, and PTA and other parent meetings. You can make arrangements for a speaker by contacting your local Education Services Specialist or Military Service representatives.

Local Education Services Specialist contact information is available from the following toll-free number: 1-800-323-0513, or from the counselor section of our website at www.asvabprogram.com

Printed Materials

The ASVAB Program has developed several documents to explain the ASVAB Program to students, parents, and faculty. The following list includes many of the publications.

- *ASVAB Educator & Counselor Guide* (U.S. Department of Defense, 2002)
- *ASVAB Student & Parent Guide* (U.S. Department of Defense, 2002)
- *Guide to the Shortened ASVAB* (U.S. Department of Defense, 2002)
- *Exploring Careers: The ASVAB Career Exploration Guide* (U.S. Department of Defense, 2002)
- *Military Careers* (U.S. Department of Defense, 2001)
- *The ASVAB Career Exploration Program Counselor Manual* (U.S. Department of Defense, 2002)
- *Technical Manual for the ASVAB Career Exploration Program* (U.S. Department of Defense, 1999)

You can obtain copies of these materials from your local ASVAB Program representatives by calling your local Military Entrance Processing Station (MEPS) toll-free at 1-800-323-0513.

Developing a Preliminary Testing Plan

Once you have decided to offer the ASVAB at your school, you will need to consider such things as how ASVAB results can be used most effectively in your school and which students will benefit the most from ASVAB testing. We believe all of your students in grades 10, 11, and 12 will benefit from the revised ASVAB Program. We encourage you to contact your local Education Services Specialist, Military Education Specialist, or military recruiter to discuss your preliminary ideas. They can answer your questions and make suggestions, as these initial decisions will have implications in the administration and interpretation phases of the process.

Throughout the testing process, you will play a central role. Your involvement will help to ensure that the testing process is a positive experience for students and that they are able to make optimal use of the test results. In developing a testing plan, a number of questions and issues will naturally arise, some before the test administration and some after the test has been administered. Next you will find a list of some of the most important questions and issues to be resolved prior to testing students.

- How will the school use the ASVAB Program?
- Which grade levels would benefit the most from testing?
- Who will take the ASVAB?
- What activities will be conducted to inform students, parents, and faculty about ASVAB testing?
- When will the test be administered?
- Where will students take the test?
- What school staff are available that might serve as test proctors if necessary?
- Which recruiter contact option is appropriate for the students being tested?
- Who (e.g., students, parents, faculty) will receive feedback on the ASVAB testing?
- What type of feedback will be provided?
- What assistance will students receive to help them understand their results?
- What counseling will be provided using the ASVAB results?
- What other school or district personnel need to be informed about the ASVAB testing plan?

Information to Consider When Planning

In addition to the questions above, you should consider the following factors as you plan for ASVAB testing.

ASVAB Program Costs

There are no direct costs associated with adopting the ASVAB Program. DoD provides the test materials, administration and scoring services, resource personnel, and reference materials at no cost to schools or students.

Student Eligibility for ASVAB Testing

The ASVAB has nationally representative norms for the 10th, 11th, and 12th grades and for post-secondary students. Consequently, freshmen in high school are not permitted to participate in the ASVAB Program.

Scheduling the Testing Session

You should work with the local ASVAB representative to schedule the testing session. You will need to consider the school calendar, other tests that will occur during the school year, activities that might compete for students' time and attention, and any local events that might affect students' participation in the program.

Time Required for Testing

In most cases, a three-hour block of time is necessary for administering the battery. For larger test sessions, more time will be necessary. For groups of 100 or more, an additional 15-20 minutes should be scheduled. This is because it will take longer to hand out and collect the materials, ensure that the students have followed the directions, and handle other administrative details. For *really* large groups (e.g. 200 students or more), you should talk with your Education Services Specialist.

Room Arrangements

The testing facilities should conform to good testing procedures. Ideally, the facilities need to be well lighted, ventilated, comfortable, free of extraneous noise and interruptions, and with sufficient flat work surfaces to accommodate the number of students taking the test.

Proctors

The ASVAB is a secure test, so maintaining test security is of paramount importance. Test security requires a minimum of one proctor for every 40 students to be tested. To create a familiar atmosphere, counselors and school personnel may want to attend the session or serve as proctors if needed. The Military Services will also provide proctors for the test.

Counselor Codes

If student results are to be distributed to more than one counselor, counselor codes can be used. In this case, the school assigns a three-digit counselor code to each counselor. On the day of testing, students enter the appropriate counselor code on their answer sheets. The ASVAB Summary Results will be grouped alphabetically, within grade, by counselor code. At the school's discretion, the code also can be used to group student results by other school-designated divisions, such as homeroom.

Parental Consent

The ASVAB is exempt from the provisions of the Family Educational Rights and Privacy Act of 1974 (the Buckley Amendment) that require a signed parental release statement. In 1974 the General Counsels of both DoD and the Department of Health, Education,

and Welfare, ruled that ASVAB results become records of the school only after those results are provided to the schools. Consequently, ASVAB testing does not require a signed parental release statement.

Options for Recruiter Contact

As noted in Figure 3-1, there are eight options for releasing ASVAB results to military recruiters. ASVAB results are withheld from the Military Services for at least seven business days to allow counselors time to distribute the results and counsel students. You may wish to have additional time to discuss the results with students before any recruiter contact. Review the options in Figure 3-1 and inform the Military Service representative of your desired option before ASVAB testing. The option you select will apply for all students taking the ASVAB test at your school during the scheduled test sessions.

These options apply only to recruiter contact efforts resulting from ASVAB testing. Students in grades 11 and 12 and post-secondary students may be contacted by military recruiters independent of ASVAB testing. It is important to note that recruiting personnel encourage high school students to graduate before enlisting into the Military Services. In fact, a recruiter must notify the school if a non-graduate tries to enlist.

Figure 3-1. Options for Recruiter Contact

Option	Description
1	No special instructions. Release results to recruiting Military Services 7 days after test scores are mailed.
2	Release results to recruiters 60 days after test scores are mailed. No recruiter contact prior to that time.
3	Release results to recruiters 90 days after test scores are mailed. No recruiter contact prior to that time.
4	Release results to recruiters 120 days after test scores are mailed. No recruiter contact prior to that time.
5	Release results to recruiters at the end of the school year. No recruiter contact prior to that time.
6	Release results to Military Services 7 days after test scores are mailed. No telephone solicitations by recruiter based on the student names provided with the listing of student results.
7	Not valid for enlistment purposes. Results not released to recruiting Military Services.
8	No recruiter contact from this listing of student results. Results not released to recruiting Military Services.

Military Services Representatives

Your Military Services Representatives—Education Services Specialists, Military Education Specialists, and military recruiters—are resources for you in developing your testing plan. Throughout the testing process, you will work as a team with different and overlapping responsibilities. In Appendix E, we have summarized both the counselor's and the Education Services Specialist's responsibilities in each of the test administration and post-administration/interpretation phases. For purposes of this discussion, we will list below the support your Military Services representatives will provide during the pre-testing phase.

- Provide ASVAB informational materials, as requested
- Participate in ASVAB awareness activities, as requested
- Finalize and agree upon the testing schedule
- Confirm your decision about recruiter contact options listed in Figure 3-1
- Answer your questions and make suggestions

Scheduling a Post-Test Interpretation Session

After students have completed the ASVAB, they are encouraged to attend a post-test interpretation session. This session takes place after the school receives the ASVAB Summary Results and focuses on the use of the ASVAB results for career exploration. While the ASVAB is administered by qualified test administrators from DoD or the U.S. Office of Personnel Management (OPM), civilian DoD Education Service Specialists typically lead the post-test interpretation (or train school or military personnel to conduct a session). In this session, students learn how to use their test scores along with *Exploring Careers: The ASVAB Career Exploration Guide* to begin the career exploration process. This is the heart of the ASVAB Program, so we urge you to encourage your students to attend a post-test interpretation session. The actual interpretation of the results is discussed in the next section of this manual.

4

Helping Students Use the ASVAB Program to Explore Careers

High school and college students often get asked about their future goals and plans. "What are you going to do after graduation?" is a question that high school students often hear. Yet, sometimes this well-intentioned question is interpreted to mean that the student should have detailed post-high school plans and goals. Since career development during adolescence and early adulthood is an ongoing process, students' career plans are still in the formative stages. Such plans will continue to develop and change over time. Change is often a healthy sign that students are learning more about themselves and the world of work. As students form and explore tentative career goals based on this new self-knowledge, they can develop an effective strategy to realize these goals.

The ASVAB Career Exploration Program was designed to help students at this initial stage in their career development. By completing the assessment components and the series of activities in the ASVAB Program, students will learn about their interests and skills. They can then identify occupations in line with personal goals, interests, and skills. With a list of occupations in hand, students will be ready to engage in career exploration activities designed to help them focus on the occupations that hold the greatest potential for them. They will be encouraged to explore their tentative career goals and to compare their academic preparation against the requirements for entry into desired programs of study or occupations. Finally, they will be asked to identify high school courses that will increase their skills. Seeing the connection between their current educational planning and their future goals will help to foster a greater sense of responsibility for that planning.

This section provides you with an overview of the ASVAB Program and provides ideas for interpreting ASVAB results. Various approaches are suggested. As you review these choices, you can consider what might be the best approach for your school and modify the content to suit your specific needs and the needs of your students.

Student and counselor materials are available electronically on our website at www.asvabprogram.com You can download the materials for students to use locally or direct them to the website.

Many of the ideas for supplemental program materials available on our website came from counselors and Education Services Specialists. We would appreciate feedback on what you have found most helpful in this manual and any innovative ideas that you have tried and found effective with students. Please consider sharing them with us at asvab@osd.pentagon.mil

Developing a Post-Testing Activities Plan

Knowing that your time is at a premium, and how difficult it can be to arrange meetings with groups of students, we have tried to make the interpretive materials as self-guiding as possible so that students can use them independently. There are, however, times when counselor-facilitated discussion and review greatly enhances both the process and the outcome for students.

When students review their ASVAB and *Interest-Finder* results, counselor-facilitated discussion is important to ensure that students' interpretations are accurate. This also provides you an opportunity to determine if the aptitude test or inventory results are consistent with each student's grades and other test results. For example, a student's aptitude scores may appear to be lower than his or her general performance in class. Some discussion with the student could reveal some intervening circumstances, such as illness, that might have influenced his or her performance on the day of testing. Such incongruences are worth exploring.

Your involvement is important when students are introduced to the OCCU-FIND, and supplemental materials, such as My Educational and Career Plans and the Coursework Planner, to help them use these materials effectively and accurately in career exploration and planning. For example, to complete the OCCU-FIND activity, students need to understand how to use their Career Exploration Scores along with the skill importance ratings for occupations. To complete the Coursework Planner, students will need to have a list of graduation requirements for their current programs of study. As part of these exercises, they are asked to identify one or two post-high school goals. These can be immediate civilian or military employment, a 2-year or 4-year program of study, or a vocational training program. As they engage in exploration of these post-high school goals, they are asked to identify high school courses that are considered necessary for admission to a program of study or entry into a civilian or military occupation. In the final step, students are asked to evaluate their current academic preparation in terms of their tentative goals and to develop an educational plan (i.e., selection of high school

courses) that facilitates goal accomplishment. Your review (or a teacher's review) of these plans would help to identify potential problems (e.g., when the students' plans are not realistic or when their interests and abilities do not complement one another).

Overview of Student Materials

The student materials for the ASVAB Program consist of the ASVAB Summary Results, *Exploring Careers: The ASVAB Career Exploration Guide* (U.S. Department of Defense, 2002), *Military Careers* (U.S. Department of Defense, 2001), My Educational and Career Plans, the Coursework Planner, and the college Major Finder. Each of these is described in Figure 4-1.

Figure 4-1. Overview of Student Materials for the ASVAB Program

ASVAB Program Component	Description
ASVAB Summary Results	A score report provided to students that describes standard and percentile scores on individual ASVAB tests, Career Exploration Score composites, and military composites
Exploring Careers: The ASVAB Career Exploration Guide	A manual consisting of seven chapters designed to help students: • Examine their work-related interests (using the *Interest-Finder*), skills and abilities, and personal preferences • Identify occupations that have similar characteristics (using the OCCU-FIND) • Discover ways of learning more about those occupations • Evaluate their current academic preparation for admission or entry into a program of study or an occupation • Learn about various educational opportunities • Learn planning and career decision-making skills
Military Careers	A publication providing information about job duties, training, demands, career paths, and opportunities for approximately 140 military occupations
My Educational and Career Plans	An activity for students to help them make future education and career plans
Coursework Planner	A worksheet to help students plan their remaining high school courses based on tentative career choices
Major Finder	An activity for college bound students to help them identify potential programs of study

Suggestions for Using Student Materials

Exploring Careers: The ASVAB Career Exploration Guide is designed so that you have considerable flexibility in using it with students. You can use the *Guide* in a career guidance class or combine homework assignments with individual, small group, or classroom sessions.

One of the strengths of the ASVAB Program is that you can decide how to use the materials to suit your needs and preferences. For example, you can choose to focus your discussion with students on their *Interest-Finder* results while providing an overview of how to use the OCCU-FIND to identify and explore occupations. Alternatively, you could have students independently take the *Interest-Finder* and then focus your discussion on the use of the OCCU-FIND and exploration of occupations.

Your students will benefit the most if the ASVAB Program is integrated into the school's curriculum. Establishing career goals and identifying the necessary education and other requirements for potential careers allows students to see the link between school and work. An increased awareness of how their current school coursework relates to their career goals may encourage students to better apply themselves.

With the ASVAB Program, students can benefit from learning about themselves and various career options. Through informed exploration and planning, they may eliminate potential careers without investing time and money studying a field that won't be satisfying. Without direction and encouragement, however, many students will not reap the benefits of the ASVAB Program. As such, we recommend incorporating this program into the school's curriculum (e.g., through an English, Communications, or Computer Science class). With teacher and/or counselor guidance, students will be more likely to apply the information provided in a meaningful way. Furthermore, the activities involved in the ASVAB Program (e.g., self-assessment of interests, using the OCCU-FIND to identify potentially satisfying occupations, researching occupations) are appropriate for a combination of in-class and outside-of-class assignments.

Figure 4-2 outlines the key components of *Exploring Careers: The ASVAB Career Exploration Guide*, along with the estimated time required to cover each section. Supplemental materials are also described. A discussion of ways to cover the material (both in class and outside of class) follows.

In many cases, you may only have one class period during which to work with students as they review the *Guide* and perform the activities within it. Since comprehensive coverage of the *Guide* would require too much time, you will most likely need to have students read and complete some sections outside of class. Any or all of the sections highlighted in Figure 4-2 are suitable for out-of-class assignments.

**Figure 4-2. Overview of Content and Estimated Time Requirements
for ASVAB Program Materials**

Career Exploration Guide Section	Page Nos.	Content	Estimated Time to Cover
The *Interest-Finder*	3-19	Includes the *Interest-Finder* instrument, scoring instructions, and descriptions of the RIASEC types	30 min.
Skills and Abilities	20–21	Provides an explanation of ASVAB results, describes how to use the ASVAB scores with the OCCU-FIND, and suggests ways to improve scores	10–15 min.
Work Values	22	Describes work values that are relevant in choosing a career and provides examples	5 min.
Educational Opportunities	24–25	Presents a variety of educational paths that students can take and provides case examples	10 min.
Types of Employers	26	Describes the impact differing types of employers (e.g., military, private sector) may have on job experiences	5 min.
Career Information Resources	27	Provides information on printed and on-line career resources, as well as suggestions for other ways to obtain career information (e.g., by talking to a job incumbent)	5 min.
The OCCU-FIND	28–45	Describes how students can use their *Interest-Finder* and ASVAB scores to explore occupations using the OCCU-FIND; a chart with information on more than 400 occupations, sorted by RIASEC code. Includes the following: • *Skill Importance Ratings* – relative importance of Verbal, Math, and Science and Technical skills for success in each occupation • *Employers* – lists whether the occupation exists in the military, government, and/or private sector • *Military Careers Score* – average Military Careers Score of people in the occupation • *Career Resource Information* – provides page numbers from career information resources	30 min. (This includes a 10-minute explanation & 20 minutes of review by students)
Next Steps	46–48	Provides an activity for students to list occupations for further exploration	10 min.
Exploration and Planning Tools			
My Educational and Career Plans	Website	Provides a thought provoking activity for students to help them make future education and career plans	30 min.+
Coursework Planner	Website	Provides an activity to help students plan their remaining high school courses based on tentative career choices	30 min.+
Major Finder	Website	Provides an activity for college-bound students to help them identify potential programs of study	30 min.+

For example, you may want to distribute the *Guide* to students and have them complete the *Interest-Finder* before the review session. Then, at the review session, you can address any questions students have about the *Interest-Finder*, provide and explain the ASVAB results to students, and cover as much of the remainder of the *Guide* as possible. While the students may not have time to complete their review of the OCCU-FIND during class, it is critical for you to help them understand how to use it and answer any questions they may have.

Once students understand how to use the OCCU-FIND, you can quickly review the remaining materials (Next Steps, My Educational and Career Plans, Coursework Planner, Major Finder) and direct them to complete these outside of class. You will need to provide each student with a list of graduation requirements for his or her program of study to complete the Coursework Planner. Encourage students to work together with partners or in small groups to complete the exercises. The sharing and support this provides for the students can be very beneficial. Extend an invitation to review and discuss their results on either a one-to-one basis or in small groups.

If you have more than one class period available to work with students, you can spend more time helping students so that they have a more thorough understanding of the concepts presented. In-class discussions focusing on their interest inventory results and the results of their career exploration will help students gain insight into their goals. Additionally, incorporating real-world experience via guest speakers, job-shadowing days, or interviewing job incumbents enhances their knowledge and experience.

