Defense Acquisition University Core Requirements and Faculty Structure

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Executive Summary

The core functions and staff requirements of the Defense Acquisition University (DAU) should be determined by the law that established DAU and the body of knowledge unique to defense acquisition. Before the optimal organization and structure for DAU can be determined, however, DoD leadership must decide what it wants DAU to be. Our analysis has resulted in the definition and construction of the Defense Acquisition Knowledge Base, the determination of core functions for DAU, and a quantifiable analysis of core curriculum and faculty, but our major recommendation concerns organization and structure.

We discuss three possible directions for DAU: a skill-based training institution with emphasis on efficiency through consolidation, outsourcing, distance learning, and minimal research activity; a "corporate university" with much of the efficiency of the skill-based training institution but also with a new cross-functional curriculum and a role as an agent of change; or a preeminent acquisition institution with the same efficiencies as above but organized like a university, with faculty preeminent in their (acquisition) fields and research sought after and performed by faculty and students.

Our recommendation is that DAU move to become more like a corporate university, but with additional attributes from the academic model. In particular, this means that DAU should

- maintain separate skill-based training, with maximum use of distance learning;
- develop a corporate university curriculum focusing on business practices and executive development;
- establish a residential campus for the corporate university;
- act as an agent of change for DoD, a role that will require the active participation of OSD leadership;

- outsource where possible;
- maintain for each functional area a small nucleus of faculty members pre-eminent in their fields and resident at the corporate university campus;
- perform some research and analysis through those faculty and their students, and also under central DAU control and faculty supervision; and
- outsource other acquisition research requirements to external agencies.

Our other analytic efforts addressed the core requirements of DAU and the body of defense acquisition knowledge upon which many of them rest. In a unique and utilitarian manner, we defined and captured this knowledge base, available in competency form from a number of sources, by creating a relational database consisting of the competencies and several attributes. This database contains valuable reference data and served as a tool for analysis, both in terms of analyzing the knowledge base itself and of determining core curriculum and faculty.

After determining the functions performed by DAU, as well as those mandated by law, we established definitions and criteria for two levels of core functions. The first level comprised those functions that must be performed by DAU to accomplish its mission—that is, those that are essential. Of those functions, the second level was determined by evaluating which should be performed in-house. We determined that all functions currently performed by DAU fall into the "essential" category. We also concluded that, except for a few inherently governmental functions, there are few that could not be outsourced. There are caveats to this general statement. First, it would not make practical or economic sense to outsource the administrative or support functions currently split and performed at the separate consortium schools. (However, if DAU were consolidated on one or two large campuses, contracting for support services should be evaluated.) Second, while control of course development must be maintained in-house, the possibility of outsourcing the actual performance of course development and teaching requires investigation on a course-by-course basis.

Since DAU courses generally contain a mix of disciplinary and functional material as well as defense-related and non-defense-related material, it was impossible to distinguish easily between courses that absolutely must remain in-house and those that need not. We could, however, make comparisons among courses as to how "core" they are. Our methodology ranks the FY97 set of courses from highest to lowest by first establishing criteria for "coreness," next weighting those criteria, then scoring each course according to the criteria, and finally summing the weighted scores (for both teaching and course development). The Senior Acquisition Course, which is taught by the Industrial College of the Armed Forces and grants a masters degree, had by far the highest rating.

As with curriculum and courses, there was no way to determine individual faculty positions that could not be outsourced. We did, however, develop and apply a quantitative methodology for estimating what part of DAU's faculty and support staff might justifiably be considered "core." We used four different factors, or assumptions, which resulted in core staff percentages ranging from 34 to 65 percent. The lower estimate is the "minimum defensible core," based on the FY97 configuration of courses.

In DAU's present form, except for the Senior Acquisition Course, there is no clearly established requirement for research within DAU; faculty are, for the most part, facilitators of instruction who do not need to do research for the same reasons that university faculty do. We believe that using one or two "visiting professors" from academia (or industry), as is currently done at one school, would be more than sufficient to stimulate and involve DAU faculty to the extent required.

Whether research is required by DAU ultimately depends on the *need* for research, which can come about in two ways: the *external* demand for research (from OSD, academia, industry), which DAU can either satisfy directly or assist in satisfying indirectly, and the *internal* need for research, which will exist only to the extent that DAU intends to be a preeminent academic institution. Satisfying an external demand for research, from OSD or from others, requires a mechanism to capture or solicit research projects and then see to their resolution. The research itself can be done through organic or through external sources, depending on the nature of DAU as an institution. DAU faculty would presumably be involved in either case. The mechanism for such a process, however, does not exist today, and up to this point, OSD and DAU have not committed to having either a preeminent institution or preeminent faculty.

