

## Growing APL's Human Capital

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**T**he speed of technological change obliges a high-technology organization like APL to nurture continually its “human capital”—the knowledge, skills, and experience of its workforce—to meet its business objectives. This article describes a broad range of strategies used to build and maintain the expertise of the APL staff, with particular emphasis on the technical staff, leaders and managers, and administrative supporting staff. These strategies include a wide array of training and developmental opportunities, from classroom instruction to online courses, from formal training programs to informal mentoring, and from just-in-time skills building to long-term career development. Methods of measuring and evaluating the impact of training and development activities are also addressed.

### INTRODUCTION: THE HUMAN CAPITAL CHALLENGE

The quality of APL's products and services—indeed, its capacity to make critical contributions to the nation's critical challenges—depends on its ability to bring innovation and expertise to bear on its customers' problems and deliver solutions that meet scope, time, and budget requirements. Like most high-technology organizations, APL regards the knowledge, skills, and experience of its staff as its most valuable asset in accomplishing this mission. As the pace of technological change intensifies, and as the Laboratory enters new areas of endeavor, nurturing and strengthening that capacity—APL's “human capital”—has become more challenging.

Dr. Gary S. Becker's seminal book, *Human Capital*,<sup>1</sup> led to a generalized use of the term “human capital” in considering and measuring investments in education, training, and other related areas. There was, perhaps, a time when an employee's skills could be built primarily through academic studies and work assignments, with

some mentoring thrown into the mix. Now, employees must engage a broad range of developmental opportunities and resources, many of which were unavailable just a few short years ago, to ensure that their knowledge, skills, and experience stay current and appropriate to the customers' needs.

Building knowledge, skills, and experience takes three primary forms: (1) work assignments, on-the-job mentoring and training, and other developmental activities that occur primarily in the workspace, (2) education, training, and other developmental activities that take place primarily in a real-world or online classroom, and (3) learning activities that occur more casually through one's professional network or community (user groups and professional associations, for example). While a great deal of learning does take place in the classroom, practice and experience both play a critical role in reinforcing classroom learning and establishing

new patterns of behaviors; consequently, learners must take a more active role in their own learning, especially in continuing the learning process after class has been dismissed. Of course, in an enterprise or organizational context, this reinforcement must be supported by the organization's management.

The Training and Development (T&D) Office, part of APL's Human Resources and Services Department, is tasked with the mission of working with the Laboratory's management and staff—and in concert with the APL Education Center—to ensure that the right developmental opportunities and resources are made available to strengthen the staff's ability to meet the Laboratory's commitments to its customers. The T&D Office's "myAPLTraining" website provides a wealth of information about these opportunities and resources. This article focuses on how the needs of the three primary constituencies of this effort—the technical professional staff, leaders and managers, and administrative supporting staff—are addressed.

## TECHNICAL EDUCATION AND TRAINING

Outside of work assignments, one of the most common means of keeping one's technical knowledge and skills up-to-date is pursuing post-graduate studies at The Johns Hopkins University (JHU) and other academic institutions. The T&D Office administers the Laboratory's Part-Time Study Program (PTSP), which has been supporting the academic studies of APL employees for more than 50 years. Each year, more than 600 staff members participate in the PTSP, which covers 100% of the cost of tuition and fees for up to 18 credit hours per year, as well as administrative leave to attend courses offered only during work hours. Most PTSP participants attend JHU because of the proximity of the APL Education Center and the R. E. Gibson Library, both of which bring the university's world-class academic programs and resources within easy reach. Other staff members choose to attend a variety of academic institutions in the local area, as well as many outside the local area that offer online academic programs.

The T&D Office also arranges on-site classroom training (Fig. 1), taught by both APL experts and outside providers, on a wide range of technical topics, such as the following courses that were offered on-site in 2005:

- Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR)
- Data Exploration and Analysis of Designed Experiments with JMP Software
- Value-Focused Thinking for Multiple Objective Decision Analysis (VFT/MODA)
- MATLAB Fundamentals and Programming Techniques



**Figure 1.** APL staff members collaborate during a technical training class conducted in an on-campus computer training room.

- Military Standard 1553
- Overview of Object Oriented Analysis and Design (OOAD) and Unified Modeling Language (UML) 2.0

These offerings are supplemented by hundreds of online courses in a wide range of information technology topics, licensed from one of the foremost providers of e-learning courses and made available to APL employees 24 hours a day, on-site and off-site.

Trips to ships and submarines play an important role in helping APL staff members develop a better understanding of our customers and the environment in which they operate, particularly if they've never been onboard ships and submarines as part of their APL assignments or previous military service. The T&D Office, therefore, periodically arranges informal tours at Naval Station Norfolk (Norfolk, Virginia).

Informal mentoring has long played an important role in building and enhancing skills at APL by making on-the-job training and classroom instruction more effective. In recent years, many of the departments at APL have begun conducting formal mentoring programs to support individual career development and organizational workforce development.