Incorporating the ASVAB Program into an Academic Class

There are many ways to deliver the ASVAB program as part of a high school course. One way would be to assign one or more aspects of the career exploration process as homework and grade each student's work. For example, students in an English class could write about the career exploration process, describing how they discovered and applied their interests and work values along the way. Students in a computer science class could be asked to research careers requiring science and technical skills using some of the on-line resources discussed in the *Guide*. A follow-on assignment might be to develop a database of computer-science related occupations. These types of activities will allow students to engage in career planning while improving the relevant skill (e.g., writing, computer-based research). Teachers can determine ways to evaluate the assignment (e.g., writing quality, database design) based on the course objectives. Additional suggestions for incorporating the ASVAB Program into the school's curriculum are included in "Idea Sheets" found in the counselor section of our website.

The remainder of this section provides detailed information about the ASVAB Program materials. You can use this information as you help students with career exploration.

Each of the following topics will be discussed:

- Information included in *Exploring Careers: The ASVAB Career Exploration Guide*
    - ASVAB Results and How They Relate to Abilities and Skills
    - The *Interest-Finder* as a Way to Gain Self-Knowledge
    - Work Values and Career Exploration
    - The New OCCU-FIND
- Other Materials
    - *Military Careers*
    - My Educational and Career Plans, Coursework Planner, and Major Finder

ASVAB Results and How They Relate to Abilities and Skills

Both test developers and those that use tests share a responsibility for accurate test interpretation. In developing the ASVAB Summary Results score sheets and *Exploring Careers: The ASVAB Career Exploration Guide*, we have provided the necessary information so that students can accurately interpret their scores. Your assistance in helping them draw accurate conclusions is also very important. In reviewing the results, it is important to make sure that students understand what the scores mean, how they scored on each of the eight ASVAB tests and the three Career Exploration Score composites, and what the implications are for each score.

After distributing the ASVAB Summary Results sheets, you might want to begin by reviewing the purpose of the ASVAB. Next, "walk students through" the explanations and interpretation information provided on the front of the score sheet and the definitions of the tests and Career Exploration Scores on the back. In this process, you might ask students the following questions:

- Do you understand your standard and percentile scores?
- How do you feel about your percentile scores?
- Did the tests give you a chance to show what you could do?
- Would you like to change any of your scores?

These questions should help initiate important discussion. You may find the following definitions useful for facilitating the discussion and providing explanations to your students.

Standard Scores

The students' scores on the eight ASVAB tests and the three Career Exploration Score composites are reported as both standard and percentile scores. A standard score is calculated by converting the student's raw score based on a standard distribution of scores with a mean of 50 and a standard deviation of 10. On the ASVAB Summary Results sheet, the standard scores are provided and shown in a graph with the corresponding error bands. The American Psychological Association's testing standards require that we provide students with their standard scores; however, standard scores are not as meaningful to students or as useful in career exploration as the percentile scores. When working with students, you might tell them that the standard scores are not like what they are used to seeing—where the scores range from 1 to 100 with the majority of students scoring between 70 and 100. With standard scores, the majority of students score between 30 and 70. This means that a standard score of 50 is an average score and a score of 60 would be an above average score.

You might focus students' attention on the graph of the standard scores to see if any of their score bands stand out (i.e., are located to the left or the right of the other score bands). Such scores would suggest either a strength (to the right of the others) or a weakness (to the left of the others). This is helpful information for students to take into consideration as they consider various career options.

Percentile Scores

Percentile scores indicate how well each student did in relation to others in the same grade. For each test and composite, students receive a same grade/same sex, same grade/opposite sex, and same grade/combined sex percentile score. In explaining a percentile score to a student, it is helpful to use the following phrase: "as well as or better than X out of 100 students of (name the norm group)." For example, for a female 11th grader with a same grade/same sex percentile score of 72 on Math Skills, you could say: "you scored as well or better than 72 out of 100 11th grade females in Math Skills." It is important for students to understand that the percentile scores are not the same as percent correct. In addition, there are no passing or failing percentile scores.

Because the experiences of males and females differ, they can score somewhat differently on tests. On the more technically-oriented tests, such as Electronics Information, the mean performance of males is higher than that of females. This does not mean that women cannot learn this information or that they should be discouraged from considering occupations in related areas. Typically, this difference occurs because more males than females have had exposure to electronic principles. As a result, it is fairer to report how students do when compared to their own sex but also to let them know how they compare to the opposite sex on tests that might be important to them. For example, a female student might be interested in a career in mechanics, surveying, or

civil engineering. Knowing how she scores relative to her own sex and the opposite sex is useful information. In the past, these career fields have traditionally been dominated by males. Since she will be competing with males, it is important for her to know how she stands relative to males. The same is true for males interested in occupations traditionally dominated by females.

Satisfaction with Scores

In Exploring Careers: the ASVAB Career Exploration Guide, we ask students "Are you happy with your scores?" You might want to describe students' ASVAB scores as a *snapshot* of their skills. These scores are only one source of feedback about their skills at one point in time. There are numerous other sources of information about the students, such as their grades. If they are not satisfied with their scores on the ASVAB, you might suggest they ask themselves the following questions:

- Effort
    - Have I put as much effort into my school work in an area (be it verbal, math, or science and technology) as I can? In other words, have I put in my maximum effort?
- Academic Preparation
    - To what extent have I taken the right classes? Have I avoided the extra math or English classes that would have likely allowed me to increase my scores? (*If students have not taken the necessary courses, now is a good time to take them.*)
    - Has the fact that I have not taken some of the technical classes lowered my scores? Will this impact my readiness for a career?
- Environmental Factors
    - To what extent has my home or school environment played a role in my performance? Were there lots of changes at home or in the teachers in my school? Was the climate at home or in school unsupportive of academic excellence and effort? Were there frequent disruptions at home or in class which made it hard for me to concentrate? (*If so, you may want to provide students with guidance on ways to reduce stress.*)

Once students have asked themselves these sorts of questions, they can begin to explore further how accurate the scores are by seeking additional experiences to develop these skills. For example, if a student's Math Skills score is not as high as desired, the student could strive to improve these skills by taking more courses or pursuing tutoring. If the effort of some students has been consistently high, yet there has been little improvement, it may be wise to consider some compromise choices. For example, if a student is interested in occupations where Math Skills are very important yet has a low Math Skills score, he or she may find technical occupations to be satisfying and rewarding.

We also offer the following as suggestions:

- Remind students about the limits of aptitude tests. They are not absolute measures of ability, but rather provide estimates of general levels of developed abilities.

- Students all too often equate test scores with fixed traits and assume that ability scores do not change. It is important to let students know that education and experience may change their scores.

- Explain the concept of test error and the presence of error bands in the standard scores graphed on student score reports.

- Clarify the Career Exploration Scores and the eight ASVAB test scores.

- Define potentially confusing or misunderstood terms (e.g., standard scores, percentile scores, and norm groups).

- Remind students that an aptitude test is only one tool used in career exploration. Suggest that they integrate their ASVAB results with other data about themselves. They should keep in mind formal data (e.g., grades, achievement test scores) and informal data (e.g., teacher reports, paid and non-paid work experiences).

- Although students will have a copy of their ASVAB Summary Results and the *Guide*, some may want or need personal assistance. You might offer students the opportunity to meet with a counselor in small groups or individually to discuss their scores.

The *Interest-Finder* as a Way to Gain Self-Knowledge

This section describes the *Interest-Finder*, an interest inventory developed for the ASVAB program. The *Interest-Finder,* based on John Holland's (1973, 1985a, 1997) widely accepted theory of career choice, assesses students' occupational interests in terms of the six RIASEC types. [The *Technical Manual for the ASVAB 18/19 Career Exploration Program* (U.S. Department of Defense, 1999) contains a complete description of the development of the *Interest-Finder.*]

Holland's Theory of Career Choice

Holland's (1973, 1985a, 1997) theory of career choice is one of the most widely accepted contemporary theories of vocational choice (Brown & Gore, 1994; Weinrach & Sreballus, 1990). For a brief summary of the salient points of Holland's theory, turn to Appendix C. The summary includes a discussion of the six RIASEC types and important aspects of Holland's theory that describe the relationship between the individual and the work environment. We invite you to review Appendix C since it provides a sound basis for understanding the scores provided by the *Interest-Finder*. If teachers will be involved in assisting students, you might consider sharing the contents of Appendix C with them, as knowledge of RIASEC types will help them provide students with a richer career exploration experience.

Administering the *Interest-Finder*

Students can complete and score the *Interest-Finder* on their own in approximately 20 to 30 minutes, so it can be assigned as homework or done in class, and students can discuss the results. The *Interest-Finder* begins on Page 3 of the *Guide*. A sample is shown in Figure 4-3.

Whether the *Interest-Finder* is completed as homework or in class, a few instructions are warranted. You might begin by making students aware of the value of taking an interest inventory to gain an understanding of their current career interests. Honest and accurate answers to the items are critical to obtaining meaningful and valid results. For many of the inventory items, students will know their answers almost immediately. For other items, however, they may not be so certain. On these items, students should probably base their answers on their first impression. If, however, a student does not understand an item or what is being referred to in an item, they should be encouraged to ask for clarification.

Figure 4-3. Sample *Interest-Finder* Items

I NVESTIGATIVE

ACTIVITIES

Darken Ⓛ for **Like**, if you *like* or *would like* to do this activity.

Darken Ⓓ for **Dislike**, if you *do not like* or *would not like* to do this activity, or if you *are unsure*.

Activity		
Examine the ruins of an ancient temple	Ⓛ	Ⓓ
Operate a computer to solve complex math problems	Ⓛ	Ⓓ
Learn scientific ways to help protect the environment	Ⓛ	Ⓓ
Study how diseases are spread	Ⓛ	Ⓓ
Study marine life	Ⓛ	Ⓓ
Study plants under a microscope	Ⓛ	Ⓓ
Study the ecosystem of a coral reef	Ⓛ	Ⓓ
Study the effects of radiation on plants	Ⓛ	Ⓓ
Find the area of a triangle	Ⓛ	Ⓓ
Prove geometry theorems	Ⓛ	Ⓓ
Conduct research to improve solar power	Ⓛ	Ⓓ
Learn about chemical compounds	Ⓛ	Ⓓ
Study about new sources of energy	Ⓛ	Ⓓ
Study chemical reactions	Ⓛ	Ⓓ

Scoring the *Interest-Finder*

As shown in Figure 4-3, students answer the *Interest-Finder* questions by darkening the bubble indicating their response [*Like* (L) or *Dislike* (D)]. Each scale is scored by counting the number of *Like* (L) responses. While great care was taken to create scales that would facilitate accurate self-scoring, some students will make scoring errors. Such errors can seriously affect the accuracy of the results. Errors may be discovered by having students exchange their *Interest-Finder* with a partner and having each partner check the other's scoring.

After scoring, students will need to convert their raw scores into gender-specific percentiles. With gender-specific percentile scores, female students' scores are compared with those of other females to determine the appropriate percentile. The same is true for males. Please note that there are two separate pages in the *Guide* with conversion tables for males (page 12) and females (page 13). An example of the conversion table is shown in Figure 4-4. Reviewing this process with students will avert possible errors.

The last step in scoring the *Interest-Finder* is determining the three RIASEC codes corresponding to the three highest scores. These codes (R, I, A, S, E, C) are to be written in the appropriate spaces according to which code is associated with the highest score, the second highest, and the third highest. If there is a tie, and two (or three) codes have the same percentile score, students should enter both (or all three) codes in the same box. No more than three RIASEC codes are entered into any one box.

**Figure 4-4.
Converting Raw Scores**

R
Page 4

| 32 |

40	99%
39	99%
38	99%
37	99%
36	99%
35	99%
34	98%
33	97%
32	97%
31	95%
30	94%

| *97%* |
| **R** |

Helping Students Understand Their *Interest-Finder* Results

The *Interest-Finder* is well adapted to interpretation by individuals or groups. Holland's RIASEC typology organizes occupations in the world of work so students can focus their attention on potentially satisfying occupations. In talking about their RIASEC types, students learn a new way of conceptualizing and talking about their interests. More complex and useful self-conceptualizations may emerge through a discussion of their results.

In scoring the *Interest-Finder*, students determine their Raw Score Summary Code and Converted Summary Code (based on gender-specific percentile scores). For many students these two Summary Codes will yield the same or similar results. However, for some students, the two codes will differ. In these situations students are given the option of using the Summary Code (i.e., Raw Score or Converted) they feel is most accurate

when exploring occupations in the OCCU-FIND. Using the Converted Summary Code is most important when students are exploring occupations that are traditionally held by members of the opposite sex. The gender-specific percentile scores correct for gender differences and show students the relative strength of their interests. While this is applicable for both males and females, we will illustrate with a female example. Often, females tend to have lower Realistic (R) raw scores than do males. So, based on the raw scores alone, females will tend to appear uninterested in Realistic activities. When female raw scores are converted to gender-specific percentiles, the R scores will likely increase. This increase is particularly important for females to note when R is one of their top three codes. As they explore Realistic occupations (such as civil or electrical engineering, carpentry, forestry, surgical technician, etc.) they benefit from knowing both the relative strength of their Realistic interest as compared to the combined sexes and the same-sex groups.

The overwhelming majority of students will have RIASEC or Summary Codes that are easily interpretable. Figure 4-5 provides an example of a typical profile.

Figure 4-5. Raw and Converted Interest Codes for a Typical Male Student (Mike)

Raw Scores						Converted Scores					
23	20	14	27	35	20	83%	69%	65%	93%	95%	88%
(R)	I	A	(S)	(E)	C	R	I	A	(S)	(E)	(C)

Primary Interest Code	2nd Interest Code	3rd Interest Code	Primary Interest Code	2nd Interest Code	3rd Interest Code
E	S	R	E	S	C
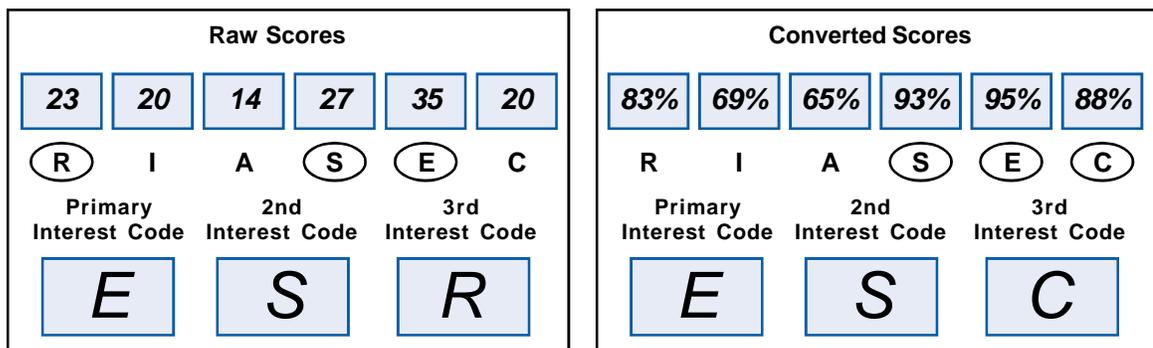
Mike's raw scores range from a low of 14 to a high of 35. Mike's Raw Score Summary Code is ESR. When corrected for gender differences, Mike's third interest code changed from R to C. As seen in the RIASEC hexagon in Figure 4-6, E is adjacent to both S and C, indicating that these three interest codes share some similarities. Also note that I and C are tied in Mike's raw score (both have a score of 20) but are clearly different in his converted score (69 and 88, respectively). Therefore, compared to other males, Mike has a relatively high interest in Conventional activities, training, and occupations.

**Figure 4-6.
The RIASEC Hexagon**

Dealing with Ties

It is not uncommon to have ties for any of the interest codes. Figure 4-7 illustrates a 3-way tie for the primary interest code.

Figure 4-7. Tied Raw and Converted Interest Codes Scores for a Female (Juanita)
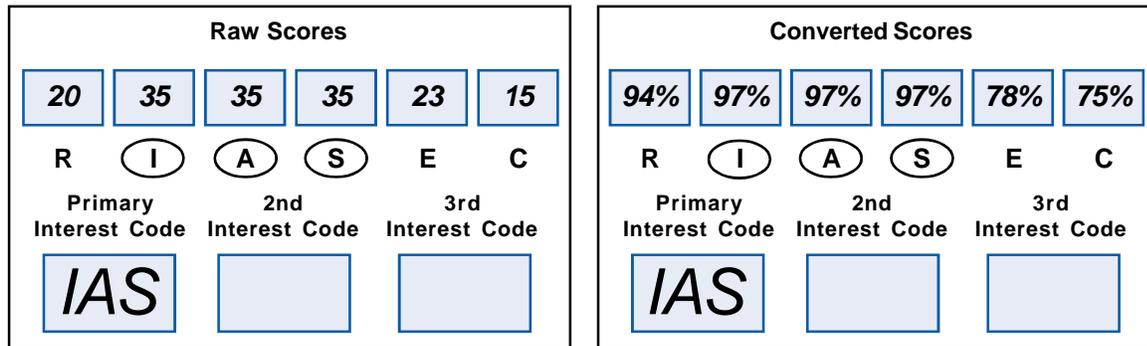
Juanita has three tied scores in both the raw and converted scores. Her profile shows a spread in the remaining scores. For purposes of career exploration, Juanita should be encouraged to consider all combinations of the Summary Code; you might suggest that she identify and explore occupations for IAS, ISA, SAI, SIA, AIS, and ASI. Capitalizing on Juanita's Investigative type, you might suggest that she review occupations listed in the *Guide* for each of these primary types (I, A, and S) and identify one or two occupations to explore for each type with secondary codes consistent with the other two types. As she researches the types of tasks performed and the environments where the work is typically performed, Juanita may identify differences that are important to her.

Helping Students with Undifferentiated Profiles

The ability of an interest inventory such as the *Interest-Finder* to identify a person's interest type is predicated on a response pattern of *Like* and *Dislike* responses to the items. A very high percentage of *Like* responses will elevate the scale scores, and a low percentage of *Like* responses will lower the scale scores. In either case, the student will have a flat or undifferentiated six-score profile. An undifferentiated or flat profile can also occur at any point on the scale. This occurs when the person answers the items in each scale with a pattern of *Like* and *Dislike* responses that just happens to yield scores occurring at about the same scale points.

With a flat, undifferentiated profile, the differences among the raw scores are considered minor fluctuations or measurement error. As a rule, having less than a 5-point difference between scores would be considered minor fluctuations. With an undifferentiated profile, it is not appropriate to draw any conclusions from such minor differences.