Other recommendations include the following:

- DAU should increase its distance-learning courses but maintain residential capability for its most core courses, resulting in fewer but more robust campuses.
- DAU should consider developing a short orientation course, preferably provided through distance-learning technologies, for all employees new to the acquisition field.
- Unless DAU opts to become a preeminent institution, course development should be done under the direction of DAU headquarters, with content determined from the leadership and the workforce.
- DAU should actively seek to outsource its training on a best-value basis, including current consortium members as possible sources. (We have found examples of successful outsourcing of both training and curriculum development.)

- For training conducted in-house, about one-third of the faculty should be tenured, with the remainder rotating to and from acquisition positions.

- As a minimum, DAU should become the conduit and central overseer of acquisition research required by OSD but performed by external sources and should also make use of visiting professors to enhance and supplement faculty skills and stimulate faculty interest in research issues.

- DAU should institutionalize an acquisition knowledge database for reference and future analysis. The acquisition knowledge database we constructed is a valuable resource tool providing a complete list of competencies, useful associated attributes, and a full list of acquisition terms.

- DAU should operate more like a business unit. It should seek out fee-for-service work, from external sources as well as internal DoD "customers." DAU should also implement sound business practices and a financial system that accurately determines training costs and assists in the evaluation of cost-based decisions.

DAU's original consortium structure was an expedient arrangement that allowed participation by existing schools from each segment of DoD, and the original focus was on meeting the training and certification requirements established in law. Acquisition reform, mostly procedural, was under way, and DAU was to be a voice and implementer of that reform. Today, however, more change is on the horizon, not just procedural, but also in terms of the nature and makeup of the acquisition workforce. It is the proper time for DoD leadership to reexamine both the function and form of DAU, and decide what it wants DAU to be.

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Chapter 1
Introduction and Study Objectives

INTRODUCTION

The Office of the Under Secretary of Defense for Acquisition and Technology, (USD(A&T)), asked the Logistics Management Institute (LMI) to conduct a study of the Defense Acquisition University (DAU). The overarching study objective was to develop a structural framework for DAU, derived from the body of knowledge basic to defense acquisition, and to identify core functions, curriculum, and faculty areas. This framework will assist DAU in the long-term accomplishment of its missions.

BACKGROUND

DAU was formed in response to specific requirements in the Defense Acquisition Workforce Improvement Act of 1990 (DAWIA). DAWIA requires the Secretary of Defense, acting through the USD(A&T), to establish and maintain a defense acquisition university structure. As stated in DAWIA, the purpose of this structure

> ...is to provide for...
>
> (A) the professional educational development and training of the acquisition workforce, and
>
> (B) research and analysis of defense acquisition policy issues from an academic perspective.

In response to this requirement, the USD(A&T) formed an Implementation Board and two subcommittees to advise on implementation of DAWIA requirements. The Implementation Board's Defense Acquisition University Planning Subcommittee was charged with developing options for implementing a defense acquisition university structure and advising the USD(A&T) on the most appropriate means for accomplishing the requirement. The planning subcommittee recommended a consortium structure using the existing DoD education and training institutions as an efficient and cost-effective approach. It was the subcommittee's position that a consortium would build on the strengths and relationships among participants in the existing program and would allow the flexibility to include other institutions as necessary to meet emerging training requirements.

DAU, the product of these deliberations, became fully operational in August 1992, with the mission of educating and training military and DoD civilian

professionals for effective service in the defense acquisition system. Today, DAU's training and education programs are accomplished through the 13 participating consortium members, which are as follows:

- Air Force Institute of Technology (AFIT)
- Army Logistics Management College (ALMC)
- Defense Contract Audit Institute (DCAI)
- Defense Logistics Agency Civilian Personnel Support Office (DCPSO)
- Defense Systems Management College (DSMC)
- Industrial College of the Armed Forces (ICAF)
- Information Resources Management College (IRMC)
- Lackland Training Facility (LTF)
- Naval Center for Acquisition Training (NCAT)
- Naval Facilities Contracts Training Center (NFCTC)
- Naval Postgraduate School (NPS)
- Naval Warfare Assessment Division (NWAD)
- Office of the Assistant Secretary of the Navy (OASN), Research, Development and Acquisition (RD&A).

Today, DAU provides mandatory and assignment-specific courses for military and civilian personnel serving in 11 acquisition career fields.[1] At the end of FY97, the acquisition workforce, covered by DAWIA, encompassed approximately 106,000 positions, of which about 90,000 were civilian positions.

The years since DAU's establishment have been marked with significant change, including technological advances, the requirement for different forms of education (for example, the addition of a continuous learning requirement for the acquisition workforce in 1997), and a need to reach a broader acquisition workforce than originally envisioned. These changes have occurred during a period of diminishing resources and a need to find increasingly effective modes of operation. This has also been a time when DoD policy at the highest levels has directed that

[1] These career fields are listed at Appendix A.

outsourcing and privatization be considered in lieu of the traditional "in-house" way of conducting government business.[2] Hence the requirement for this study.