Professional association membership also enhances one's development, providing access to professional journals and specialized online bookstores, as well as profession-specific seminars, conferences, and technical meetings. Staff members work through the Registrations and Memberships function in the Accounts Payable Office to register for association memberships or for off-site conferences and seminars.

## LEADERSHIP/MANAGEMENT DEVELOPMENT

One of APL's most important challenges as an organization is to identify and develop effective technical

leaders. Sound leadership is a key factor in ensuring that tasks are completed to meet our customers' satisfaction and expectations, and that all resources—staff, facility, equipment, financial, etc.—are optimally used in performing our customers' work.

APL's current leadership/management development (LMD) curriculum has evolved over many years. In the early 1980s, the Supervisor's Management Seminars were initiated, covering a broad range of topics including funding and fiscal control of programs, federal government contracts, procurement, Laboratory facilities, personnel administration, and administrative procedures.

In February 1985, the first APL Coaching Seminar was held, and for the past 20 years, this course has remained a cornerstone of the Laboratory's LMD efforts. Designed to provide a venue for APL's leaders to strengthen their leadership and "people management" skills, the Coaching Seminar (Fig. 2) furnishes instruction and practical exercises on various models and tools for assessing and improving the use of leadership and behavioral styles, as well as team building, performance management, and conflict management techniques.

Because an "in the trenches" leadership experience provides crucial context for the seminar's coaching practices, participants are nominated to attend after they've been in a formal line or program leadership position for at least 1 year. Several weeks before the Coaching Seminar begins, participants engage in the Supervisory Feedback Process, APL's "360-degree feedback" assessment, that gives them insights into their leadership performance from their supervisors, peers, and direct reports. After receiving their feedback report, participants meet with external coaches to interpret their assessment reports and draft an individual development plan using insights from the report.

The 5-day Coaching Seminar is held off-site—since 1998, at the Belmont Conference Center in Elkridge—to enable participants to focus on their learning experience, away from the usual distractions of their busy

work environment. The seminar's format sets aside substantial time for role-playing exercises so that participants can apply new knowledge and practice new skills immediately in a simulated environment, and thereby feel more comfortable using them in real-world situations. A half-day session is devoted to a series of group exercises, run in conjunction with Outward Bound instructors. These exercises—such as "The Wall" climb shown in Fig. 3—are designed to help seminar participants understand how the teams they lead form, grow, and work together. At first glance, such exercises might appear more recreational than instructional. However, by exposing the group to challenging tasks dissimilar to their normal work, these exercises force participants to look more closely at how teams can form and operate more effectively. Another high point of the seminar is a question-and-answer session with APL's Director and other members of the Laboratory's senior management that covers a wide range of topics relating to the management of the Laboratory.

The LMD curriculum also includes the Group Supervisor Course. First offered in 1995 as a follow-on to the Coaching Seminar, this course focuses on the various administrative and leadership responsibilities of group supervisors. It is held in three 1-day sessions and covers topics such as staffing, performance ratings and management, compensation practices, legal issues, business development, and effective interactions with program managers.

In addition, the APL Leaders Workshop, first offered in 1998, was designed to increase opportunities to obtain leadership knowledge and skills, especially for new or informal leaders who were not yet ready or eligible for the APL Coaching Seminar. While much of the course content initially mirrored a number of the fundamental topics and techniques covered in the Coaching Seminar, several personal effectiveness topics—such as meeting management and time management—were added to address the specific needs of newer leaders. Based on



**Figure 2.** Leaders attending the Coaching Seminar participate in role-playing practice to enhance their management skills.



**Figure 3.** Three Coaching Seminar participants scale "The Wall" as part of the seminar's Outward Bound experience.

a recent training needs assessment, as well as feedback from previous attendees, this course has undergone a significant redesign to provide an increased focus on APL's leadership and management processes and tools, such as the Laboratory's performance evaluation, progressive discipline, and salary administration processes, to meet the needs of more experienced leaders who are new to APL.

Training program and project managers has become increasingly important over the past 10 to 15 years, as APL's contracts with its sponsors have become more numerous and smaller, and as project and program timelines have become shorter. APL's Project/Program Management Training Program blends standardized project management (PM) approaches with customized content about important APL-specific processes. In its design, the course's content and format are the product of lessons learned from previous project/program management training, as well as a comprehensive needs assessment conducted in 2003 using a focus group approach.

The program begins with a 4-day APL Project Management Fundamentals Course, the content of which is aligned with the Project Management Institute's *Guide to the Project Management Body of Knowledge (PMBOK)*.<sup>2</sup> A recognized standard, this guide articulates PM knowledge areas that address the management of a project's scope, time, cost, risk, communications, human resources, quality, and procurement. The first five of these areas are covered in the PM Fundamentals Course in detail. Subsequent APL-specific modules cover the other knowledge areas, as well as additional important topics—such as security, export control, business development and contracts, and program financial management—where an APL-specific perspective on the content is key.