Flat, high profiles or flat profiles that are neither low nor high can occur for several reasons, including:

- a consistent tendency to say "Yes" to questions, regardless of the questions
- a belief that one should be interested in everything
- a lack of understanding of the cognitive task
- not engaging in the task
- a reflection of the person's interests in all or most of the interest types.

There are a number of things you can do to assist a student with a high, flat profile or a profile that is flat and neither high or low. You might begin by asking the student why he or she thinks the particular pattern emerged. Is the flat profile reflective of his or her interests? If the flat profile is the result of a lack of prior thinking about, or experience with, the world of work, you might suggest that the student gain some experience (e.g., hobbies, paid and non-paid work, classes). You might also explain that the inventory helps to identify career interests based on a pattern of *Like* and *Dislike* responses and suggest that he or she retake the inventory answering with more varied responses.

When students have a flat profile, they can still explore occupations, but the task will entail a little more effort. You might suggest that they review the six scale definitions and the list of occupations in the *Guide* to identify one or two occupations for each type. For those occupations, have them read about the Nature of the Work and Working Conditions sections in the *Occupational Outlook Handbook* (U.S. Department of Labor, 2002) or the What They Do and Work Environment sections in *Military Careers*. This information may provide insights about the differences in the RIASEC types represented by the selected occupations. In turn, this information may help the students focus on two or three preferred interest types.

In the following example (Figure 4-8), the profile is not completely flat or undifferentiated. The example is included because it shows how correcting the scores for gender differences helped to narrow the number of undifferentiated types down to four.

Figure 4-8. High, Flat or Undifferentiated Female Profile (Stephanie)

Raw Scores					
32	36	36	17	32	32
R	I	A	S	E	C

Converted Scores					
97%	96%	96%	77%	90%	96%
R	I	A	S	E	C
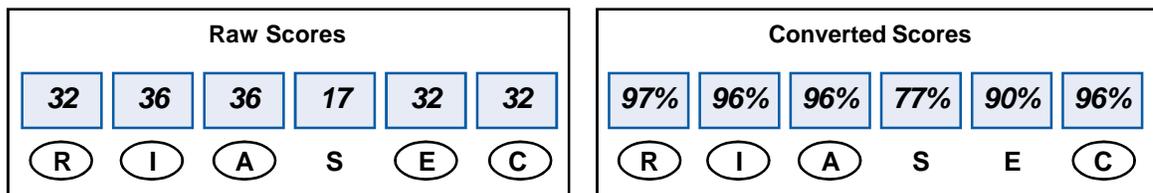
Stephanie has an undifferentiated profile for all types except Social. Her top five scores are only a few points from each other, so it is probably not appropriate to determine her Raw Summary Code. Correcting her scores for gender differences, she has four scores which differ by only a few points. Your discussion with, and knowledge of, Stephanie might suggest an appropriate approach to take in dealing with the situation. You could review the RIASEC definitions with Stephanie, then suggest that she explore occupations under R, I, A, and C if they seem to fit her interests.

Helping Students with Undifferentiated Low Profiles

Assisting students with flat or undifferentiated, low profiles is somewhat more difficult since the students have indicated they dislike the overwhelming majority of activities, tasks, and training in the items. In some cases, such an undifferentiated, low profile can occur for the following reasons:

- a consistent tendency to answer with a "No" response, regardless of the questions
- not having thought about such things
- exercising a very high degree of discrimination and wanting to select only the most desirable
- a lack of work-related experience
- an underlying mood state
- not engaging in the task.

As with the high, flat, or undifferentiated profiles, you might begin by asking the student why he or she thinks the particular pattern emerged. Is the flat profile really reflective of the student's interests? If the flat profile was the result of a lack of prior thinking about or experience with the world of work, you might suggest that the student gain some experience via hobbies, paid and non-paid work, classes, or other activities. You might explain that the inventory helps to identify career interests based on a pattern of *Like* and *Dislike* responses and suggest that they retake the inventory answering with more varied responses.

The following case (Figure 4-9) illustrates one reason why low, flat or undifferentiated profiles are more difficult to deal with.

Figure 4-9. Low, Flat or Undifferentiated Male Profile (Richard)

Raw Scores					
4	*5*	*3*	*3*	*4*	*0*
R	I	A	S	E	C

Richard's raw scores show a flat, undifferentiated profile with a 5-or-less point spread in his scores. You should advise Richard that it may not be appropriate to draw any conclusions from these results. This means that he should not determine his Raw Score Summary Code or correct his scores for gender differences. The assistance you would provide Richard in exploring occupations would follow the same approach previously described (e.g., review the six score definitions and the list of occupations in the OCCU-FIND to identify occupations for further exploration).

In general, with raw scores at the very bottom of the scales, correcting scores can lead to anomalous results. We want to illustrate this. In Richard's case, the corrected scores are R (22%), I (22%), A (26%), S (26%), E (25%), and C (27%). Looking at Richard's raw scores, you will note that he responded *Dislike* to all of the Conventional items, yet C emerged as his primary interest code in the converted scores. To avoid having students get such confusing results, it is better to advise them not to proceed with determining their Summary Codes.

Low, Undifferentiated Profiles and Mood States

A flat, undifferentiated profile may, in some cases, be indicative of an underlying mood state. Your knowledge of the student is important in determining whether the *Interest-Finder* results are a result of such a mood state.

Work Values and Career Exploration

The purpose of this section is to introduce students to various work-related values and to discuss the central role work values play in job satisfaction and informed career planning. In the discussion, we make the following points:

- An individual's work values may change during different stages in his or her life. For example, the desire for work involving lots of travel might change after marriage and having a family. A change in life circumstances can precipitate a shift in the importance of different values, such as having a flexible work schedule.

- When values are not taken into consideration in career planning, there is a greater chance that a person may find work less satisfying and therefore not succeed in it.

- Research has shown that values are predictive of job satisfaction. Two components of job satisfaction are intrinsic satisfaction (satisfaction with the work itself) and extrinsic satisfaction (satisfaction with the conditions at work, such as physical setting and earning potential).

- A person is likely to be happier working in an occupation that supports his or her values.

- In exploring various occupations and planning, it is important for a person to understand what he or she values.

- Some values are associated with a specific job and are determined by the employer or the location of the job.

You might want to undertake two tasks as you discuss work values: (a) establishing that work values play a role in job satisfaction, and (b) helping students begin to identify values that may be important to them. For the latter, you might start by asking students if they have ever quit a job and follow that question up with why they quit. Often, the reasons for quitting a job are related to work values. (For example, "I had to work by myself all the time." or, "My boss was too controlling in how I did my work.")

To facilitate students' understanding of work values, consider a discussion of the listed work values in Figure 4-10 and any that might not appear on the list. Have students think of specific jobs that illustrate these values. You could list other work-related values that might be location-specific (e.g., commute time, rotating shifts).

It is important for students to consider the role that work values play in the career exploration process and in their career development. However, the concept of work values and the important role they play will more than likely be a new concept for most students. Developmentally, it is appropriate for students to begin thinking about important work values even though a formal assessment may not be warranted at this stage of their lives.

Figure 4-10. Work-Related Values

Value	Description
Challenge	Learning new skills or information; self-development
Creativity	Doing things in a new way, inventing things, or developing different approaches or methods
Making or Fixing Things	Using your hands and/or tools to make or fix objects; working with things that you can see and touch
Helping Others	Doing things for others; building a better world
Income	Making a high salary
Independence	Being able to determine the nature of work without significant direction or instructions from others; deciding how and when to do your work
Public Contact	Providing information to the public; talking to people outside your organization
Security	Having stable employment, steady income; not worrying about being laid off
Variety	Doing many different activities; not doing the same things all the time
Working in a Group	Working with others, being cooperative; getting to know co-workers
Physical Activity	Doing work that requires physical activity, such as walking, lifting, and carrying or moving heavy objects
Prestige	Doing work that is seen as important, and for which people admire and respect you

The New OCCU-FIND

In talking to students about career exploration and planning, consider using the metaphor of embarking on a lifelong journey into unknown lands. Students' results from the *Interest-Finder* and the ASVAB represent a source of direction for the journey. How can students use their Interest Codes and Career Exploration Scores to find their way? We believe the answer is in developing skills in exploration and planning. Students begin the journey by using the OCCU-FIND, but they need to know that this is not a narrowing-down process that will result in finding the right match. Rather, their scores should empower them to explore and try things out in more depth. Exposure and experience are priceless. We want students to fully explore their options to find the best directions for their life journeys.

We selected 431 occupations from the Occupational Information Network (O*NET) 3.1 database for the new OCCU-FIND. These occupations are organized according to RIASEC types. For five of the six RIASEC types, approximately 60 occupations were selected to provide students with a representative yet manageable set of occupations to explore. However, in the world of work, there are proportionately more Realistic occupations; of the 1,018 occupations in the O*NET 3.1 database, over 500 are Realistic occupations. To adequately represent Realistic occupations, we included 123 Realistic occupations in the OCCU-FIND. Figure 4-11 shows a graphic of the organization of the OCCU-FIND.

Figure 4-11. Sample of the OCCU-FIND

	Explore Futher	2nd Interest Code	Verbal	Math	Science/Tech.	Employers	MC Score	MC Page Number	OOH Page Number
Occupational Titles									
Aerospace Engineers	[ ]	R	●	●	●	MGP	Ofc	245	106
Anesthesiologists	[ ]	R	◑	◑	●	MGP	Ofc	288	262
Anthropologists & Archeologists	[ ]	A	●	●	◑	GP			246
Archivists	[ ]	C	●	◑	◔	GP			184

◔ Less Important   ◑ Moderately Important   ● Very Important

The OCCU-FIND also provides students with the occupation's second RIASEC type (or ties for second) and other relevant information. Having information about the second interest code allows students to identify occupations with environments that are potentially more satisfying to them. In the next three columns, Skill Importance Ratings are shown for Verbal Skills, Math Skills, and Science and Technical Skills. The Skill Importance Ratings show if the skill set is less important, moderately important, or very important to the job in question. The Skill Importance Ratings, derived from the O*NET 3.1 database, are based on job incumbents' ratings of the importance of these knowledge, skills, and abilities (KSAs) to the successful performance of the job tasks.

In the remaining columns of the OCCU-FIND, we provide students with information about types of employers and where to find information about occupations. The Employers column indicates if the occupation is found in the military (M), government (G), and/or private sector (P). *Occupational Outlook Handbook* (U.S. Department of Labor, 2002) and *Military Careers* page numbers are provided so that students can easily locate information about occupations. Military Career Scores for military occupations are shown; students can compare their Military Careers Score from their ASVAB Summary Results sheet to determine their eligibility for training opportunities in the military.

Skill Importance Ratings

What is the relationship between the Skill Importance Ratings in the OCCU-FIND and students' Career Exploration Scores? As shown in Figure 4-12, they appear to have some comparability.

Students' scores on the three Career Exploration Scores should be viewed as *current snapshots* of their KSAs. The three Skill Importance Ratings provide a *current snapshot* of the KSAs required to successfully perform the tasks for the given occupation. The phrase *current snapshot* is applied to both because both are subject to change. Further education and experience will have a positive effect on students' KSAs. The world of work is also changing. Of course, some jobs will not change all that much, but with the rapid influx of technology coupled with huge shifts in the nature of work, it is nearly impossible to predict how occupations will evolve. So we use the terms *current snapshots* to describe these scores and ratings.

Figure 4-12. Career Exploration Scores and Skill Importance Ratings

ASVAB Career Exploration Scores

ASVAB Results	Standard Score
Career Exploration Scores	
Verbal Skills	52
Math Skills	49
Science and Technical Skills	46

OCCU-FIND Skill Importance Ratings

Skill Importance Ratings

Occupational Titles		Verbal	Math	Science/Tech.
Aerospace Engineers	R	●	●	●
Anesthesiologists	R	◑	◑	●
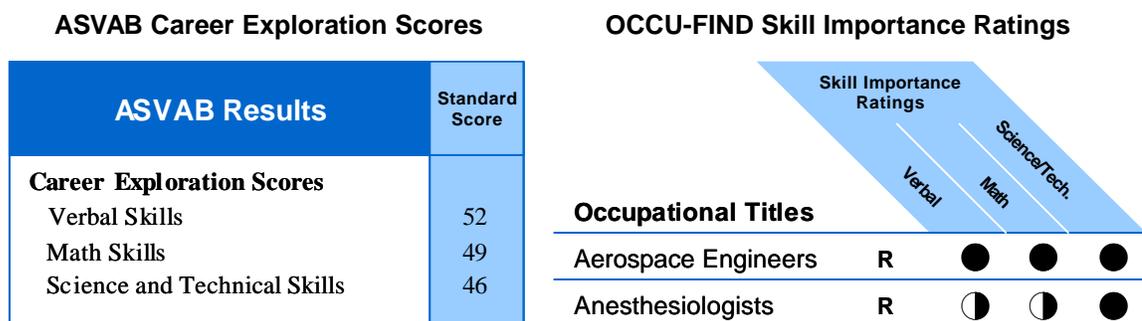
The three ASVAB Career Exploration Scores and the O*NET 3.1-based Skill Importance Ratings are comparable; however they are not numerically similar. For the majority of the occupations in the OCCU-FIND, it is not appropriate to make a one-to-one comparison between the two. Consider the substantial amount of training or education required before a person, particularly a 10th or 11th grade student, would be qualified to apply for most of the occupations in the OCCU-FIND. Additional high school courses and courses in a training program or post-secondary education program would take years—several years in some cases—and further education and training would likely result in an increase the person's Verbal Skills, Math Skills, and Science and Technical Skills. Prediction of performance in the distant future is not likely to be fruitful because of the many ways the students and occupations will change over time.

Other cognitive tests such as the Scholastic Aptitude Test (SAT) and the ACT Assessment are good predictors of academic performance. However, the ability of such tests to predict academic performance is generally limited in time to the next academic year. We know that students are encouraged to take the SAT or ACT in their junior

year, but that is for practice or to see how they perform on the test. Colleges and universities that have a pre-admission requirement to take the SAT or ACT prefer that the test be taken in the student's senior year.

The ASVAB has a well-established capacity to assess not only the ability to learn new skills, but also to predict success in a wide variety of occupations. Therefore, it is appropriate for high school seniors or post-secondary students to make direct comparisons of their Career Exploration Scores and the Skill Importance Ratings shown in the OCCU-FIND *if they are interested in immediate employment in the occupation* or are applying for an on-the-job training program. It is also appropriate to make a direct comparison if they are applying for a post-secondary educational program; however, the direct comparison would not be with the Skill Importance Ratings for the occupation. The comparison would be with the entrance requirements for the program of study the student would need to complete to qualify for a job in the occupation of interest.

So what value do the Career Exploration Scores have for high school sophomores and juniors? Skill Importance Ratings provide students with a general idea of how important these skills are for a given occupation. That's useful information for students to have. Students should be encouraged to compare their Career Exploration Scores to the Skill Importance Ratings for occupations they are interested in exploring. This *snapshot* of the skills needed gives them valuable information to make judgments and decisions. As they ponder their current skill levels and the importance of these same skills for job incumbents in the occupations they are interested in, they should research the actual requirements for the occupation. For example, if Verbal Skills are very important for an occupation of interest, the student should research what specific skills and/or training are required. Students should also be encouraged to ask themselves such questions as:

* What sort of education or training will I need to be able to work in this occupation?
* Will my current skills and abilities allow me to get into the relevant training or education program?
* Does my past performance in classes and my current level of skills (as evidenced by my ASVAB results, grades, and other test results) suggest that I will be successful in the training and education required for this occupation?
* Is my interest and motivation for working in this occupation sufficient to carry me through the training and education I will need to prepare for this occupation?
* Should I be taking more classes or engaging in some other activities (while in high school) to increase my skills in one or more areas?

Ultimately, when a student evaluates his or her Career Exploration Scores and *Interest-Finder* results along with the information provided in the OCCU-FIND, the student should question "Am I heading in the right direction?" After he or she has explored and

investigated different occupations, it is appropriate to make a more in-depth assessment to determine what must be done to develop the skills necessary to take the next step. For 10th and 11th grade students, this involves making sure they are in the right programs of study and selecting the most appropriate courses to enhance their skills while still in high school.

One important message that we hope students will come to understand is that they can potentially make changes in their KSAs. We tell students this in the *Guide* and we use the phrase *current snapshot* when referring to their Career Exploration Scores to emphasize this point. These scores should not be used to rule out any occupation at this time. In our view, the best way of learning about the extent to which students will match well with a given occupation is through exploration. We want to help empower students to overcome obstacles and obtain the education necessary for their career choices.

Note: In field-testing draft versions of the OCCU-FIND with groups of students and counselors, we were able to identify and clarify misunderstandings regarding terminology. It is important to note that the term Verbal Skills, as used with both the ASVAB Career Exploration Score and the OCCU-FIND Importance Ratings, refers to reading and vocabulary skills and not to verbal communication skills.

Education Requirements

The OCCU-FIND does not have information about educational requirements associated with the occupations. This was done intentionally for several reasons, but primarily because education is a lifelong process. Today, there are more educational opportunities and alternatives available. Not all students will or should go on to a four-year university. Two-year degree programs and certificate programs enable students to enter some of the fastest growing occupations. The proliferation of technical occupations coupled with the different career and educational choices have dramatically altered this landscape. By not providing the education requirements "up front" we hope to expand students' exploration and planning. We also hope they will make informed choices about their educational and career paths.

Another reason is that high school students' goals and plans are almost constantly subject to review and revision. For close to forty years, longitudinal studies conducted by the U.S. Department of Education [e.g., the National Educational Longitudinal Study (NELS), High School and Beyond (HSB)] have shown that many students do not carry out their high school plans. These studies, for example, suggest that more than one out of every three high school students who say they will go to college do not attend college. Of those who do attend college, only about half complete a four-year degree program. Basing career exploration on students' current post-secondary plans could do these students a disservice.