STUDY OBJECTIVES

This study had three specific objectives:

- Determine the Defense Acquisition Knowledge Base (DAKB). The DAKB is the specialized body of knowledge that characterizes the acquisition profession within the Department of Defense. The knowledge base includes information specific to each acquisition functional area as well as that generally applicable to the entire acquisition workforce. Definition and analysis of the DAKB provided needed visibility as to the scope and content of training. Even more important, it served as a basis for determining the core curriculum and staff.[3]

- Determine the core requirements for DAU. The objective was to develop an operational definition for the term "core" and to apply that definition to determine DAU's core functions, faculty, and course offerings.

- Assess DAU's organization, structure, and operation, and make comparisons with similar "best-practice" training institutions. The objective was to develop a structural framework and recommended operational methodology for DAU.

The methodology used in the study will be discussed in the next chapter.

[2] Indeed, the Secretary of Defense's January 1998 Defense Reform Initiative urges privatization wherever possible.

[3] The word "core," as it is often used relative to "core functions" or "core competencies," is elusive at best. In Chapters 5 and 6, we will describe our efforts to make the term concrete and measurable.

Chapter 2
Methodology

INTRODUCTION

This chapter provides an outline and overview of the basic methodology employed to accomplish the task objectives. The various elements of this methodology are described in greater detail in Chapters 3 through 7.

The methodology we used can be generally subdivided into five major research areas, each with subordinate elements. They are as follows:

- Determine the "as-is" state of DAU (Chapter 3)
  - Conduct literature search and background interviews
  - Interview DoD personnel above the consortium school level
  - Collect operational data
  - Conduct site surveys and interviews at selected consortium schools.
- Define and describe the DAKB (Chapter 4)
  - Collect data on the competencies encompassed by the defense acquisition process and system
  - Build a relational database capturing the applicable competencies and related attributes.
- Define and determine core functions of DAU (Chapter 5)
  - Determine functions performed by DAU
  - Define core function
  - Establish and apply criteria to determine which DAU functions are core.

- Develop analytic techniques to determine core curriculum and faculty (Chapter 6)
  - Develop methodology to rank courses
  - Develop and apply analytic techniques to estimate core faculty.
- Analyze other training models for comparison with DAU (Chapter 7)
  - Colleges and universities
  - Corporate universities
  - Other federal training institutions.

Although there was some sequential phasing of the major research categories and their subordinate elements, generally several research efforts were under way simultaneously. The major research categories and their subordinate elements are described below and in substantially more detail in subsequent chapters.

DETERMINE THE AS-IS STATE OF DAU

At the outset of our research, we wanted to develop a thorough understanding of how DAU is currently structured and operates—in essence, DAU's as-is state. We also wanted to understand how DAU came to be formed and organized.

Conduct Literature Search and Background Interviews

We began with the applicable statutes, directives, and policy memoranda governing DAU's operation. We also reviewed the extensive historical documents detailing the deliberations that led to the formation of the current DAU. In addition to research focusing on DAU, we conducted a more general literature search to establish an understanding of how other, non-DoD institutions organize and operate today to achieve an educational or training mission.

Interview DoD Personnel Above the Consortium School Level

LMI researchers interviewed DAU's president and his staff to enhance our understanding of the university's current organization and functions. The results of these interviews can be found in Chapter 3. We also presented briefings explaining the study's objectives to each DoD component's Director of Acquisition Career Management and to the five DoD acquisition functional boards.[1] In addition

[1] Five DoD functional boards exercise functional oversight over specific portions of the defense acquisition workforce. Composed of senior military and civilian functional area representatives, the boards oversee management and program execution for their respective career fields. Appendix B lists the functional boards and the career fields for which they are responsible.

to enlisting their assistance, we obtained valuable insight into the roles and functions of DAU from both a military department/defense agency and a functional perspective. Furthermore, representatives from several functional boards participated in the study's quantitative aspects. Appendix C lists the people interviewed.

Collect Operational Data

In preparation for our analysis, we collected data from numerous sources. Because DAU is a dynamic organization, constantly adapting to workforce and professional changes as well as technological advances, it was necessary to take a "snapshot in time." We established FY97 as the baseline because it was the most recent year from which complete data were available. We collected budget data, including staff-years of effort programmed for the DAU headquarters and consortium participants. Consortium schools provided data on their professional staff, course requirements, course offerings, and student throughput.

Conduct Site Surveys and Interviews at Selected Consortium Schools

LMI researchers visited 9 of the 13 DAU consortium schools, seeking a representative sampling of the various organizations operating within the consortium. In addition to site visits to each military department's primary acquisition institution, we visited two joint service schools: the DSMC and the ICAF, which offers the Senior Acquisition Course. Site visit findings are discussed in Chapter 3.