These offerings are supplemented by hundreds of online courses in a wide range of leadership, business, and personal effectiveness topics. As noted earlier, these courses are licensed from one of the foremost providers of e-learning courses and made available to APL employees 24 hours a day, on-site and off-site. In addition, APL's Legal Office has developed a series of eight online Compliance Courses, covering APL policies regarding export control, equal employment opportunity, intellectual property, timekeeping, and drugs and alcohol. The success of these "home-grown" online courses has led other APL business units to use the same online framework to develop their own courses.

## ADMINISTRATIVE SUPPORTING STAFF DEVELOPMENT

Getting the technical work done requires that the administrative work that supports it is done effectively and efficiently. The Laboratory's administrative

supporting staff members play a critical role in getting the technical work done by ensuring that administrative requirements are met, thereby allowing technical staff members to focus their efforts on technical requirements.

In 1996, the Supporting Staff Development Working Group (SSDWG) was established to assist the T&D Office in identifying and addressing the T&D needs of the administrative supporting staff. In 1997 and 2001, the SSDWG assisted the T&D Office in conducting comprehensive assessments of those needs, and a third assessment is planned for 2006. The SSDWG has also played a critical role in organizing the innovative Keeping One Step Ahead (KOSA) training conferences and seminars, held semi-annually to provide developmental opportunities for the Laboratory's supporting staff on-site, saving money and making training more convenient to attend. Some KOSA events have focused on improving interpersonal and general business skills, while others have covered APL-specific business processes affecting the administrative supporting staff.

## MEASURING AND EVALUATING THE IMPACT OF TRAINING

Because APL's investment in its human capital is considerable, measuring the impact of that investment is important. Participants complete self-evaluations at the end of each course to provide feedback regarding the degree to which individual learning objectives were met. In addition, instructors use practical exercises—such as role playing and case studies—to verify that course learning objectives have been attained. The results of these evaluations are used to adjust the content and format of the courses as necessary to retain what works and modify or eliminate what does not.

In some cases, however, the attainment of learning objectives may take many months to demonstrate; this is true, for example, with leadership/management development. Therefore, follow-up evaluations are conducted after a number of months have passed to assess the effectiveness of the course in effecting long-term performance improvement. Such follow-up evaluations occur 4 to 6 months after completing the Coaching Seminar and 12 to 16 months after starting the APL Project/Program Management Training Program.

Historically, APL has used a number of standard metrics to measure and evaluate its human capital investment. One commonly used metric is training investment as a percentage of payroll, which assumes that, as payroll increases (as a result of having more employees or increased salaries), the cost to maintain the staff's capability should also rise (as a result of having to conduct more training because there are more employees to train

or because training for more highly paid employees tends to be more expensive). In 2005, APL's expenditures for education and training were 1.37% of payroll. The Laboratory also tracks the number of training hours per employee, which was 38.9 hours when last calculated using 2003 data. Table 1 compares APL data with industry benchmarking data, indicating that its investment in human capital measures very favorably to that of organizations in government and in the technology industry.

**Table 1. Investment in human capital.**

	APL <sup>a</sup>	Government <sup>b</sup>	Technology Industry <sup>b</sup>
Expenditures as a percentage of payroll	1.37%	1.39%	1.65%
Training hours per employee	38.9	26.5	82.7

<sup>a</sup>APL expenditures for 2005; APL training hours for 2003.  
<sup>b</sup>Government and Technology Industry data are taken from the American Society for Training and Development's 2005 *State of the Industry* report<sup>3</sup> and are for 2004, the latest year for which data are available.

Finally, the T&D Office compares APL programs with comparable programs available at peer and competing organizations. In some instances, such comparisons reveal that other organizations do not offer organized technical or LMD curricula, forcing managers and employees to find training on their own. In other instances, important information is obtained that allows APL programs to be enhanced, as was the case in 2005 during the design of the new Personal Effectiveness Course.

**SUMMARY**


Dr. Gary Becker, who has studied the issue of human capital for decades, asserts that "education and training are the most important investments in human capital."<sup>4</sup> APL is fortunate to have rich resources with which to develop continually the knowledge, skills, and

experience of its staff members to meet its customers' needs. The T&D Office provides a focal point for an ongoing effort to increase the awareness of staff members and their supervisors regarding these resources, thereby enabling them to be applied more effectively. Using and continually improving the resources at hand, APL will continue to enhance the ability of its "human capital" to make critical contributions to the nation's critical challenges.

**REFERENCES**

<sup>1</sup>Becker, G. S., *Human Capital*, 3rd Ed., University of Chicago Press (1993).  
<sup>2</sup>*A Guide to the Project Management Body of Knowledge (PMBOK Guide)*, 3rd Ed., Project Management Institute, Newtown Square, PA (2005).  
<sup>3</sup>Sugrue, B., and Rivera, R. J., *2005 State of the Industry: ASTD's Annual Review of Trends in Workplace Learning and Performance*, American Society of Training and Development, Alexandria, VA, p. 6 (2005).  
<sup>4</sup>Becker, G. S., "Human Capital"; <http://www.econlib.org/library/ENC/HumanCapital/html>.

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