Career Resource Information

Once students have identified occupations to explore, they are provided with page numbers for two resource books, the *Occupational Outlook Handbook* (U.S. Department of Labor, 2002) and *Military Careers*, where they can find information about occupations. Web addresses for these on-line resources and the O*NET Occupational Information Network are also provided. We encourage you to make these resources available to students. You can obtain copies of *Military Careers* by contacting your local Education Services Specialist at the following address: HQ US MEPCOM, 2834 Green Bay Road, North Chicago, IL 60064-3094 (1-800-323-0513).

On page 31 of the *Guide*, we tell students what they have, what the OCCU-FIND provides, and where and how to find information to explore careers. We encourage students to learn as much as possible about their career choices and to talk with parents and other family members, teachers, and you about taking the next steps. To familiarize parents and teachers with the ASVAB Program and suggest how they might provide assistance and encouragement to students in this process, we have prepared a set of materials and posted them on our website for your use. Our web address is www.asvabprogram.com

In addition to the OCCU-FIND in the *Guide*, students can explore occupations electronically at www.asvabprogram.com The on-line version of the OCCU-FIND includes close to half of the occupations in O*NET. Students can explore occupations in RIASEC order or in alphabetical order. They can also click on the page numbers for the *Occupational Outlook Handbook* (U.S. Department of Labor, 2002) and *Military Careers* and link to the occupational descriptions in these two on-line resources. In the electronic version of the OCCU-FIND, we have also included links to the occupational descriptions from O*NET Online.

Your students may ask why some occupations are not shown in either the *Occupational Outlook Handbook* (U.S. Department of Labor, 2002) or in *Military Careers*. The *Occupational Outlook Handbook* (U.S. Department of Labor, 2002) includes a total of only 250 occupations to profile, and *Military Careers* includes 140 occupations. An occupation appears in *Military Careers* only if it occurs in more than one Service and the occupation is either growing or there are a significant number of people employed in the occupation. Therefore, it is possible that an occupation can be found in the military even though it is not profiled in *Military Careers*.

At this point, it may be helpful to review two cases of high school students to consider how they used their scores and how the process of understanding their results helped to generate their own exploration process.

Juan:

Juan is a 16 year-old student at a metropolitan high school on the West Coast in a medium sized city. He took the ASVAB toward the end of 10th grade along with the rest of his school, without giving it much thought. He was rather bored by the tests and was glad to get them over with. His scores were actually a bit of a disappointment to him. He always felt that he was smart, but attributed his low grades to lack of effort. Juan was mostly concerned about his friends, dating, and sports. He did not think much about what he would do with his life after school; college, work, or military life did not appeal to him. He just thought that he would figure something out as he went along in life.

Juan was particularly upset with his ASVAB scores that placed him between the 30th and 60th percentiles. His scores on the *Interest-Finder* were actually fairly "interesting." Juan received some feedback that showed he seemed to enjoy working in technological areas and that he was rather "enterprising" in his nature. This is consistent with the fact that he loved to work with the computer at school and he had recently saved up some money to buy a computer for his home as well. He also liked being in charge; this was supported by the fact that he was typically the leader in various sports teams and that many of his friends looked up to him as a source of advice. However, he was still annoyed with the ASVAB scores. When Juan compared his scores with the various fields that he thought he would like to consider further, he became even more upset. Initially, he found that his ASVAB scores suggested that he would not necessarily excel in these areas. The matches that he had hoped for were not very encouraging. Looking at the OCCU-FIND and his ASVAB scores did not convey a particularly promising future. However, his counselor reminded him that the ASVAB scores were relevant only for short-term decisions and that as a sophomore there were many ways he could "improve" in those areas that bothered him. His counselor further explained to him that he should not consider these scores as a sort of crystal ball that could see into his future. He actually could change how he fared in tests like these by putting forth more effort in school and by exploring his options further. The ASVAB process also allowed Juan to consider his work values in a more systematic way. After reviewing *Exploring Careers: the ASVAB Career Exploration Guide* and reading the section on values, Juan was able to articulate that he valued challenge, income, prestige, public contact, independence, and security in his work life.

Juan then elected to enter a career pathway in his school that was devoted to technology and business. He started to take courses that seemed more relevant to him and was also involved in job shadowing, where he spent time with a computer analyst at a local company in his community. In addition, he started to receive some tutoring in math, which had represented his least effective course in school and his lowest scores on the ASVAB. By the time he reached his senior year, he was interested in college and was performing quite well in school. He was able to improve his grades so that he was able to obtain admission to the state university, where he enrolled as a student in Business Administration with a minor in Computer Science.

Jennifer:

Jennifer took the ASVAB in the first part of the 11th grade when she had just turned 16. Jennifer did not have much interest in school at that point in her life. In fact, she was basically turned off to the entire experience of being in high school. Her parents had recently separated and she was feeling that she could not afford to go to college. In addition, she did not have a lot confidence in herself in most areas of her life, except in the area of writing, where she was privately working on song lyrics and poems. Jennifer did not like to think about the future as she did not think that she could really do anything well enough. In addition, she did not have any specific interests in school or in extracurricular activities. Like Juan, Jennifer valued challenge, creativity, income, prestige, and variety.

Jennifer's *Interest-Finder* scores were not all that informative. Her guidance counselor called them a "flat profile," which means that the results did not necessarily point to a particular pattern of interests. However, Jennifer's ASVAB scores were much higher than she had expected. Her counselor was a bit surprised by the fact that her scores ranged across the 80th and 90th percentiles, even in math, which had been her least favorite subject. While this part of the testing process was certainly encouraging, her "flat profile" was distressing. What did it mean to have a flat profile? Did that mean that she would never become interested in anything? Her school counselor was very helpful at this point. Together with a number of other students who also had "flat profiles," Jennifer joined a career exploration group in the Guidance Office. The purpose of this group was to explore oneself and one's options in depth, with the support of one of the guidance staff. Jennifer enjoyed this a great deal as she was able to talk more openly about her writing. She learned how to explore colleges and occupations on the Internet, and she also received some useful ideas from the rest of the group.

One of the most interesting aspects of the ASVAB Program for Jennifer was learning more about military careers. Jennifer never really considered the military before taking the ASVAB. However, with the events following the September 11, 2001, terrorist attacks fresh on her mind, coupled with her self-exploration and growing knowledge about herself, she was now able to put some pieces together. Her ASVAB scores suggested that she might do well in officer candidate training at some point in her life. In addition, she learned that she could receive some funding from the military to attend college after she completed her service. Furthermore, she was beginning to sketch out a life plan that included creative writing along with writing in other contexts. She learned that she could apply her verbal ability in a variety of areas and still maintain some time for her creative pursuits. Once she finished high school, Jennifer enlisted in the U.S. Navy where she received training in public relations.

What are the key ingredients in these cases that seemed to make a difference?

- **Exploration:** For both Juan and Jennifer, the ASVAB process resulted in exploration that had both short-term and long-term aspects. They embarked on a process of self-discovery that helped them re-examine and challenge some of their existing beliefs and also helped them chart some new directions in their lives.

- **Trying things out further:** Another important aspect of Juan's and Jennifer's stories was their determination to try out experiences further, which actually represents a form of exploration. Rather than viewing the matching process in the OCCU-FIND as a onetime event that determines the rest of their lives, Juan and Jennifer learned that the purpose of the ASVAB program is to promote exploration and not to promote final career choices. Once they got this message, they started to test out some of the assumptions and conclusions of the *Interest-Finder* and ASVAB with real-life experience. As we have witnessed in these stories, both Juan and Jennifer were able to chart new pathways based on their exploration.

Maximizing Students' Exploration

Exploration is a way of life, a way of being open to the world. Encourage your students to engage in as much exploration as possible to learn more about themselves and about the world of work. To help them learn more about themselves, consider giving students the following tips on exploration:

- *Search for information that challenges as well as supports your current goals.* We all want to have our plans affirmed by life experience and others; however, sometimes this is not always in our best interest. It is useful for students to examine aspects of an occupation or training option that may not be particularly attractive to ensure that they will be comfortable with the entire set of circumstances of a given career.

- *Seek out multiple sources of information.* Most decisions are best made with multiple sources of information. Having students engage in exploration, such as reading materials about occupations, shadowing people in specific jobs, and taking courses in new areas, can provide them with a great deal of information from various sources. When the students begin to notice consistent patterns of feedback, they will be in a better position to make informed decisions about their futures.

- *Develop some tentative plans while also keeping your eyes and ears open to new opportunities, changes in a given field, and changes within yourselves.* Being in a state of open-ended exploration without making firm decisions can be very stressful and uncomfortable. You are well aware of the tendency for students to make decisions in high school so that they do not have to deal with the uncertainty of not knowing their future path. Exploration can yield a number of interrelated options for training and work that may help to give students a sense of planning and being open to new experiences.

- *Connect self-exploration with exploration of educational and career options.* When students learn new information about an occupation, help them to connect it to their own sense of who they are and where they want to go. The sense of evaluating information in light of one's sense of self is very important in maximizing the outcomes of exploration.

Military Careers

Military Careers describes approximately 140 enlisted and officer occupations. It contains information about the type of work performed, training, and advancement opportunities for a number of Army, Navy, Air Force, Marine Corps, and Coast Guard careers.

Even if a student is not interested in joining the military, he or she can use *Military Careers* to learn more about occupations of interest. Each occupational description in *Military Careers* provides the following types of information that would be helpful to your students as they explore careers:

- *Military Careers Score:* the typical Military Careers Score of servicemembers in each occupation is provided. You can advise students to compare their Military Careers Scores against this information to see how their skills and abilities match those required for the occupation. If a discrepancy exists, students can try to identify ways in which they could improve their skills (e.g., additional coursework, tutoring).

- *Interest Code:* the primary Interest Code is provided for each occupation. Students can compare their *Interest-Finder* scores against this code to determine if they might be interested in the occupation.

- *What They Do:* each page lists the primary duties performed by individuals in the occupation. These descriptions will provide students with a good idea about what the job involves on a daily basis.

- *Helpful Attributes:* each occupational description includes a list of attributes (both interests and abilities), as well as high school courses, that would be helpful in the job. You can help students compare their current coursework against helpful school subjects for occupations in which they are interested. This comparison could then be used to help students complete the Coursework Planner.

- *Physical Demands:* any physical demands, or discomforts, of the job are described here.

- *Training Provided:* the content of courses that are provided by one or more of the Military Services is described. Students can see what types of courses they would need to take to prepare for an occupation. You can advise them on what they may need to do to prepare for these courses.

- *Civilian Counterparts:* for most occupations, comparable civilian jobs are described. This information can be especially useful for students who are not interested in the Military. You may want to advise them that the civilian counterparts likely involve the same types of duties and would probably require the same helpful attributes as the Military occupation.

- *Opportunities:* the number of individuals employed in the occupation in the Services is provided, as well as the projected future need. In addition, the typical career path taken by individuals in this occupation is described. This description provides students with a realistic idea of how they might progress in the occupation if they were to join the Military.

During the focus groups conducted with students on the new ASVAB Program materials, we discovered that students were very interested in the information presented in *Military Careers.* However, many were previously unaware that the information existed. For this reason, we strongly suggest that you provide your students with the opportunity to explore this publication, as it can be a very helpful tool for career exploration. To obtain a copy of *Military Careers* for your school, contact your local MEPS at 1-800-323-0513.

My Educational and Career Plans, Coursework Planner, and Major Finder

We have developed three supplemental student materials and made them available to you and students at www.asvabprogram.com Both the Coursework Planner and My Educational and Career Plans are provided in two formats, one for students and the other for counselors. Students will find a version of these documents for use on our website to download and complete. We have also made modifiable versions of these documents available to you. You can download these, make changes to suit your local needs, and either make them available to students electronically or in printed copies. These tools are provided to help students organize career-related information and plan the next steps for realizing their career choices.

These tools will also help students make the connection between their current academic classes and preparation for their future careers. Establishing this connection will serve two important purposes. It will enhance their taking responsibility for not only planning their careers but also for planning the rest of their high school classes. Understanding this connection may increase their desire to learn or acquire the KSAs offered in their current classes.

My Educational and Career Plans and the Coursework Planner have been developed so students can complete them on their own; however, when integrated into an academic class or a series of career education classes, more students will reap the benefits. We have developed Idea Sheets showing how students' researching of occupations, interviewing job incumbents, completing My Educational and Career Plans can be incorporated into curriculum in such classes as English, computer science, communication, etc. These Idea Sheets are also posted on our website at www.asvabprogram.com

5

Technical Information

This chapter focuses on the technical and psychometric characteristics of the three major assessment devices used in the ASVAB Career Exploration Program: the ASVAB, *Interest-Finder*, and OCCU-FIND. Detailed information about these tools can be found in the *Technical Manual for the ASVAB 18/19 Career Exploration Program* (U.S. Department of Defense [DoD], 1999) and the *Supplement to the Technical Manual for the ASVAB 18/19 Career Exploration Program* (U.S. Department of Defense, 2002).

The ASVAB Technical Characteristics

The ASVAB is one of the most well respected and researched tests in modern history. Literally hundreds of studies have assessed its psychometric and statistical characteristics. Virtually all published reviews of the ASVAB (e.g., Elmore & Bradley, 1994; Jensen, 1988; Rogers, 2002) agree that the ASVAB represents the state-of-the-art for aptitude and achievement testing.

ASVAB National Norms

Students receive their ASVAB results expressed as both standard scores and percentile scores. These scores indicate how students performed in relation to the nationally representative sample of 16 to 23 year-olds who participated in the 1979 National Longitudinal Survey of Youth Labor Force Behavior (NLSY79), sponsored by the U.S. Departments of Labor and Defense. As part of the NLSY79, participants completed the ASVAB and provided the data from which the current norms were derived and compiled. The separate administration of the ASVAB within the larger NLSY79 study has come to be called the Profile of American Youth, 1980 (PAY80).

The PAY80 sample consisted of nearly 12,000 men and women between the ages of 16 and 23 who took the ASVAB reference form (ASVAB 8a) between July and October of 1980. Sponsored by DoD and conducted by the National Opinion Research Center of the University of Chicago, PAY80 marked the first time a nationally representative sample of young people had taken a vocational aptitude battery.

The sample contained approximately equal proportions of young women and men, including individuals from urban and rural areas and from all major census regions. Oversampling techniques ensured that sufficient numbers of African Americans, Hispanics, and economically disadvantaged Caucasians were included in the sample. The sample then was weighted to ensure further that it represented accurately the national population distribution for all groups. Figure 5-1 reports the demographic characteristics both for the PAY80 sample and for the entire population of 16 to 23 year-olds as reported by the Bureau of the Census in 1979.

The norm groups against which students are compared on the ASVAB are based on subsamples of the larger reference sample. These norm groups include:

- The Grade 10 Norm Group, consisting of approximately 3,878 students in grade 10 with scores statistically related to the Reference Population in a separate norming study
- The Grade 11 Norm Group, consisting of approximately 1,300 students in grade 11
- The Grade 12 Norm Group, consisting of approximately 1,200 students in grade 12
- The Two-Year College Norm Group, consisting of approximately 750 students in two-year postsecondary schools

Complete information on the sex and racial/ethnic group composition of the reference sample and subsamples, and norm tables for each, are included in the *Technical Manual*. Additional information on the collection of the norming data can be found in Profile of American Youth: 1980 Nationwide Administration of the Armed Services Vocational Aptitude Battery (DoD, 1982).

Equivalent Forms

Forms 23 and 24 of the ASVAB were equated with ASVAB Form 8(a), the reference form, as are all subsequent forms that the military has administered to service applicants since 1980 (Ree, Mathews, Mullins, & Massey, 1982; Ree, Mullins, Mathews, & Massey, 1982). The equivalence of different versions of the ASVAB is important to DoD to ensure that percentile scores on all test forms can be interpreted in the same way. Equivalence is also important to users of ASVAB 23/24 because it permits them to draw on the sizable existing body of research using earlier ASVAB forms. Estimates of the reliability and validity of the current ASVAB can be computed from data on these equivalent forms of the test battery.

**Figure 5-1. Comparison of the ASVAB Reference Population
to the National Population of 16-23 Year-Olds**

Subgroup	N in Reference Sample		Percent of Reference Sample (Weighted)	Percent of National Population of 16-23 Year Olds
	Unweighted	Weighted		
White*				
Men	3,531	13,393,060	41	41
Women	3,496	12,946,550	39	39
Total	7,027	26,339,610	80	80
Black				
Men	1,511	2,278,490	7	7
Women	1,511	2,276,440	7	7
Total	3,022	4,554,930	14	14
Hispanic				
Men	902	1,031,890	3	3
Women	927	1,014,310	3	3
Total	1,829	2,046,200	6	6
Total Reference Sample				
Men	5,944	16,703,440	51	51
Women	5,934	16,237,300	49	49
Total	11,878	32,940,740	100	100

Note: National population percentages are from U.S. Bureau of the Census, 1979.
* "White" includes all non-Blacks and non-Hispanics.

ASVAB Reading Level

Reading level estimates were computed separately for test questions and test directions. For test questions, the percentages of words typically encountered in materials used in various grades were calculated. The grade levels were based on the information in *The Word Frequency Book* (Carroll, Davies, & Richman, 1971). With one exception, by the sixth grade, between 95% and 100% of all ASVAB test words typically have been encountered. The estimate for Word Knowledge questions was 83%. Similarly, between 98% and 100% of the test words have been encountered by the eighth grade, with 93% for Word Knowledge.

The reading level of ASVAB test directions was estimated using the Dale-Chall formula (Chall, 1958). This procedure yielded a reading level of less than sixth grade. These estimates indicate that examinees in grades 10 and above should have very little difficulty in understanding the verbal content of the ASVAB.

More recently, various computer programs have calculated various readability indices. In every instance, the results indicate that the vocabulary and comprehension levels of the ASVAB are well within the range of the target audience for the test.