Define and Describe the Defense Acquisition Knowledge Base

The DAKB is the body of knowledge associated with defense acquisition. Within that body of knowledge, there is a portion directly associated with DoD acquisition processes and a portion that may be learned and applied outside of DoD. Some of the knowledge comes directly from a number of disciplines (accounting, statistics, etc.), and some of it is more functional in nature (program management, contracting, etc.). Our goal was to capture and describe the defense acquisition body of knowledge in a meaningful, useful way, and we did that by creating a relational database containing all available DoD acquisition competencies. Creating this database provided concrete substance to the base of knowledge and gave us an analytic tool for use in determining core curriculum and faculty.

Collect Data on Defense Acquisition Competencies

LMI obtained defense acquisition competencies from several sources. The two primary sources were the programs of instruction and lesson plans from DAU courses and the "fulfillment guide" used by acquisition employees to document

achievement of competencies through experience or other training. Chapter 4 contains a more detailed discussion of competency data and sources.

Build a Relational Database of the Applicable Competencies

Once the competencies had been assembled, LMI researchers constructed a relational database containing the competencies and their associated attributes. The completed database reflects approximately 6,100 competencies and more than 3,300 unique keywords. The keywords form a comprehensive listing of defense acquisition terminology. Users can query the database by any possible combination of keyword, source, course, career field, and level as well as by other fields useful for analysis. Chapter 4 discusses the construct, analytic capabilities, and potential further uses of this relational database.

DEFINE AND DETERMINE CORE FUNCTIONS OF DAU

In order to determine core functions of DAU, we first had to determine which functions the headquarters and consortium schools were in fact performing. We also developed an operational definition and criteria for the term "core." Finally, we applied the criteria to DAU's set of functions. Chapter 5 provides extensive detail on this process.

Determine Functions Performed by DAU

We first had to identify the functions that DAU was currently performing as well as which others, if any, the university should be performing. This was accomplished through a legislative review, review of DoD implementing directives, interviews with DAU headquarters and consortium personnel, and comparisons with other similar institutions. The functions, which have been grouped into six major areas, are also discussed in Chapter 5.

Define Core Function

We found very early in the study that the term "core" is not only nebulous, but also highly sensitive. In order to clarify the issue, we defined two aspects of core as the term relates to functions: essential, meaning a function that must be performed (by someone), and organic, meaning one that should be accomplished in-house (by DoD).

Establish and Apply Criteria to Determine DAU Core Functions

On the basis of research, interviews, and collective judgment, LMI analysts established two sets of criteria, one for essential functions and the other for organic ones. We weighed each DAU function against the criteria to determine whether it is essential or organic. Those results are in Chapter 5. Some functions, such as

teaching a particular course, were determined to be essential but could not conclusively be established as organic, simply on the basis of criteria. Chapter 6 discusses the additional techniques used for those functions.

DEVELOP ANALYTIC TECHNIQUES TO DETERMINE CORE CURRICULUM AND FACULTY

LMI developed quantitative methodologies to allow a comparative ranking of DAU courses according to how "core" they were and to estimate core staff-years by course. The computations and their variations, presented in Chapter 6, provide tools and alternatives for decision-makers as they assess DAU's future size, composition, and methods of operation.

Develop Methodology to Rank Courses

In order to rank courses as to how core they are, that is, how important in-house performance is, we determined a set of criteria associated with the desirability of in-house performance. Functional board representatives participated by establishing two sets of weights for the criteria: one for the function of teaching, the other for the function of course development. Each course was then rated according to the criteria. The summed weighted scores for each course allowed rankings for both teaching and course development. Results are provided in Chapter 6.

Develop and Apply Analytic Techniques to Estimate Core Faculty

Having found no single, definitive method to establish which DAU staff should be considered core, LMI analysts developed several alternative methods for estimating the core portion of DAU staff. The methods employ results from the DAKB (such as the percentage of defense-related competencies within a course), from the ranking of courses, or from both sources. Chapter 6 describes the analytic techniques and the results of their application.

ANALYZE OTHER TRAINING MODELS FOR COMPARISON WITH DAU

An important element of our methodology placed specific attention on comparing DAU with other training institutions and educational models. Best practices were sought, as were similar and common practices among leading training institutions. We obtained organizational, structural, and functional information from—and in several cases visited—various training institutions to enable comparison with DAU. These institutions included colleges and universities, corporate universities, and other federal training institutions. The insights and findings from our research and site visits are discussed in detail in Chapter 7.

SUMMARY

The preceding is a very general overview of the methodology pursued in the conduct of this study. In Chapters 3 through 7, we will discuss the various elements of this methodology in greater detail. Chapter 8 summarizes the conclusions and recommendations of the entire study.

Chapter 3
Current Organization, Structure, and Operation

INTRODUCTION

This chapter discusses our review of DAU's current organization, structure, and operation. This as-is look at DAU was essential for building the analytical foundation to permit us to provide possible alternative organizations and structures for use by decision makers in determining the future state of DAU.