ASVAB Reliability

One of the critical technical qualities of a test is its reliability. Reliability is the psychometric property concerned with the accuracy, precision, and consistency of test scores. This consistency can be across time (test-retest reliability), across different forms of the same measure (parallel forms reliability), across items within a single measure (internal consistency), across repeated testing of the same individual (standard error of measure), or across response patterns (IRT-based reliability estimates). Each of these approaches leads to estimates of the reliability of the measure. The scoring of the ASVAB is based on item response theory (IRT). Figure 5-2 presents IRT-based reliability estimates for ASVAB composite scores and test scores computed on the PAY80 sample. The reliability estimates for the ASVAB composites range from .87 to .92, and the estimates for the individual tests range from .66 to .88. Additional information on reliability of the ASVAB composite and individual tests is reported in the *Technical Manual.*

Figure 5-2. IRT-Based Reliability Estimates for ASVAB Composite Scores and Test Scores*

CAREER EXPLORATION SCORES	MALES				FEMALES			
	10th Grade	11th Grade	12th Grade	Post Sec.	10th Grade	11th Grade	12th Grade	Post Sec.
Verbal Skills	.89	.90	.90	.88	.89	.90	.90	.88
Math Skills	.87	.91	.91	.92	.87	.91	.91	.92
Science and Technical Skills	.89	.91	.91	.91	.88	.90	.90	.90
TESTS								
General Science	.77	.81	.80	.81	.77	.80	.80	.82
Arithmetic Reasoning	.80	.85	.86	.88	.79	.85	.86	.88
Word Knowledge	.86	.87	.87	.85	.86	.87	.87	.86
Paragraph Comprehension	.74	.71	.70	.66	.75	.70	.69	.67
Mathematics Knowledge	.76	.81	.82	.85	.75	.82	.82	.84
Electronics Information	.71	.73	.73	.73	.69	.72	.72	.74
Auto and Shop Information	.74	.80	.82	.82	.68	.73	.73	.76
Mechanical Comprehension	.75	.81	.82	.83	.72	.77	.78	.79

* based on PAY80 sample.

ASVAB Validity

One of the central concerns of counselors about testing is whether the tests they use are valid. Considered the single most important test characteristic by the joint standards on testing developed by the American Educational Research Association, American Psychological Association and National Council for Measurement in Education (American Psychological Association, 2000), validity refers to the appropriateness, meaningfulness, and usefulness of the inferences made from test scores. Because validity emphasizes the inferences based on the test scores rather than the scores themselves, it is not really appropriate to talk about validity as if it were a property of the test. Even so, most validity studies seem to be conducted to accumulate evidence to assess "the degree to which it [the test] measures what it is supposed to measure" (Rosenthal & Rosnow, 1991, p. 60).

Traditionally, the focus on test validation has been on examining validity from three different perspectives: content validity, construct validity, and criterion validity. For a test to be considered a 'valid' measure, there should be evidence to support all three types of validity. For the ASVAB, validity is a primarily a matter of whether the test accurately forecasts success in future educational programs and predicts performance in various civilian and military occupations.

ASVAB Content Validity

Content-related evidence of validity demonstrates the degree to which the items represent the appropriately defined domain. In this case, the appropriate domains consist of the individual ASVAB tests and composites. The content domains for the tests and composites are described in Figure 5-3. The ASVAB's primary purpose is to predict success in entry-level training and on-the-job performance across a wide array of military occupations. Therefore, the ASVAB test and composite content was selected to facilitate such prediction. The ASVAB was not intended to provide a measure of the degree to which an individual has mastered the entire domain assessed by the test. Rather, the test items represent the aspects of the domain that are important for success in military occupations. They were not designed to be representative of the entire domain. For example, Mathematics Knowledge (see Figure 5-3) assesses the math knowledge needed to be successful in a number of different occupations. It does not sample or reflect the entire mathematics domain. This is one reason why the ASVAB cannot be used to determine subject-matter competency or how well an individual has mastered particular school courses. Additional information about the development of the OCCU-FIND can be found in the *Supplement to the Technical Manual for the ASVAB 18/19 Career Exploration Program* (U.S. Department of Defense, 2002).

Figure 5-3. ASVAB Tests and Composites

Career Exploration Scores

Verbal Skills is a general measure of vocabulary and reading skills covered in the Word Knowledge and Paragraph Comprehension tests. People with high scores tend to do well in tasks that require good vocabulary or reading skills, while people with low scores have more difficulty with such tasks.

Math Skills is a general measure of mathematics skills covered in the Mathematics Knowledge and Arithmetic Reasoning tests. People with high scores tend to do well in tasks that require a knowledge of mathematics, while people with low scores have more difficulty with these kinds of tasks.

Science and Technical Skills is a general measure of science and technical skills which are covered in the General Science, Electronics Information, and Mechanical Comprehension tests. People with high scores tend to do well in tasks that require scientific thinking or technical skills, while people with low scores have more difficulty with such tasks.

Individual ASVAB Tests

General Science tests the ability to answer questions on a variety of science topics drawn from courses taught in most high schools. The life science items cover botany, zoology, anatomy and physiology, and ecology. The earth and space science items are based on astronomy, geology, meteorology, and oceanography. The physical science items measure force and motion mechanics, energy, fluids, atomic structure, and chemistry.

Arithmetic Reasoning tests the ability to solve basic arithmetic problems one encounters in everyday life. One-step and multistep word problems require addition, subtraction, multiplication, and division, and choosing the correct order of operations when more than one step is necessary. The items include operations with whole numbers, operations with rational numbers, ratio and proportion, interest and percentage, and measurement. Arithmetic reasoning is one factor that helps characterize mathematics comprehension and logical thinking.

Word Knowledge tests the ability to understand the meaning of words through synonyms - words having the same or nearly the same meaning as other words. The test is a measure of one component of reading comprehension since vocabulary is one of many factors that characterize reading comprehension.

Paragraph Comprehension tests the ability to obtain information from written material. Students read different types of passages of varying lengths and respond to questions based on information presented in each passage. Concepts include identifying stated and reworded facts, determining a sequence of events, drawing conclusions, identifying main ideas, determining the author's purpose and tone, and identifying style and technique.

Mathematics Knowledge tests the ability to solve problems by applying knowledge of mathematical concepts and applications. The problems focus on concepts and algorithms and involve number theory, numeration, algebraic operations and equations, geometry and measurement, and probability. Mathematics knowledge is one factor that characterizes mathematics comprehension and assesses logical thinking.

Electronics Information tests understanding of electrical current, circuits, devices, and systems. Electronics information topics include electrical circuits, electrical and electronic systems, electrical currents, electrical tools, symbols, devices, and materials.

Auto and Shop Information tests aptitude for automotive maintenance and repair, and wood and metal shop practices. The test covers several areas commonly included in most high school auto and shop courses such as automotive components, automotive systems, automotive tools, troubleshooting and repair, shop tools, building materials, and building and construction procedures.

Mechanical Comprehension tests understanding of the principles of mechanical devices, structural support, and properties of materials. Mechanical comprehension topics include simple machines, compound machines, mechanical motion, and fluid dynamics.

Figure 5-3. ASVAB Tests and Composites (continued)

Military Composites

Military Careers Score is a composite score based on the verbal, math, Mechanical Comprehension, and Electronics Information tests. It compares skills in these areas to the skills of military personnel currently employed in a number of occupations. The score is used with the publication *Military Careers* which highlights and describes a number of military occupations.

Military Entrance Score (AFQT) is a composite score based on results from the following four tests: Arithmetic Reasoning, Mathematics Knowledge, Paragraph Comprehension, and Word Knowledge. It is the score used if an individual decides to enter any of the Military Services.

ASVAB Criterion Validity

Criterion-related evidence of validity demonstrates the degree to which the scores on a measure are systematically related to one or more appropriate criteria. Since the introduction of forms parallel to the ASVAB reference form in 1980, the Military Services have collected criterion data for individuals entering hundreds of military occupations. Extensive research demonstrates that the ASVAB is a valid predictor of success in military training, first-term attrition, and job performance (Booth-Kewley, 1983; Maier & Truss, 1983; Rossmeissl, Martin, & Wing, 1983; Welsh, Kucinkas, & and Curran, 1990; Wilbourn, Valentine, & Ree, 1984). For example, validity coefficients for military occupations ranged from .36 to .77. The ASVAB also shows substantial validity for predicting job performance using state-of-the-art performance criteria. The complete set of validity data for military service occupations is found in the *Armed Services Vocational Aptitude Battery (ASVAB): Integrative Review of Validity Studies* (Welsh, Kucinkas, & Curran, 1990).

The ASVAB also has demonstrated criterion-related evidence for validity in predicting success in civilian occupations as well. Holmgren and Dalldorf (1993) examined the criterion-related validity of the ASVAB for eleven popular civilian occupations (e.g., firefighter, cosmetologist, electronics technician, operating engineer). For eight of these occupations, at least one of the ASVAB composites had a validity coefficient of at least .30.

Additional evidence comes from two sources: (a) the similarity between ASVAB and other tests that predict occupational performance, and (b) the established linkage between military occupational specialties and their civilian occupational counterparts. The General Aptitude Test Battery (GATB) which was used by the U.S. Employment Service for over 30 years, has a database of more than 400 validation studies on a representative sample of 12,000 jobs contained in the *Dictionary of Occupational Titles* (U.S. Department of Labor, 1983a, 1983b). The GATB has long been accepted as a valid predictor of job performance in the civilian sector. Based on the psychometric equivalence of the ASVAB and GATB, Hunter (1983) concluded that the ASVAB also predicts performance in civilian occupations. Because psychometrically equivalent tests

have similar validity coefficients with external criteria, Hunter, Crosson, and Freedman (1985) determined that the ASVAB was a valid predictor of both civilian and military job performance.

Job analysis techniques were used to study the correspondence between military and civilian occupations. The study found that approximately 80% of the enlisted occupations and 60% of the officer occupations had close civilian counterparts (U.S. Department of Defense, 1986). This study demonstrates the close ties between occupations in both the military and civilian worlds of work, lending further support of the validity of the ASVAB as a predictor of military and civilian job performance.

ASVAB Construct Validity

A test is considered to have construct validity when it measures the appropriate construct, or concept. Construct-related evidence often includes findings that show a strong relationship between the test of interest and other highly regarded measures of the same construct. As an aptitude test, one would expect the ASVAB to have much in common with achievement and ability tests such as the SAT and ACT Assessment. Research confirms this suspicion. For example, a recent study reported a correlation of .79 between the ACT Assessment and the ASVAB-AFQT—the score used for enlistment purposes by all U.S. Armed Forces (Nicewander, 2000). This finding, based on a sample of over one million Service applicants who completed both the ASVAB and ACT, leaves little doubt that the ASVAB-AFQT measures the same type of knowledge, skills, and abilities measured by the ACT Assessment. Other studies have also reported strong relationships between the ASVAB-AFQT and other achievement and ability tests. For example, the ASVAB-AFQT tests correlate quite highly with the corresponding scales of the California Achievement Test (Streicher & Friedman, 1983). Based on a sample of over 1,600 high school sophomores, the corresponding scale correlations ranged from .70 to .86. Streicher and Friedman reported similar high correlations between the ASVAB-AFQT and corresponding tests of the Differential Aptitude Test based on their sample of over 1,300 high school sophomores and juniors. These correlations ranged in magnitude from .65 to .82. These and other studies are fully detailed in the *Technical Manual* and provide firm evidence for the construct validity of the ASVAB-AFQT.

The relationship between some of the ASVAB tests and school grades also provides construct validity evidence. Fairbank, Welsh, and Sawin (1990) reported strong relationships between high school course grades and ASVAB scores. They obtained course grades for about 8,400 high school students in a number of English, math, science, foreign language, vocational, and social studies courses. The correlations between the grades and the relevant ASVAB tests and composites were about as expected, ranging in value from .30 to .59.

Test Bias and Differential Prediction

As noted by those who study achievement testing and minority issues (e.g., McLoyd & Steinberg, 1998; Valencia & Suzuki, 2001), there tends to be large performance differences between Caucasian students and students from the historically excluded populations in this country (i.e., African Americans, Hispanics, American Indians). Because this difference appears to exist on almost all major standardized achievement and aptitude tests, it should come as no surprise that it also exists on the ASVAB.

The important issue, as noted by ASVAB critics like Prediger (2000) and Rogers (2002), is how the test scores are used in predicting future educational and career outcomes. Such issues have been thoroughly investigated and reviewed both by DoD research personnel and civilian review panels to ensure that the ASVAB is as free of bias as possible. In this regard, the conclusions of the most recent wide-scale investigation of this issue was that the ASVAB tests and composites are "highly sensitive predictors of training and job performance for all applicant groups" (Wise, Welsh, Grafton, Foley, Earles, Sawin, & Divgi, 1992, p. 25). This conclusion echoes that of the Defense Advisory Committee on Military Personnel Testing, a panel of civilian psychometricians and testing professionals who studied ASVAB gender and race/ethnic differences in the early 1980s.

The Army and Air Force have reported separate validation data for African Americans and Caucasians, and for women and men who took ASVAB Form 8, 9, or 10. For those occupations for which adequate samples were available, no major sex or race differences were found in predictions based upon ASVAB scores (Fast & Martin, 1984). Similarly, in reviewing data relating scores on an earlier ASVAB form to performance in 43 Air Force technical training schools, Bock and Moore (1984) concluded that there was no evidence that the use of the ASVAB resulted in biased selection favoring Whites to Blacks or men to women. More recent research (Linn, Hastings, Hu, & Ryan, 1988; Welsh, Androlewicz, & Curran, 1990) supports the fairness of the ASVAB. A more detailed discussion of the equity of the ASVAB for personnel selection and job placement can be found in Eitelberg, Laurence, Waters, and Perelman (1984), and in Bock and Mislevy (1981). Additional race, gender, and ethnicity information is available in Welsh, Kucinkas, & Curran (1990).

ASVAB Career Exploration Composites

Rather than use individual ASVAB tests for career exploration purposes, the ASVAB Program relies on the use of specially derived Career Exploration Scores, or composites. These composites—Verbal Skills, Math Skills and Science and Technical Skills—were derived through factor analyses of the ASVAB. Virtually all reported factor analyses of the ASVAB report the presence of a math, verbal, science/technical, and a speeded factor. The two tests—Numerical Operations and Coding Speed—that defined the speeded factor have been dropped from the ASVAB, leaving the other three factors.

To verify the presence of the math, verbal, and science and technical factors, both exploratory and confirmatory factor analyses were conducted using the nationally representative data from PAY80 (Baker & Styer, 2002). Both methods yielded similar results and conclusions. The Math Skills factor combined Arithmetic Reasoning and Mathematics Knowledge; the Verbal Skills factor combined Word Knowledge and Paragraph Comprehension; the Science and Technical Skills factor combined General Science, Mechanical Comprehension and Electronics Information. The factor results were highly reliable (Tucker's phi = .91), indicating that the three factors are both reliable and robust. These and other factor analytic studies of the ASVAB are detailed more fully in the *Technical Manual*.

Summary of ASVAB Validity

The ASVAB is a valid predictor of successful performance in educational programs and in various civilian and military occupations. Scores from the ASVAB predict success in high school and postsecondary school courses, as well as military occupational training programs. The usefulness of ASVAB scores for predicting performance in civilian occupations is supported by (a) the abundance of data linking ASVAB scores to military and civilian occupations; (b) analyses linking civilian and military occupations; and (c) the strong relationship between scores on the ASVAB and those on the GATB, a test battery with extensive validity data for civilian workers. In addition, scores from the ASVAB do not systematically underestimate the performance of minority group members or women.

The *Interest-Finder* Technical Characteristics

Developed specifically for the ASVAB Program, the *Interest-Finder* is an inventory designed to help students explore their occupational and career interests. Based on John Holland's well-accepted theory of career choice, the *Interest-Finder* assesses an individual's resemblance to each of the six RIASEC (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) types described by Holland (1985a). Though relatively new, the *Interest-Finder* has already earned positive reviews. Bingham and Krantz (2001), for example, described the primary validation study of the *Interest-Finder* as "one of the most extensive studies on the development of a career measurement tool" (p. 4). They go on to say "these research results may be of particular interest to high school counselors" (p. 4).

More detailed information about the development of the *Interest-Finder* is available in the *Technical Manual* and in published reports by Wall, Wise, and Baker (1996) and Wall and Baker (1997).

Interest-Finder Norms

Because the *Interest-Finder* is self-administered and self-scored, students receive their raw scores which they then convert to gender-specific percentile equivalent scores. The current norms for the *Interest-Finder* are based on the results of a national study of over 1,300 high school students from 22 high schools across 20 states and 2,300 recruits (Wall, Wise, & Baker, 1996). However, only the high school student results were used to determine *Interest-Finder* norms.

The *Interest-Finder* uses gender-based percentile scores for interpretation. Providing gender-based percentiles acknowledges the gender differences on the *Interest-Finder* scales. For example, when a male has a raw score of 10 on the Realistic scale, he is at the 43rd percentile for males, while a female with the same raw score would be at the 72nd percentile for females. When a male obtains a raw score of 10 on the Social scale, he is at the 56th percentile for males, while a female with the same raw score would be at the 28th percentile for females. As can be seen, the use of gender-based percentile scores provides a normative interpretation designed to help students consider a wider range of occupations than they may consider based on gender-combined norms. Both the gender-specific and gender-combined norms are reported in Appendix F.

Interest-Finder Reading Level

Generally, test publishers and authors rely on various readability formulas to estimate the reading level of the items or inventory (Popham, 1990). This was deemed inappropriate for the development of the *Interest-Finder* because these formulas focus almost entirely on the mechanical aspects of reading (Anderson & Davidson, 1986) and give little information about the comprehensibility of the material. Therefore, *The Living Word Vocabulary* (Dale & O'Rourke, 1981) was used to help ensure that the words used in the *Interest-Finder* were appropriate for use with high school students. Words not meeting the comprehensibility criteria were revised to meet the criteria or deleted, as appropriate.

Interest-Finder Reliability

The reliability of each of the *Interest-Finder* scales was assessed by calculating coefficient alpha, a measure of internal consistency. The alphas for the *Interest-Finder* scales, which were very high, range from a low of .93 (Realistic) to a high of .96 (Conventional).

The standard error of measurement (SEM) assesses the amount of change one might expect over repeated applications of a measure. Th*e Interest-Finder* SEMs range from a low of 2.06 (Conventional) to a high of 2.51 (Enterprising). These standard errors

indicate that if an individual were to take the *Interest-Finder* again, there is a 95% chance that the new score would be within about four or five points above or below the original score. This suggests that the *Interest-Finder* scores are fairly stable over time.

Interest-Finder Validity

As noted earlier, validity refers to the appropriateness, meaningfulness, and usefulness of the inferences made from test scores. Because validity emphasizes the inferences based on the test scores rather than the scores themselves, it is not really appropriate to talk about validity as if it were a property of the test.

In their review of career assessment instruments, Bingham and Krantz (2001) point out that there is considerable evidence to support the content, construct, and criterion validity of the *Interest-Finder* as a measure of the RIASEC constructs associated with Holland's (1985a) theory of career choice.

Interest-Finder Content Validity

According to the joint testing standards described earlier, content-related evidence of validity demonstrates the degree to which the items represent the appropriately defined domain. In this case, the appropriate domain consists of the RIASEC constructs in Holland's (1985a) theory of career choice.

A detailed content taxonomy for each of the RIASEC domains was created that provided the blueprint for creating the *Interest-Finder*. It consisted of the RIASEC constructs to be measured, the content areas that characterized each of those constructs, and the types of items used to assess the constructs. The taxonomy was created through a comprehensive review of Holland's theory, a careful analysis of other RIASEC-based interest inventories, and student input through several focus group sessions. Such attention to the taxonomy helped to ensure that the RIASEC domains were more than adequately represented by the item content.

After careful consideration of six different types of items, three types were selected for use in the *Interest-Finder*: activities, training, and occupations. In the activity items, students are asked about the kinds of things they find enjoyable. In the training items, students are asked about the kinds of things they like or would like to learn through courses or training programs. Occupation items ask students to identify which kinds of career titles or jobs they might like to pursue.

Based on the taxonomy, about 900 tryout items were written. Each item needed to meet five specifications: (a) measure the targeted RIASEC domain, (b) be understandable to students, (c) be equally valid for all students, (d) use occupational titles familiar to high school students, and (e) reduce irrelevant gender and ethnicity differences. Each item was subjected to a comprehensive review process to ensure these goals were met.

Items failing to meet even one of these criteria were eliminated. Various screenings eliminated approximately one-third of the items, with two-thirds (607) of the items surviving all of the screenings.

Interest-Finder Criterion Validity

Criterion-related evidence for the validity of the *Interest-Finder* consists of an examination of the relationship between *Interest-Finder* scores and high school coursework and the selection of future careers. One would expect a relationship between the courses one takes and the interests one has. By comparing students who have taken (or who plan to take) certain courses with those who have not taken (and do not plan to take) those courses on the *Interest-Finder* scales, evidence for the criterion-related validity of the *Interest-Finder* can be assessed. To the extent that the preference for certain courses are predictive of future plans, it seems reasonable that there should be corresponding *Interest-Finder* differences between those who complete certain courses and those who do not complete those courses.

As one would expect, there are statistically significant relationships between RIASEC scales and the courses taken in high school. Wall and Baker (1997) reported significant correlations between courses taken and *Interest-Finder* scale scores that conformed to expectations. For example, among males, Realistic scores were significantly correlated with taking courses that likely require the use of tools, such as introductory science, industrial arts, electronics, auto mechanics, wood working, and metal working. Significant correlations were also found between Investigative scores and taking science courses such as biology, physics, chemistry, electronics, and computer science. The findings among females showed a similar, though less pronounced, pattern of results. Significant correlations were found between the Realistic scale and electronics, auto mechanics, wood working, metal working, and drafting. Females' Investigative scores correlated significantly with taking science courses like physics and chemistry. Their Conventional scores were correlated with taking computer science courses. It appears that the Investigative scale is predictive of whether or not students will take science courses, and the Realistic scale appears to predict whether or not they will take courses that involve the use of tools.

Wall and Baker (1997) presented high school students with 16 job categories and asked them to identify the category that best matched their career plans. While originally used to determine socioeconomic status, these career plans also provided criterion-related evidence of validity, by indicating the degree to which *Interest-Finder* scores were related to students' career choices. For example, if a student selected a job category coded as Realistic, his or her Realistic scale score should be significantly higher than the other *Interest-Finder* scale scores. Students' *Interest-Finder* scores were, in fact, consistent with their selections of future career categories coded according to the *Dictionary of Holland Occupational Codes* (Gottfredson & Holland, 1989). The

predictable, meaningful difference between *Interest-Finder* scores based on students' selection of future careers is substantial criterion-related evidence for the validity of the *Interest-Finder*.

Interest-Finder Construct Validity

One useful way to assess the construct validity of the *Interest-Finder* at the item level would be to assess the relationships (correlations) between the *Interest-Finder* items and the *Self-Directed Search* (SDS; Holland, 1985b) and *Strong Interest Inventory* (SII; Hansen & Campbell, 1985) RIASEC scales. Wall, Wise, and Baker (1997) reported that *Interest-Finder* items were substantially correlated with the appropriate RIASEC scales both on the SDS and the SII. Wall and Baker (1997) reported that very few items failed to correlate more strongly with their intended RIASEC scale than with the other RIASEC scales. In fact, only 3 of the 240 items failed to correlate more strongly with the intended SDS scale than with the other SDS scales. Similarly, only 19 items failed to correlate more strongly with the intended SII scale than with the other SII scales. These correlations provide an impressive amount of evidence in support of the *Interest-Finder*'s construct validity at the item level.

At the scale level, the *Interest-Finder* items were submitted to an item-level factor analysis. Six factors accounting for 59% of the variance were extracted and retained. The six factors were rotated to a simple structure via the Promax criterion. The items with loadings of absolute value of .40 or higher were used to define the content of each of the six factors. Using this criterion, 93% (222 of 240) of the *Interest-Finder* items exhibited the expected loadings on the appropriate factors. These factor analysis results provide substantial evidence for the construct validity of the *Interest-Finder* at the item level.

The correlations for the corresponding *Interest-Finder* and SII scales are very high - ranging from .74 to .84 in magnitude. Each *Interest-Finder* scale also correlates more highly with its respective SII scale than with any of the other SII scales. This provides further evidence of the *Interest-Finder*'s validity.

Finally, both multidimensional scaling techniques and specific tests of hexagonal structure demonstrate that the *Interest-Finder* has an hexagonal shape as required by the theory.

Summary of *Interest-Finder* Validity

Consistent content, construct, and criterion-related evidence for the validity of the *Interest-Finder* has been presented. The *Interest-Finder* is highly related (a) to other RIASEC inventories both at the individual item and scale level, (b) to the courses taken in school, and (c) to future occupational choices. It is hexagonal in shape, as required by the theory.

The OCCU-FIND Technical Characteristics

The OCCU-FIND presents students with over 400 occupational titles from the O*NET 3.1 database. These titles, listed by primary RIASEC code, were selected to represent both the current and emergent worlds of work. The OCCU-FIND provides the vehicle by which the ASVAB Program links individuals to occupations. It relies on a career development perspective best exemplified by Bloch (1997). Bloch suggested that "the essential tasks of career development are centered on 'self, search, and synthesis'; that is, on identifying the needs, interests, values, and other critical variables of the individual; on understanding the nature of work, occupations, and industries; and on bringing these together" (Bloch, 1989, p. 189). In this perspective, "individuals develop information about themselves, gather information about the world of work appropriate to their current career development needs, and use this information within [their current] framework or to change the framework itself" (Bloch, 1989, p. 122). Accordingly, information is seen as feedback that helps individuals focus on the *construction* of career choices rather than on the *acceptance* of career choices. It provides a powerful way to link together important individual and occupational characteristics.

In developing the OCCU-FIND, we were mindful that students with few potentially satisfying and desirable career choices are often those most at risk in their transition from high school to adult status. A career can provide "a sense of satisfaction and productivity that stems from completing meaningful tasks, a feeling of belonging to a valued reference group, a basis for self-esteem and personal identity, and a way to earn one's economic place in society" (Moos, 1986, p. 9). Further, as Savickas (1997) so compellingly reminds us:

> Work provides a major context in which individuals can meet their needs for agency and union. Through work as a productive activity, people can be active agents who advance themselves and improve the world. Through work as a social contribution, individuals can share the fruits of their labor with family, friends, and neighbors. Through working with people, individuals can gratify their needs for cooperation and companionship. Thus, work provides a forum for both individual identity and social significance. Accordingly, individuals can and do use work to develop into the self they want to become as well as manifest that self in social situations. (p.6)

Hence, we wanted to ensure that *every* student who participates in the ASVAB Program can identify and investigate potentially satisfying and rewarding occupations. In this process, they can choose whether or not to turn these potential occupations into tentative career choices. If they do, the OCCU-FIND offers more sources of information and some concrete next steps in the career development process.

The OCCU-FIND was developed in three broad steps. First, we identified a sound linkage between the Verbal Skills, Math Skills, and Science and Technical Skills composites and the knowledge, skills, and abilities (KSAs) ratings contained in the O*NET 3.1 database. Second, we examined the results of the linkage to ensure adequate coverage of current and emergent world of work. Finally, we selected the specific occupations for inclusion in the OCCU-FIND.

Development of the OCCU-FIND – Phase I

The goal of the first phase was to create three O*NET 3.1 database scales that would mirror the content of the Verbal Skills, Math Skills, and Science and Technical Skills scores that students receive from the ASVAB. Two career development experts scrutinized the 110 KSAs contained in the O*NET 3.1 database. The goal was to determine the degree to which these KSAs were related to the Verbal Skills, Math Skills, and Science and Technical Skills composites. To do so, they assessed how well the O*NET KSAs "matched" the content of each of the ASVAB scales used in the three skills composites. Through a combination of independent ratings and a consensus rating procedure, they identified 26 KSAs that they believed were substantially related to the content of one or more ASVAB scales.

Questionnaires were developed and administered to expert judges to see how well ASVAB scale content could be used to assess the degree to which individuals met these 26 KSAs. One questionnaire was completed by 14 expert judges to see how the 26 KSAs matched the content of the three ASVAB tests (General Science, Mechanical Comprehension, and Electronics Information) used to calculate the Science and Technical Skills score. The 14 judges were well qualified to render such a decision. They all had graduate degrees in psychology or a related field (2 MA, 14 Ph.D.), were employed in an appropriate field (5 Industrial/Organizational Psychologists, 3 Counseling Psychologists, 2 "Other" Psychologist, 4 Psychometricians), and averaged 13.5 years of experience. A second questionnaire was completed by expert judges to see how the 26 KSAs matched the content of the four ASVAB tests (Arithmetic Reasoning, Mathematics Knowledge, Word Knowledge, and Paragraph Comprehension) used to calculate the Verbal Skills and Math Skills scores. The 9 judges were well qualified to render this decision. They all had graduate degrees in psychology or a related field (2 MA, 9 Ph.D.), were employed in an appropriate field (2 Industrial/Organizational Psychologists, 4 "Other" Psychologist, 3 Psychometricians), and averaged 9.0 years of experience.

The two groups of judges agreed about which KSAs were related to the various ASVAB scales as evidenced by the high reliability coefficients for the Verbal Skills composite (.94), Math Skills composite (.87), and Science and Technical Skills composite (.97). These estimates are conservative in nature; that is, the actual reliability is likely higher than these figures would indicate. The high level of reliability indicates that the judges agreed substantially about how each KSA related to the various ASVAB scales.

The KSAs judged to be highly related, moderately highly related, or moderately related to ASVAB scale content were retained for further analysis. This led to 5, 9, and 16 KSAs for the Verbal Skills, Math Skills, and Science and Technical Skills composites respectively. As would be expected, some KSAs (four) were judged to be related to two or more of the composites. Figure 5-4 displays the KSAs retained for each of the three composites. It seems apparent from the KSAs that they are substantially related to the ASVAB skill composites.

Figure 5-4. Competency KSAs

VERBAL COMPETENCY KSAs		
O*NET Scale name	**KSA**	**KSA Text**
Inductive Reasoning	Ability	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).
Written Comprehension	Ability	The ability to read and understand information and ideas presented in writing.
Oral Comprehension	Ability	The ability to listen and understand information and ideas presented through spoken words and sentences.
English Language	Knowledge	Knowledge of the structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.
Reading Comprehension	Skill	Understanding written sentences and paragraphs in work-related documents.

MATH COMPETENCY KSAs		
O*NET Scale name	**KSA**	**KSA Text**
Deductive Reasoning	Ability	The ability to apply general rules to specific problems to produce answers that make sense.
Inductive Reasoning	Ability	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).
Written Comprehension	Ability	The ability to read and understand information and ideas presented in writing.
Number Facility	Ability	The ability to add, subtract, multiply, or divide quickly and correctly.
Mathematical Reasoning	Ability	The ability to choose the right mathematical methods or formulas to solve a problem.
Information Ordering	Ability	The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).
Mathematics	Knowledge	Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications.
Science	Skill	Using scientific rules and methods to solve problems.
Mathematics	Skill	Using mathematics to solve problems.

Figure 5-4. Competency KSAs (continued)

SCIENCE/TECHNICAL COMPETENCY KSAs		
O*NET Scale name	**KSA**	**KSA Text**
Deductive Reasoning	Ability	The ability to apply general rules to specific problems to produce answers that make sense.
Inductive Reasoning	Ability	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).
Written Comprehension	Ability	The ability to read and understand information and ideas presented in writing.
Mechanical	Knowledge	Knowledge of machines and tools, including their designs, uses, repair, and maintenance.
Biology	Knowledge	Knowledge of plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.
Computers & Electronics	Knowledge	Knowledge of circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.
Engineering Technology	Knowledge	Knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.
Chemistry	Knowledge	Knowledge of the chemical composition, structure, and properties of substances and of the chemical processes and transformations that they undergo. This includes uses of chemicals and their interactions, danger signs, production techniques, and disposal methods.
Physics	Knowledge	Knowledge and prediction of physical principles, laws, their interrelationships, and applications to understanding fluid, material, and atmospheric dynamics, and mechanical, electrical, atomic and subatomic structures and processes.
Building & Construction	Knowledge	Knowledge of materials, methods, and the tools involved in the construction or repair of houses, buildings, or other structures such as highways and roads.
Technology Design	Skill	Generating or adapting equipment and technology to serve user needs.
Science	Skill	Using scientific rules and methods to solve problems.
Installation	Skill	Installing equipment, machines, wiring, or programs to meet specifications.
Trouble Shooting	Skill	Determining causes of operating errors and deciding what to do about it.
Equipment Selection	Skill	Determining the kind of tools and equipment needed to do a job.
Operation & Control	Skill	Controlling operations of equipment or systems.

Next, scales corresponding to each composite were constructed by combining together the importance scores for the retained KSAs. Adequate scale reliabilities were found for the three scales (.91, .90, and .82 for the Verbal, Math, and Science and Technical Scales, respectively). A score on each of these scales was calculated for each occupation in the O*NET 3.1 database.

This process resulted in the creation of three importance scales from the O*NET 3.1 database. These Verbal, Math, and Science and Technical importance scales mirror the ASVAB Career Exploration Scores in content.

Development of the OCCU-FIND – Phase II

In the second phase, the goal was to determine how well the three scales covered the O*NET 3.1 database. To facilitate career exploration, we did a cluster analysis that placed each occupation into one of three groups (high, moderate, low) on each of the three scales. From this schema, students could grasp quickly and intuitively the importance of Verbal Skills, Math Skills, and Science and Technical Skills for all of the occupations in the O*NET 3.1 database. Every occupation was coded as high, moderate, or low on the three importance scales, as reported in Figure 5-5.

Figure 5-5. Number of O*NET 3.1 Database Occupations Ranked by Importance of Verbal Skills, Math Skills, and Science and Technical Skills

O*NET Importance Composite	Low	Moderate	High
Verbal Skills	407	318	293
Math Skills	267	494	257
Science and Technical Skills	223	492	303

One consequence of this grouping is that it would be possible for students who prefer to explore occupations for which Math Skills are relatively unimportant to find 267 such occupations. Similarly, students who wanted to find occupations that place high importance on Verbal Skills would be able to identify 293 such occupations in the O*NET 3.1 database.

Development of the OCCU-FIND – Phase III

Finally, specific occupations were selected for inclusion in the OCCU-FIND. In selecting occupations, we adhered to a 'representative sampling' approach that was designed to select occupations such that the final list would be similar in nature and content to the entire list of occupations in the O*NET 3.1 database. In doing so, we selected occupations with an eye toward including both civilian and military occupations, occupations with large numbers of employees, occupations with a high expected growth rate over the next ten years, and occupations with relatively good status. Of paramount importance was selecting a mix of high, moderate, and low importance occupations for each of the three composites in each of the RIASEC domains. Additional information about the development of the OCCU-FIND can be found in the *Supplement to the Technical Manual for the ASVAB 81/19 Career Exploration Program* (U.S. Department of Defense, 2002).

6

References

American Psychological Association. (1999). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.

Anderson, R. C. & Davidson, A. (1986). *Conceptual and empirical bases of readability formulas*. Cambridge, MA: Bolt, Beranek, and Newman.

Baker, H. E. & Styer, J. S. (2002, February). *A new model for the STP*. Presented to the Defense Advisory Committee on Military Personnel Testing, San Diego, CA.

Bingham, R. P. & Krantz, J. (2001). Career and vocational assessment 1997-1998: A biennial review. *Journal of Career Assessment*, 9, 1-24.

Bloch, D. P. (1989). From career information to career knowledge: Self, search, and synthesis. *Journal of Career Development*, 16, 119-128.

Bloch, D. P. (1997). Spirituality, intentionality, and career success: The quest for meaning. In D.P. Bloch & L.J. Richmond (Eds.), *Connections between spirit and work in career development: New approaches and practical perspectives* (pp. 185-208). Palo Alto, CA: Davies-Black Publishing.

Bock, R. D. & Mislevy, R. J. (1981). *Profile of American youth: Data quality analysis of the Armed Services Vocational Aptitude Battery*. Chicago, IL: National Opinion Research Center.

Bock, R. D. & Moore, E. G. J. (1984). *Profile of American youth: Demographic influences on ASVAB test performance*. Washington, DC: Office of the Assistant Secretary of Defense (Manpower, Installations and Logistics).

Booth-Kewley, S. (1983). *Predictive validation of Armed Services Vocational Aptitude Battery forms 8, 9, and 10 against performance at 47 Navy schools*. San Diego, CA: Navy Personnel Research and Development Center.