ROLE OF THE DIRECTOR, ACQUISITION EDUCATION, TRAINING, AND CAREER DEVELOPMENT

The USD(A&T) has delegated primary responsibility for defense acquisition training to the Director, Acquisition Education, Training, and Career Development (AET&CD). This individual is responsible for establishing policies and procedures for the effective management (including accession, education, training, and career development) of the acquisition workforce. Additionally, the Director, AET&CD serves as the Director for Acquisition Career Management for the components outside the military departments.

RELATED ORGANIZATIONAL ENTITIES

Many other organizational entities share responsibility and authority for educating and training the department's acquisition workforce. These activities and their roles are summarized in the following paragraphs. The source and authority for each is listed at the end of the paragraph.

Defense Acquisition Career Development Council

The primary responsibility for overall oversight of acquisition career development resides in the Defense Acquisition Career Development (DACD) Council, chaired by the USD(A&T). The council advises the USD(A&T) on policies, programs, and supports him in executing statutory requirements for the education, training, and career development of the DoD acquisition workforce. (Source and authority: DoD Instruction [DoDI] 5000.58, *Defense Acquisition Workforce*.)

Defense Acquisition University Program Review Board and Acquisition Career Program Review Board

These two boards assist the DACD Council in executing its missions. The Defense Acquisition University Program Review Board (DAUPRB) serves as the policy guidance council called for in Title 10, United States Code, Section 1746, and DoD Directive (DoDD) 5000.57, *Defense Acquisition University*. Composed of senior DoD officials, it reviews DAU plans, operations, budgets, and program initiatives and formulates recommendations in these areas. The Acquisition Career Program Review Boards (ACPRB) reviews independent audits of the career program and fundamental program compliance matters. (ACPRB source and authority: DAWIA; DoDD 5000.52, *Defense Acquisition Education, Training and Career Development*; and DoDI 5000.58.)

Component Acquisition Executives and Service Acquisition Executives

Within each DoD component, responsibility for all acquisition functions resides with the Component Acquisition Executive (CAE). CAEs include Service Acquisition Executives (SAEs) for the military departments and acquisition executives in other DoD components. The CAEs ensure that their DoD component's training institutions develop effective working relationships with DAU and carry out their responsibilities as defined in memoranda of agreement. SAEs carry out all powers, functions, and duties of the military department secretary with respect to the acquisition workforce within the department concerned, to ensure compliance with all policies and directives. (Source and authority: DAWIA; DoDD 5000.52; and DoDD 5000.57.)

Acquisition Career Program Boards

Assisting each SAE/CAE are the Acquisition Career Program Boards (ACPBs). Their charter is to advise in managing the accession, training, education, and career development of military and civilian personnel in the acquisition workforce and in selecting individuals for the Acquisition Corps. Each military department has an ACPB. Additionally, there is an OSD/defense agency ACPB. (Source and authority: DAWIA; DoDD 5000.52; and DODI 5000.58.)

Directors of Acquisition Career Management

Management of the acquisition workforce is the specific domain of the Directors of Acquisition Career Management (DACMs). DACMs are charged with program execution. Responsibilities include directing their component's process for enrolling students and integrating policies established by the USD(A&T) with military and civilian personnel policies and procedures of their components. On issues

of workforce management, DACMs concerns take precedence. (Source and authority: DAWIA and DoDD 5000.52.)

Defense Functional Boards

The defense functional boards exercise functional oversight over the acquisition workforce. Composed of senior functional area representatives, they provide oversight of management and program execution for their respective career fields. Furthermore, they provide functional advice and recommendations to support implementation of the overall defense acquisition education, training, and career development program. Functional boards recommend policy on functional issues such as curriculum content, quality of courses, and establishment or termination of courses. Functional boards review career program planning and execution to ensure that they support the goal of attaining a fully qualified acquisition workforce. Appendix B lists the functional boards and the career fields they represent (Source and authority: DoDD 5000.58.)

DAU Board of Visitors

A board of visitors, individuals selected for their preeminence in academia, business, or industry, advises the president of the university and the USD(A&T) on matters relating to organizational management, curricula, methods of instruction, facilities, and other matters of interest to the university. (Source and authority: DAWIA and DoDD 5000.57.)

DEFENSE ACQUISITION UNIVERSITY

DAU is ultimately responsible for delivering the professional training required by the acquisition workforce. DAU, through its consortium of DoD education and training institutions and organizations, provides mandatory and assignment-specific courses for personnel serving in the acquisition workforce.

President, DAU

Management of the university is accomplished by the DAU headquarters, presided over by the President, DAU. The president is appointed by the Secretary of Defense and serves as the chief executive officer of the university. The president reports to the USD(A&T). Assisting the president in executing his duties are Directors of Academic Affairs, Operations, and Resources Management.

Director of Academic Affairs

The Director of Academic Affairs has a staff of seven people; responsibilities include

- ensuring that course offerings meet workforce needs,
- ensuring an integrated program of training,
- developing new courses,
- reviewing and revising existing courses (in conjunction with functional boards),
- ensuring that courses are accurate and educationally sound,
- managing educational projects, and
- exploring technological innovation in course migration and delivery.

Director of Operations

The Director of Operations, with a staff of four, is responsible for

- strategic planning,
- ensuring technological integration as well as compatibility of new technologies with school capabilities,
- communicating DAU activities to students and the community,
- maintaining the DAWIA management information system (DAWIA MIS),
- performing workforce and other analyses based on DAWIA MIS data,
- serving as liaison with other offices and agencies and coordinating with and providing support to the Board of Visitors and DACD Council,
- overseeing the acquisition scholarship program,
- developing and maintaining the DAU research program, and
- publishing the DAU catalog.

Director of Resource Management

The responsibilities of the Director of Resource Management, with a staff of four, include

- preparing and executing the DAU budget,
- establishing memoranda of agreement (MOAs) between DAU and consortium schools, and
- developing and publishing course schedules.

DAU Consortium Members

Implementation of DAU training and education programs is accomplished by the 13 participating consortium members. Under the DAU structure, consortium members remain a part of their existing organizational structures. MOAs define the relationship between DAU and its participating schools. In addition to DoD mandatory acquisition and assignment-specific courses, most consortium members continue to offer non-DAU education and training unique to their service or agency missions.

During the course of this study, we visited 9 of the 13 consortium schools. The schools were selected to ensure that we experienced the full spectrum of the consortium in terms of the military departments represented, joint services schools, large and small schools, and schools that vary in their primary modes of course delivery—that is, in-residence versus on-site delivery. The schools we visited were as follows:

- Air Force Institute of Technology
- Army Logistics Management College
- Defense Contract Audit Institute
- Defense Systems Management College
- Industrial College of the Armed Forces
- Naval Center for Acquisition Training
- Naval Facilities Contracts Training Center
- Naval Postgraduate School
- Naval Warfare Assessment Division.

Before each visit, we provided the school with a request for data and an agenda for the visit (see Appendix D). Our focus was on the school's organization; on the relationship to DAU headquarters and other consortium members; on its courses, faculty and students; and on the extent to which and manner in which a list of DAU functions are performed. Our main purpose in visiting the schools was to obtain a "feel" for consortium operation, not to perform a comparative analysis. We sought recommendations and "not-for-attribution" comments, which the schools provided.

Operational Policy

Operational policy and programmatic guidelines for DAU are specified in DoDD 5000.57, *Defense Acquisition University*, which implements the portions of DAWIA that pertain to DAU. DAU operates under the direction, control, and authority of the USD(A&T). The relationship between the president and the consortium members is specified in MOAs ratified annually by both parties.

The DAU president announces and prescribes DAU's standards, policies, and processes to functional boards, DACMs, and consortium members through policy memoranda. These memoranda, all revised in March 1997, are[1]

- Policy Memorandum #1, "New Course Development, Revision, and Maintenance Process";
- Policy Memorandum #2, "Course Sponsor and Offeror Requirements";
- Policy Memorandum #3, "Student Attendance";
- Policy Memorandum #4, "Academic Program Review"; and
- Policy Memorandum #5, "Course Equivalency."

The consortium relationship means that the DAU headquarters is responsible for funding and coordinating its acquisition training but has no direct operational control over consortium members. The 13 members report to 12 different command chains under the Army, Navy, Air Force, Defense Logistics Agency, Office of the Secretary of Defense (Comptroller), and Deputy Under Secretary of Defense (Acquisition and Technology) (DUSD(A&T)).

Overview of Current Operations

Together with the consortium schools, DAU performs functions in six broad areas: teaching, developing courses, ensuring quality, managing and administering, performing research and analysis, and sharing knowledge. Chapter 5 will provide a more detailed look at the functions performed by DAU. In this subsection we

[1] Policy memoranda can be viewed on the DAU homepage (http://www.acq.osd.mil/dau).

discuss in overview fashion what DAU (headquarters and consortium schools) does, and how it does it. Our findings are based on our interviews, data collection, and site visits. For the most part, our information reflects DAU operations in FY97. Also, resource and workload data come primarily from DAU's portion of the FY98/99 President's budget submission to Congress, and the DAU consortium member budget estimate spreadsheets.

TEACHING

DAU provides courses in a variety of modes to meet the needs of the acquisition workforce. In FY97, DAU offered 78 courses in the following categories:

- *Certification courses.* These are courses identified by career field as being either mandatory or desired, taken to meet DAWIA certification training requirements; within this group are two core courses: Acquisition 101, Fundamentals of Systems Acquisition Management, and Acquisition 201, Intermediate Systems Acquisition Management. Seven (of the 11) career fields require that these courses be taken before other mandatory training (ACQ 101 at Career Level I, and ACQ 201 at Level II).