Brown, D. & Gore, A. (1994). An evaluation of interest congruence indices: Distribution characteristics and measurement properties. *Journal of Vocational Behavior*, 2, 353-376.

Carroll, J. B., Davies, P., & Richman, B. (1971). *The word frequency book*. New York: American Heritage.

Chall, J. S. (1958). *Readability: An appraisal of research and application*. Columbus, OH: The Ohio State University, Bureau of Educational Research.

Dahir, C. A. & Campbell, C. A. (1977). *Sharing the vision: The national standards for school counseling programs.* The American School Counselor Association.

Dale, E. & O'Rourke, J. (1981). *The living word vocabulary*. Chicago, IL: World Book-Childcraft, Inc.

Eitelberg, M. J., Laurence, J. H., Waters, B. K., & Perelman, L. S. (1984). *Screening for service: Aptitude and education criteria for military entry.* Washington, DC: Office of the Assistant Secretary of Defense (Manpower, Installations and Logistics).

Elmore, P. B. & Bradley, R. W. (1994). Review of the Armed Services Vocational Aptitude Battery (ASVAB) career exploration program. In J. T. Kapes, M. M. Mastie, & E. A. Whitfield (Eds.), *A counselor's guide to career assessment instruments* (3rd. ed., pp. 71-77). Alexandria, VA: National Career Development Association.

Fairbank, B.A., Welsh, J.R., & Sawin, L.L. (1990). *Armed Services Vocational Aptitude Battery (ASVAB): Validity of ASVAB form 14 for the prediction of high school course grades* (AFHRL-TR-90-48). Brooks Air Force Base, TX: Air Force Human Resources Laboratory.

Fast, J. C. & Martin, T. J. (1984). *Utility of selection measures for women: Interim report* (Phase I). Cambridge, MA: Scientific Systems.

Gottfredson, G. D. & Holland, J. L. (1989). *Dictionary of Holland occupational codes* (2nd ed.). Odessa, FL: Psychological Assessment Resources, Inc.

Hansen, J. C. & Campbell, D. P. (1985). *Manual for the Strong Interest Inventory* (4th ed.). Palo Alto, CA: Consulting Psychologists press.

Holland, J. L. (1973). *Making vocational choices: a theory of vocational personalities and work environments*. Englewood Cliffs, NJ: Prentice-Hall.

Holland, J. L. (1985a). *Making vocational choices: A theory of vocational personalities and work environments* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Holland, J. L. (1985b). *The Self-Directed Search professional manual - 1985 edition*. Odessa, FL: Psychological Assessment Resources, Inc.

Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments* (3rd ed.). Odessa, FL: Psychological Assessment Resources, Inc.

Holmgren, R.L. & Dalldorf, M.R. (October, 1993). *A validation of the ASVAB against supervisors' ratings in the General Aptitude Test Battery (GATB)*. Washington, DC: United States Employment Service.

Hunter, J. E. (1983). *The prediction of success in the military: A preliminary report*. Rockville, MD: Research Applications.

Hunter, J. E., Crosson, J. S., & Friedman, D. H. (1985). *The validity of the Armed Services Vocational Aptitude Battery (ASVAB) for civilian and military job performance*. Washington, DC: Office of the Assistant Secretary of Defense (Force Management and Personnel).

Jensen, A. R., (1988). Review of the Armed Services Vocational Aptitude Battery. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to career assessment instruments* (2nd ed., pp. 59-62). Alexandria, VA: National Career Development Association.

Linn, R. L., Hastings, C. N., Hu, P. G., & Ryan, K. E. (1988). *Armed Services Vocational Aptitude Battery: Differential item functioning on the high school form* (AFHRL-TR-87-45). Brooks Air Force Base, TX: Air Force Human Resources Laboratory.

Maier, M. H. & Truss, A. R. (1983). *Validity of the ASVAB forms 8, 9, and 10 for Marine Corps training courses: Subtests and current composites* (Memorandum No. 83-3107). Alexandria, VA: Center for Naval Analyses.

McLoyd, V. C. & Steinberg, L. (1998). *Studying minority adolescents: Conceptual, methodological, and theoretical issues*. Mahweh, NJ: Erlbaum.

Moos, R. H. (1986) Work as a human context. In M. S. Pallak & R. Perloff (Eds.), *Psychology and work: Productivity, change, and employment* (pp. 5-52). Washington, DC: American Psychological Association.

Nicewander, W. A. (2000, March). *ACT-SAT-ASVAB concordance*. Presented to the Defense Advisory Committee on Military Personnel Testing, Nashville, TN.

Popham, W. J. (1990). *Modern educational measurement: A practitioner's perspective* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Prediger, D. J. (1999). Integrating interests and abilities for career exploration: General considerations. In M. L. Savickas & A. R. Spokane (Eds.), *Vocational interests: Meaning, measurement, and counseling use* (pp. 295-326). Palo Alto, CA: Davies-Black.

Ree, M. M., Mathews, J. J., Mullins, C. J., & Massey, R. H. (1982). *Calibration of Armed Services Vocational Aptitude Battery forms 8, 9, and 10* (AFHRL-TR-81-49). Brooks Air Force Base, TX: Air Force Human Resources Laboratory.

Ree, M. M., Mullins, C. J., Mathews, J. J., & Massey, R. H. (1982). *Armed Services Vocational Aptitude Battery: Item and factor analyses of forms 8, 9, and 10* (AFHRL-TR-81-55). Brooks Air Force Base, TX: Air Force Human Resources Laboratory.

Rogers, J. E. (2002). Armed Services Vocational Aptitude Battery career exploration program (ASVAB). In J. T. Kapes & E. A. Whitfield (Eds.), *A counselor's guide to career assessment instruments* (4th ed., pp. 93-101). Alexandria, VA: National Career Development Association.

Rosenthal, R. & Rosnow, R. L. (1991). *Essentials of behavioral research: Methods and data analysis* (2nd ed.). New York, NY: McGraw-Hill.

Rossmeissl, P. G., Martin, C. J., & Wing, H. (1983). *Validity of ASVAB 8, 9, and 10 as predictors of training success* (Selection and Classification Working Paper No. 83-3). Alexandria, VA: Army Research Institute for the Behavioral and Social Sciences.

Savickas, M. A. (1997). The spirit in career counseling: Fostering self-completion through work. In D. P. Bloch & L. J. Richmond (Eds.), *Connections between spirit and work in career development: New approaches and practical perspectives* (pp. 3-25). Palo Alto, CA: Davies-Black Publishing.

Streicher, A. H. & Friedman, D. (1983). *Armed Services Vocational Aptitude Battery (ASVAB Form 14): Comparison with CAT, DAT, and FIT/FACT tests*. Unpublished report. Rockville, MD: Research Applications, Inc.

U.S. Department of Defense. (1982). *Profile of American Youth: 1980 nationwide administration of the Armed Services Vocational Aptitude Battery*. Washington DC: Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs and Logistics).

U.S. Department of Defense. (1986). *Military-civilian occupational crosswalk manual*. Washington, DC: Office of the Assistant Secretary of Defense (Force Management and Personnel).

U.S. Department of Defense. (1999). *Technical manual for the ASVAB 18/19 career exploration program*, Seaside, CA: Defense Manpower Data Center.

U.S. Department of Defense. (2001). *Military careers*. Seaside, CA: Defense Manpower Data Center.

U.S. Department of Defense. (2002). *Exploring careers: the ASVAB career exploration guide*. Seaside, CA: Defense Manpower Data Center.

U.S. Department of Defense. (2002). *Supplement to the technical manual for the ASVAB 18/19 career exploration program*. Seaside, CA: Defense Manpower Data Center. Manuscript in preparation.

U.S. Department of Labor. (1983a). *Fairness of the General Aptitude Test Battery: Ability differences and their impact on minority hiring rates*. Washington, DC: Employment and Training Administration.

U.S. Department of Labor. (1983b). *Test validation for 12,000 jobs: An application of job classification and validity generalization analysis to the General Aptitude Test Battery*. Washington, DC: Employment and Training Administration.

U.S Department of Labor. (2002). *Occupational outlook handbook*. Washington, DC: Bureau of Labor Statistics.

Valencia, R. R. & Suzuki, L. A. (2001). *Intelligence testing and minority students: Foundations, performance factors, and assessment issues*. Thousand Oaks, CA: REMP/Sage.

Wall, J. E. & Baker, H. E. (1997). The Interest-Finder: Evidence of validity. *Journal of Career Assessment*, 5, 255-273.

Wall, J. E., Wise, L. L., & Baker, H. E. (1996). Development of the Interest-Finder - A new RIASEC-based interest inventory. *Measurement and Evaluation in Counseling and Development*, 72, 134-152.

Weinrach, S. G. & Srebalus, D. J. (1990). Holland's theory of careers. In D. Brown, L. Brooks & Associates (Eds.), *Career choice and development: Applying contemporary theories to practice* (2nd ed., pp. 37-67). San Francisco, CA: Jossey-Bass.

Welsh, J. R., Androlewicz, T. R., & Curran, L. T. (1990). *Armed Services Vocational Aptitude Battery (ASVAB): Analyses of differential item functioning of forms 15, 16, and 17* (AFHRL-TP-90-62). Brooks Air Force Base, TX: Air Force Human Resources Laboratory.

Welsh, J. R., Kucinkas, S. K., & Curran, L. T. (1990). *Armed Services Vocational Aptitude Battery (ASVAB): Integrative review of validity studies* (AFHRL-TR-90-22). Brooks Air Force Base, TX: Air Force Human Resources Laboratory.

Wilbourn, J. M., Valentine, L. D., & Ree, M. J. (1984). *Relationships of the Armed Services Vocational Aptitude Battery (ASVAB) forms 8, 9, and 10 to Air Force technical school final grades* (AFHRL-TP-84-08). Brooks Air Force Base, TX: Air Force Human Resources Laboratory.

Wise, L., Welsh, J., Grafton, F., Foley, P., Earles, J., Sawin, L., & Divgi, D.R. (1992). *Sensitivity and fairness of the Armed Services Vocational Aptitude Battery (ASVAB) technical composites* (DMDC Technical Report 92-002). Monterey, CA: Defense Manpower Data Center.

National Career Development Standards and Competencies

National Standards established by the American School Counselor Association

The National Standards for School Counseling Programs facilitate student development in three broad areas: academic development, career development, and personal/social development. The ASVAB Career Exploration Program may contribute to meeting the following standards.

ASCA Guidelines
Academic Development
Standard A   Students will acquire the attitudes, knowledge, and skills that contribute to effective learning in school and across the life span.
Standard B   Students will complete school with the academic preparation essential to choose from a wide range of substantial post-secondary options, including college.
Standard C   Students will understand the relationship of academics to the world of work and to life at home and in the community.
Career Development
Standard A   Students will acquire the skills to investigate the world of work in relation to knowledge of self and to make informed career decisions.
Standard B   Students will employ strategies to achieve future career success and satisfaction.
Standard C   Students will understand the relationship between personal qualities, education and training, and the world of work.
Personal/Social Development
Standard A   Students will acquire the attitudes, knowledge, and interpersonal skills to help them understand and respect self and others.
Standard B   Students will make decisions, set goals, and take necessary action to achieve goals.
Standard C   Students will understand safety and survival skills.

Dahir, C. A. & Campbell, C. A. (1977) *Sharing the vision: The national standards for school counseling programs.* The American School Counselor Association.

National Career Development Association's Competencies for Career Development*

Career Development Competencies by Area and Level				
	Elementary	**Middle/Junior High School**	**High School**	**Adult**
Self-Knowledge	Knowledge of the importance of a positive self-concept. Skills to interact positively with others. Awareness of the importance of growth and change.	Knowledge of the influence of a positive self-concept. Skills to interact positively with others. Knowledge of the importance of growth and change.	Understanding the influence of a positive self-concept. Skills to interact positively with others. Understanding the impact of growth and development.	Skills to maintain a positive self-concept. Skills to maintain effective behaviors. Understanding developmental changes and transitions.
Educational and Occupational Experience	Awareness of the benefits of educational achievement. Awareness of the relationship between work and learning. Skills to understand and use career information. Awareness of the importance of personal responsibility and good work habits. Awareness of how work relates to the needs and functions of society.	Knowledge of the benefits of educational achievement to career opportunities. Understanding the relationship between work and learning. Skills to locate, understand and use career information. Knowledge of skills necessary to seek and obtain jobs. Understanding how work relates to the needs and functions of the economy and society.	Understanding the relationship between educational achievement and career planning. Understanding the need for positive attitudes toward work and learning. Skills to locate, evaluate and interpret career information. Skills to prepare to seek, obtain, maintain and change jobs. Understanding how the needs and functions of society influence the nature and structure of work.	Skills to enter and participate in education and training. Skills to participate in work and lifelong learning. Skills to locate, evaluate and interpret career information. Skills to prepare to seek, obtain, maintain and change jobs. Understanding how the needs and functions of society influence the nature and structure of work.
Career Planning	Understanding how to make decisions. Awareness of the interrelationship of life roles. Awareness of different occupations and changing male/female roles. Awareness of the career planning process.	Skills to make decisions. Knowledge of the interrelationship of life roles. Knowledge of different occupations and changing male/female roles. Understanding the process of career planning.	Skills to make decisions. Understanding the interrelationship of life roles. Understanding the continuous changes in male/female roles. Skills in career planning.	Skills to make decisions. Understanding the impact of work on individual and family life. Understanding the continuing changes in male/female roles. Skills to make career transitions.

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ASVAB Sample Test Items

General Science

General Science tests the ability to answer questions on a variety of science topics drawn from courses taught in most high schools. The life science items cover botany, zoology, anatomy and physiology, and ecology. The earth and space science items are based on astronomy, geology, meteorology, and oceanography. The physical science items measure force and motion mechanics, energy, fluids, atomic structure, and chemistry.

Example

A magnet will attract

    A. water.
    B. a flower.
    C. a cloth rag.
    D. a nail.

D is the correct answer.

Sample test questions

1.   An eclipse of the sun throws the shadow of the

    A. moon on the sun.
    B. moon on the earth.
    C. earth on the sun.
    D. earth on the moon.

2.   Substances that hasten chemical reaction time without themselves undergoing change are called

    A. buffers.
    B. colloids.
    C. reducers.
    D. catalysts.

Arithmetic Reasoning

Arithmetic Reasoning tests the ability to solve basic arithmetic problems encountered in everyday life. One-step and multi-step word problems require addition, subtraction, multiplication, and division, and choosing the correct order of operations when more than one step is necessary. The items include operations with whole numbers, operations with rational numbers, ratio and proportion, interest and percentage, and measurement. Arithmetic reasoning is one factor that helps characterize mathematics comprehension; it also assesses logical thinking.

Example

If 12 workers are needed to run 4 machines, how many workers are needed to run 20 machines?

   A. 20
   B. 48
   C. 60
   D. 80

   C is the correct answer.

Sample test questions

3. How many 36-passenger buses will it take to carry 144 people?

   A. 3
   B. 4
   C. 5
   D. 6

4. It costs $0.50 per square yard to waterproof canvas. What will it cost to waterproof a canvas truck cover that is 15' x 24'?

   A. $ 6.67
   B. $ 18.00
   C. $ 20.00
   D. $180.00

Word Knowledge

Word Knowledge tests the ability to understand the meaning of words through synonyms—words having the same or nearly the same meaning as other words. The test is a measure of one component of reading comprehension, since vocabulary is one of the many factors that characterize reading comprehension.

Example

Small most nearly means

    A. sturdy.
    B. round.
    C. cheap.
    D. little.

D is the correct answer.

Sample test questions

5. The wind is variable today.

    A. mild
    B. steady
    C. shifting
    D. chilling

6. Rudiments most nearly means

    A. politics.
    B. minute details.
    C. promotion opportunities.
    D. basic methods and procedures.

Paragraph Comprehension

Paragraph Comprehension tests the ability to obtain information from written material. Students read different types of passages of varying lengths and respond to questions based on information presented in each passage. Concepts include identifying stated and reworded facts, determining a sequence of events, drawing conclusions, identifying main ideas, determining the author's purpose and tone, and identifying style and technique.

Example

From a building designer's standpoint, three things that make a home livable are the client, the building site, and the amount of money the client has to spend.

According to this statement, to make a home livable,

    A. the prospective piece of land makes little difference.
    B. it can be built on any piece of land.
    C. the design must fit the owner's income and site.
    D. the design must fit the designer's income.

C is the correct answer.

Sample Test Questions

7. Twenty-five percent of all household burglaries can be attributed to unlocked windows or doors. Crime is the result of opportunity plus desire.

    To prevent crime, it is each individual's responsibility to

    A. provide the desire.
    B. provide the opportunity.
    C. prevent the desire.
    D. prevent the opportunity.

8. In certain areas, water is so scarce that every attempt is made to conserve it. For instance, on one oasis in the Sahara Desert the amount of water necessary for each date palm tree has been carefully determined.

    How much water should each tree be given?

    A. no water at all
    B. exactly the amount required
    C. water on alternate days
    D. water only if it is healthy

Mathematics Knowledge

Mathematics Knowledge tests the ability to solve problems by applying knowledge of mathematical concepts and applications. The problems focus on concepts and algorithms and involve number theory, numeration, algebraic operations and equations, geometry and measurement, and probability. Mathematics knowledge is one factor that characterizes mathematics comprehension; it also assesses logical thinking.

Example

If 50 percent of $X = 66$, then $X =$

    A.   33
    B.   66
    C.   99
    D. 132

    D is the correct answer.

Sample Test Questions

9. If $X + 6 = 7$, then X is equal to

    A. −1
    B.   0
    C.   1
    D.   7/6

10. What is the area of this square?

    A.   1 square foot
    B.   5 square feet
    C. 10 square feet
    D. 25 square feet
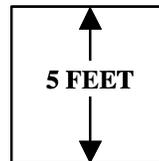
5 FEET

picture of square that is 5 feet wide

Electronics Information

Electronics Information tests understanding of electrical current, circuits, devices, and systems. Electronics information topics include electrical tools, symbols, devices, and materials; electrical circuits; electrical and electronic systems; and electrical currents.

Example

What does the abbreviation AC stand for?