- *Assignment-specific courses.* These 22 courses provide the training needed to perform specific acquisition functions and meet the unique requirements of some jobs or assignments.

- *Senior Acquisition Course.* The Senior Acquisition Course, Acquisition 401, is the preeminent course for members of the Acquisition Corps. ICAF presents the 10-month course, which has four major elements: a multi-disciplinary core curriculum, acquisition policy advanced studies, elective advanced studies, and a research project. Students successfully completing the course are awarded a Master of Science degree in National Resource Strategy.

Modes of Delivery

About 80 to 85 percent of DAU training is provided in a residential classroom mode, which includes dedicated facilities at consortium locations as well as leased space at nearby locations. Most of the remainder is provided on-site, usually by a team from one of the consortium schools. Other modes of training include satellite (video teletraining), CD-ROM, and on-line via the Internet. Correspondence courses, once available, have been dropped from the DAU catalog.

Technology-Based Education and Training

Although many uncertainties still exist, distance-learning technologies offer the expectation of increased course material availability and reduced program expenses, especially in the areas of student travel costs and job time lost due to training. DAU is embarking on an ambitious program to expand its

distance-learning capabilities and practice, with the goal of incorporating information technology in all courses by the end of FY00.[2] Two media options are being considered: computer-based instruction (Web-based or CD-ROM) and video teletraining (VTT). DAU preference has been for computer-based instruction, although VTT has been used in the past and will continue to be used. The schools that currently have VTT resources are AFIT, ALMC, DSMC, and NFCTC. Those same schools, as well as NPS, also have a Web delivery capability.

COURSE DEVELOPMENT

Course development responsibilities and procedures are described in detail in DAU Policy Memorandum #1, "New Course Development, Revision, and Maintenance Process." The president of DAU has overall responsibility for managing the process. Functional boards define performance outcomes and standards for their career fields and also assign subject-matter experts to participate in course development and revision. Two categories of consortium schools provide courses to students: course sponsors and certified offerors. Sponsors, designated by the president of DAU, are responsible for developing and revising courses on the basis of performance outcomes of the functional boards. Certified offerors also teach the course but generally do not participate formally in course development or revision.

The revision of DAU policy memoranda in 1997 allowed the president of DAU to form teams of consortium schools for course development. Known as "tiger teams," they were used in FY97 to develop several new DAU courses, including CON 101 and 102. Some, but not all, of the schools we visited were critical of the tiger team approach, noting that the process seemed to take longer and be more expensive than if one school (the sponsor) were responsible for course development.

Another frustration expressed by several schools was the "micro-management" or level of involvement by functional boards in instructional methodology; the consensus of the consortium school staffs was that during the development and revision process, functional boards should focus on course content rather than on delivery techniques and materials. The 1997 process action team on Acquisition Education and Training Structure and Process reported this same finding. As a result, the USD(A&T) has asked the Director, AET&CD, to coordinate the writing of new charters to better distinguish the roles of DAU, Functional Boards, and DACMs.

QUALITY ASSURANCE

DAU conducts a rigorous quality assurance program, that includes the development of evaluation standards and the certification and evaluation of both courses

[2] Defense Acquisition University, *Technology-Based Education and Training Plan*, June 1997.

and instructors. These areas are discussed in DAU Policy Memorandums #1, "New Course Development, Revision, and Maintenance," and #4, "Academic Program Review." DAU employs a five-step academic and course development process (see Policy Memo #1) and a 2-year cycle for academic program quality review (Policy Memo #4), which include the following quality assurance tools and applications:

- End-of-course questionnaires for students
- A postgraduate random sampling of students and their supervisors to evaluate course effectiveness
- Full curriculum review, which includes the evaluation of faculty training
- Quality assurance site visits.

During our early site visits, several schools commented that they conducted their own course and instructor evaluations, including end-of-course critiques and post-graduate surveys. Some evaluations were institution specific, while others were mandated by the institution's higher headquarters. A few schools thought that the DAU surveys were not only redundant but also inferior to their own. During the course of our study, these same comments reached DAU headquarters, which was sensitive to the problem and worked with the academic council to improve the questionnaires.

Another nearly universal comment from the consortium schools, indirectly related to quality, was that students too often lacked prerequisites for the classes they were attending. This lack not only slows the pace of the course to the detriment of the other students, but a classroom seat is wasted when it might have been filled with a better candidate.

MANAGEMENT AND ADMINISTRATION

General management and administrative functions (e.g., maintain student records) are discussed in Chapter 5. Many are performed at DAU headquarters (e.g., selection of course providers), some are shared with the consortium schools (e.g., allocation of resources is a shared function and process), and others are performed by each separately (e.g., administration of personnel).