    A. additional charge
    B. alternating coil
    C. alternating current
    D. ampere current

C is the correct answer.

Sample Test Questions

11. Which of the following has the least resistance?

    A. wood
    B. iron
    C. rubber
    D. silver

12. In this circuit diagram, the resistance is 100 ohms, and the current is 0.1 amperes. The voltage is

    A.   5 volts.
    B.   10 volts.
    C.   100 volts.
    D. 1,000 volts.

circuit diagram
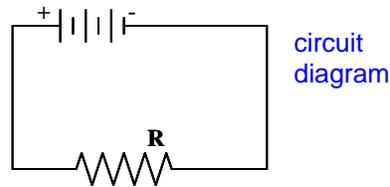
Auto and Shop Information

Auto and Shop Information tests aptitude for automotive maintenance and repair and wood and metal shop practices. The test covers several areas commonly included in most high school auto and shop courses such as automotive components, automotive systems, automotive tools, troubleshooting and repair, shop tools, building materials, and building and construction procedures.

Example

A chisel is used for

    A. prying.
    B. cutting.
    C. twisting.
    D. grinding.

B is the correct answer.

Sample Test Questions

13. A car uses too much oil when which of the following parts are worn?

    A. pistons
    B. piston rings
    C. main bearings
    D. connecting rods

14. The saw shown is used mainly to cut

    A. plywood.
    B. odd-shaped holes in wood.
    C. along the grain of the wood.
    D. across the grain of the wood.

handsaw

Mechanical Comprehension

Mechanical Comprehension tests understanding of the principles of mechanical devices, structural support, and properties of materials. Mechanical comprehension topics include simple machines, compound machines, mechanical motion, and fluid dynamics.

Example

If gear A makes 14 revolutions, gear B will make

A. 21.
B. 17.
C. 14.
D. 9.
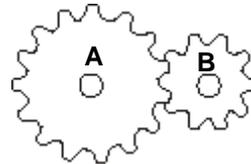
gear diagram

A is the correct answer.

Sample Test Questions

15. Which post holds up the greater part of the load?

    A. post A
    B. post B
    C. both equal
    D. not clear
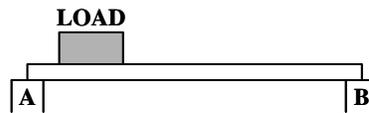
load bearing diagram

16. In this arrangement of pulleys, which pulley turns fastest?

    A. A
    B. B
    C. C
    D. D
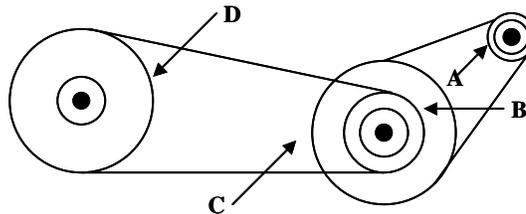
pulleys

Key to the Sample Test Items

1. B	5. C	9. C	13. B
2. D	6. D	10. D	14. B
3. B	7. D	11. D	15. A
4. C	8. C	12. B	16. A

Holland's Theory of Career Choice

According to Holland (1973, 1985a, 1997), there are basically six different personality types, and most people tend to fall into at least one of these six RIASEC (pronounced REE-uh-sek) types:

R Realistic – Mechanical and Outdoor

I Investigative – Science and Mathematics

A Artistic – Art, Music, and Literature

S Social – Social Service

E Enterprising – Business Contact

C Conventional – Business Detail

For convenience, we refer to a person with strong mechanical and outdoor interests as a Realistic person. Work environments can be thought of in a similar fashion. Each work environment can be categorized according to its RIASEC type. These types are simply ways of describing and categorizing people and work environments based on certain characteristics. While people and environments possess at least some characteristics from all six of the RIASEC types, most people and work environments can be categorized according to their highest one, two, or three RIASEC types. There tends to be a strong relationship between the personality and the work environment types. According to Holland, work environments are typically populated by people with the corresponding personality type. For example, Realistic work environments tend to be populated by Realistic people.

The Hexagon

Holland has arranged the six RIASEC types in a specific order according to the hexagonal model shown in Figure C-1. In this hexagon, adjacent types (e.g., Realistic and Investigative) are more similar to each other than are intermediate types (e.g., Realistic and Artistic).

Figure C-1. Holland's Theory of Career Choice

Realistic people are often interested in mechanical activities. They frequently prefer activities that allow them to use their hands, let them see the results of their work, allow them to work alone rather than with others, and use machines, tools and equipment. Some examples of Realistic occupations include Aircraft Pilot, Automotive Mechanic, Broadcast Technician, Woodworker, Firefighter, and Radar Operator.

Conventional people often prefer activities that allow them to use organizational, clerical, and arithmetic skills. They often prefer activities that require attention to detail and accuracy. Some typical Conventional occupations include Accountant, Bank Teller, Budget Analyst, Computer Operator, Court Reporter, and Payroll Clerk.

Investigative people are often interested in mathematical or scientific activities. They typically prefer activities that involve learning about new subjects or allow them to use their knowledge to solve problems or create new things and ideas. Some examples of Investigative occupations include Detective, Dietitian, Nutritionist, Meteorologist, Physical Therapist, Psychologist, and Veterinarian.

Enterprising people tend to prefer activities that allow them to influence others. They frequently like activities that are fast-paced and require them to take on a lot of responsibility or leadership roles. Some typical Enterprising occupations include Executive, Judge, Real Estate Agent, Retail Buyer, Sales Representative, and Travel Agent.

Artistic people like activities that allow them to express themselves through some type of artistic medium. They typically like activities that allow them to be creative, to use their imagination to do something original, and to work according to their own rules. Some examples of Artistic occupations include Actor or Actress, Graphic Designer, Jeweler, Musician, Photographer, and Writer.

Social people often prefer activities that allow them to interact with others. They frequently like activities that involve working with and helping others, and that involve teaching. Some examples of typical Social occupations include Counselor, Licensed Practical Nurse, Physical Therapy Assistant, Flight Attendant, Recreation Worker, and Teacher.

Three Important Aspects of Holland's Theory

Several important aspects of Holland's theory stem from the hexagonal model of the RIASEC types. Three such aspects - congruence, consistency, and differentiation - all describe the relationships between the individual and the work environment in terms of the RIASEC types.

Congruence

Congruence is a measure of the goodness of fit - or matches - between a personality type and a work environment. Congruence is highest when the personality and work environment types are the same and lowest when the personality and work environments are opposite types. Congruence is important because it is related both to job satisfaction and job stability. All things being equal, the greater the congruence, the greater the job satisfaction. This is because work environments provide a place for people to use their skills and abilities and to express their attitudes and values. When congruence is high, there is a good match between the individual and the work environment. This is because, for example, Realistic environments need people with "realistic" skills and preferences, and Realistic people would find that they are needed in Realistic environments. This increases the likelihood that the individual will be appreciated and valued, which in turn leads to higher levels of job satisfaction. The same reasoning explains why high congruence is associated with greater job stability, and low congruence is associated with lower job stability.

Consistency

Sometimes individuals or work environments possess similar, and mostly compatible, characteristics; when they do, they are consistent. Sometimes, however, individuals or work environments contain mostly incompatible characteristics; when they do, they are inconsistent. Using RIASEC codes, such consistency is easy to assess. One way to accomplish this is to assess the relationship between an individual's (or work environment's) primary and secondary types. People or environments with adjacent primary and secondary types (e.g., Realistic - Investigative) are the most consistent because they emphasize similar, and mostly compatible, characteristics. The least amount of consistency exists when the primary and secondary types are opposite each other (e.g., Realistic - Social) because each type contains aspects that are incompatible with the other type.

Differentiation

Individuals and work environments differ in the degree to which they resemble an ideal type. Holland calls this differentiation, and it is directly related to the RIASEC pattern that best describes an individual or work environment. The more a person's or environment's RIASEC pattern resembles just one type, the greater the differentiation. One way to assess the degree of differentiation is to look at the primary and secondary types. For example, all Realistic-Investigative (RI) work environments contain elements of both types, but they may differ in their proportions. One particular RI environment may consist mostly of Realistic characteristics, with only a small or moderate number of Investigative characteristics. Another may consist of roughly equal proportions of Realistic and Investigative characteristics. In this example, the first work environment would be considered more differentiated than the second because it is more purely Realistic than the second environment, which could be just as easily labeled *either* Realistic or Investigative. Individuals who exhibit greater differentiation are more likely to know what their career interests might be and are likely to require less assistance in career exploration.

Resource People

Many individuals are involved in the ASVAB test administration process from the time schools are initially contacted through the return and interpretation of students' results. Various resource people are available from the Department of Defense (DoD) to aid counselors in the testing process. In general, the Education Services Specialist is the primary point of contact for counselors throughout this process. At times, however, counselors may be in contact with some other resource people. Descriptions of the primary resource people related to ASVAB testing are listed below.

Education Services Specialists

An Education Services Specialist is available at each Military Entrance Processing Station (MEPS). Education Services Specialists are civilian government employees with training and experience in education who are hired by the DoD to serve as liaisons with the education community. They provide resource materials for the *ASVAB Career Exploration Program*, train counselors and recruiters in interpreting scores of the ASVAB, and assist counselors in using the ASVAB in career exploration. They may be contacted at your local MEPS. Contact information is available from the counselor section on our website: www.asvabprogram.com

Military Education Specialists

Military Education Specialists are government employees who also work with educators. The Army and Navy have supplemented their recruiting forces with these employees to teach recruiters about the education community and facilitate their activities in the schools. Army Education Specialists are assigned to Recruiting Battalions. The Navy Education Specialists are assigned to Navy Recruiting Districts.

Recruiters

Recruiters from each of the Military Services identify and screen individuals for their Service. Recruiters contact prospective enlistees, including those who have been in the Service and have returned to civilian life. They advise prospective enlistees about job and career opportunities in their Service and perform administrative duties associated with personnel enlistment and reenlistment. As part of their duties, recruiters contact schools regarding the ASVAB and make preliminary arrangements for testing.

Test Coordinators

Each MEPS has a test coordinator who coordinates the scheduling of ASVAB testing in the schools. The test coordinator finalizes scheduled testing dates, determines the availability of test administrators and proctors, and ensures that the ASVAB results are returned to the school.

Test Administrators and Proctors

The ASVAB is administered by qualified test administrators from DoD or the U.S. Office of Personnel Management (OPM). Because results from the ASVAB can be used to qualify individuals for entrance into the Military Services, test security is important. The test administrators have direct responsibility for the security of the test booklets. School personnel are encouraged to be present during the test administration to ensure an optimal testing environment. The MEPS test coordinator can provide advice to school personnel regarding the need for proctors.

Military Counselors at MEPS

Each service has a military counselor at the MEPS who discusses specific programs with young people, helps them to make decisions, and writes the contracts that guarantee job training to applicants. These counselors officially advise applicants about training that will be available and they determine if an applicant is eligible for a desired training program.

Counselor and Education Service Specialists' Responsibilities

Test Administration – Summary of Activities

On the day of testing, counselors should:

- Provide facilities for testing
- Introduce the test and be present to support an optimal testing environment

On the day of testing, Education Service Specialists and other MEPS personnel (e.g., Test Coordinators) should:

- Provide testing materials
- Provide a test administrator
- Provide proctors, as needed
- Take student answer sheets for scoring
- Secure testing materials for future use

Post Administration/Interpretation – Summary of Activities

After testing, Education Service Specialists and other MEPS personnel (e.g., Test Coordinators) should:

- Arrange for scoring student answer sheets
- Return test results to the school
- Provide sufficient number of copies of *Exploring Careers: The Career Exploration Guide*
- Provide ASVAB resource materials, as requested by counselors
- Provide interpretation session on test results to students, as requested
- Provide technical support, as requested by counselors

After testing, counselors should:

- Distribute test results to students
- Support test interpretation session, as requested

Interest-Finder Percentile Equivalence Scores

Percentile Equivalence Scores of Males, Females, and Combined for Social, Enterprising, and Conventional Codes

Raw Scores	SOCIAL			ENTERPRISING			CONVENTIONAL		
	Combined	Males	Females	Combined	Males	Females	Combined	Males	Females
40	100%	100%	100%	100%	100%	100%	100%	100%	100%
39	100%	100%	100%	99%	99%	100%	99%	99%	99%
38	100%	100%	100%	99%	98%	100%	99%	99%	99%
37	100%	99%	100%	98%	97%	99%	98%	98%	98%
36	99%	99%	100%	97%	96%	98%	98%	98%	98%
35	99%	99%	100%	96%	95%	97%	97%	98%	97%
34	99%	98%	100%	95%	94%	96%	97%	97%	97%
33	99%	97%	100%	94%	93%	96%	96%	97%	96%
32	98%	97%	99%	92%	90%	94%	95%	96%	95%
31	97%	95%	99%	91%	88%	93%	95%	96%	94%
30	97%	94%	99%	89%	87%	91%	94%	95%	93%
29	96%	93%	99%	87%	85%	89%	93%	94%	92%
28	96%	92%	99%	85%	83%	87%	91%	93%	90%
27	95%	90%	98%	84%	81%	86%	90%	92%	89%
26	94%	89%	98%	82%	79%	84%	88%	90%	87%
25	93%	87%	98%	80%	77%	83%	87%	89%	85%
24	92%	86%	97%	78%	76%	81%	85%	88%	83%
23	91%	83%	97%	77%	74%	79%	84%	87%	81%
22	89%	81%	96%	74%	72%	77%	82%	85%	79%
21	88%	80%	95%	73%	70%	75%	79%	84%	76%
20	86%	77%	94%	71%	69%	74%	77%	81%	73%
19	85%	75%	93%	69%	66%	72%	75%	78%	72%
18	83%	72%	92%	67%	64%	70%	72%	76%	69%
17	81%	69%	90%	64%	61%	67%	70%	74%	66%
16	77%	64%	87%	62%	58%	65%	66%	70%	63%
15	74%	61%	85%	59%	56%	62%	63%	67%	60%
14	71%	57%	82%	57%	53%	60%	60%	65%	56%
13	68%	54%	80%	54%	51%	57%	57%	62%	52%
12	65%	50%	77%	50%	47%	53%	54%	60%	49%
11	63%	47%	75%	46%	45%	48%	50%	57%	44%
10	59%	43%	72%	43%	40%	45%	47%	53%	41%
9	56%	40%	68%	40%	38%	42%	44%	50%	38%
8	52%	36%	64%	37%	36%	38%	39%	46%	34%
7	48%	33%	60%	33%	31%	34%	36%	42%	31%
6	44%	29%	57%	29%	27%	30%	33%	40%	28%
5	40%	26%	51%	24%	22%	26%	30%	36%	24%
4	35%	22%	45%	20%	19%	21%	25%	31%	20%
3	30%	19%	39%	16%	16%	16%	21%	26%	16%
2	23%	14%	31%	12%	12%	11%	17%	21%	13%
1	18%	11%	23%	8%	8%	8%	13%	17%	9%
0	9%	6%	11%	5%	4%	5%	8%	10%	6%

Percentile Equivalence Scores of Males, Females, and Combined
for Realistic, Investigative, and Social Codes

Raw Scores	REALISTIC			INVESTIGATIVE			SOCIAL		
	Combined	Males	Females	Combined	Males	Females	Combined	Males	Females
40	100%	100%	100%	100%	100%	100%	100%	100%	100%
39	99%	99%	99%	99%	98%	99%	99%	98%	99%
38	99%	99%	99%	98%	98%	99%	98%	98%	99%
37	98%	99%	98%	97%	97%	98%	98%	97%	98%
36	98%	98%	98%	97%	96%	97%	97%	97%	97%
35	97%	98%	97%	96%	95%	96%	97%	97%	97%
34	96%	98%	95%	94%	94%	94%	97%	97%	97%
33	95%	97%	93%	93%	93%	94%	96%	96%	96%
32	94%	97%	92%	91%	90%	92%	95%	96%	95%
31	92%	96%	89%	90%	90%	91%	95%	96%	94%
30	91%	95%	88%	89%	88%	90%	94%	95%	93%
29	90%	94%	86%	87%	85%	88%	94%	95%	93%
28	88%	94%	84%	85%	84%	87%	93%	94%	92%
27	87%	93%	82%	84%	82%	86%	92%	93%	91%
26	85%	92%	79%	82%	80%	84%	91%	93%	90%
25	83%	92%	76%	80%	78%	82%	91%	92%	89%
24	81%	91%	73%	78%	75%	80%	89%	91%	88%
23	80%	89%	72%	76%	74%	78%	88%	90%	86%
22	77%	87%	69%	74%	72%	75%	87%	89%	85%
21	74%	85%	65%	72%	71%	73%	85%	89%	83%
20	71%	84%	61%	70%	68%	71%	84%	88%	82%
19	68%	82%	58%	68%	65%	69%	83%	87%	80%
18	65%	79%	54%	65%	63%	67%	83%	86%	80%
17	62%	77%	50%	62%	61%	63%	81%	85%	78%
16	59%	75%	46%	59%	58%	60%	80%	84%	77%
15	56%	72%	43%	57%	56%	57%	78%	82%	75%
14	53%	70%	39%	54%	53%	55%	76%	81%	73%
13	50%	67%	37%	52%	52%	52%	74%	78%	70%
12	47%	64%	33%	50%	50%	50%	71%	76%	67%
11	44%	60%	30%	47%	47%	48%	69%	75%	64%
10	41%	56%	28%	44%	44%	44%	66%	72%	62%
9	37%	51%	26%	41%	41%	40%	64%	70%	59%
8	34%	47%	23%	37%	38%	37%	62%	69%	57%
7	30%	42%	21%	34%	35%	34%	60%	67%	54%
6	26%	37%	16%	32%	33%	30%	57%	65%	51%
5	23%	33%	15%	28%	29%	27%	53%	61%	46%
4	20%	29%	12%	25%	25%	24%	49%	57%	42%
3	16%	25%	9%	21%	22%	20%	43%	51%	37%
2	13%	20%	7%	18%	18%	17%	38%	45%	32%
1	9%	13%	6%	13%	14%	13%	31%	36%	27%
0	5%	8%	3%	7%	8%	7%	22%	27%	19%