A particular administrative and management relationship associated with the consortium is that between course sponsor and certified course offeror. A course sponsor is one or more consortium members, designated by the DAU president, responsible for developing, maintaining, and conducting that specific course. In addition to the course sponsor, other schools may be "certified" to teach that course, but the sponsor maintains overall course management responsibility. Policies for course sponsors and offerors are discussed in Policy Memo #2.

Several schools we visited commented on the sponsor-offeror arrangement. One comment mentioned that while course sponsorship was a competitive process, with interested schools submitting sponsor proposals, there were no definitive policies or guidelines for how the President of DAU would make his selection. A similar comment was made with the introduction of "team" sponsors, where in the viewpoint of the school, DAU established teams without input from all of the consortium members. Another school felt that offerors were in many cases chosen to "spread the wealth around," rather than on a more economical or objective basis.

RESEARCH AND ANALYSIS

As noted in Chapter 1, a primary requirement of DAWIA for DAU in is to provide for "research and analysis of defense acquisition policy issues from an academic perspective." The research done within DAU, however, results from work not centrally managed but performed at individual schools, primarily at DSMC. Also, DAU attempted a "fellowship" program for faculty to work 6 months in a policy office, then do research for 6 months, but the effort failed because of lack of applicants. At the time of our study, the Board of Visitors was interested in stimulating acquisition research with DAU oversight and in having DAU attract world-class faculty to foster the research effort.[3] DAU is debating how to best accomplish those objectives. In this subsection we discuss what research efforts are currently active within DAU headquarters and consortium schools.

Acquisition Research Coordinating Committee

At the DAU headquarters level, the Director of Operations has the functional responsibility for research and analysis. He chairs the DAU Acquisition Research Coordinating Committee (ARCC), formed in 1994 to facilitate the coordination and dissemination of research information within the consortium in particular and the acquisition community in general. The objectives of the ARCC are officially stated as

> The DAU ARCC is based on the principle that scholarly research in acquisition and in acquisition education and training is required to support senior DoD policy and decision making. Research also plays an essential role in curriculum development and in promoting academic currency in the classroom, and provides the wherewithal to improve education delivery and effectiveness.[4]

[3] Board of Visitors Minutes, Meeting of March 4, 1997.

[4] DSMC web site (http://www.dsmc.dsm.mil/research/resgen.htm#arcc) May 7, 1998.

ARCC membership is drawn from DAU consortium institutions that devote internal resources to acquisition research. In FY97 the following institutions were committee members:

- Office of the President, Defense Acquisition University
- Air Force Institute of Technology
- Army Logistics Management College
- Naval Center for Acquisition Training
- Defense Systems Management College
- Industrial College of the Armed Forces
- Information Resources Management College
- Naval Postgraduate School.

In addition to the ARCC and the suggestions from the Board of Visitors, DAU is contemplating designating an executive agent for research from among the consortium schools.

Defense Systems Management College

Research has been a major mission of DSMC since its inception in 1971. While DSMC is a DAU consortium member, much of its research and associated consulting and information dissemination effort predates the formation of DAU and is performed independent of DAU headquarters control. The DSMC Research, Consulting and Information Dissemination (RCID) Division has overall responsibility for performing, promoting, and communicating research activities, which include the following:

- *Research projects.* Active research performed by RCID team members, often in cooperation with outside professionals in systems acquisition management from places such as the service academies, Federally Funded Research and Development Centers (FFRDC), and other academic institutions.
- *Acquisition research symposium.* A symposium held biennially to provide a forum for dialogue among acquisition professionals from the federal government, the private sector, and academia.
- *Consulting.* The RCID team assists OSD acquisition officials, conducts workshops, and locates available experts from other sources when necessary.

- *ROAR database.* The Research on Ongoing Acquisition Research (ROAR) database is a valuable reference tool, tracking acquisition-related projects and studies conducted by DoD and others.

- *Military research fellowship program.* An 11-month program annually for three military research follows, sponsored by DSMC. In addition to time at DSMC, fellows attend the 3-month Program for Management Development at the Harvard Business School. RCID also sponsors a summer research program for cadets from the military academies who intern at DSMC for 6 weeks.

- *DSMC Press.* Designs, edits, and manages the distribution of books and other publications about acquisition management. The DSMC Press also creates the *Program Manager* magazine and DAU's *Acquisition Review Quarterly* journal. The *Program Manager* is a bimonthly open forum for the critical examination and discussion of defense acquisition issues, policies, and practices. The *Acquisition Review Quarterly* is a refereed publication that serves as a bridge between those who study acquisition management and those who practice it.

- *Library and Learning Resource Center.* The Acker Library at DSMC contains 17,000 books, 500 periodicals, 20 CD-ROM databases, and 8,000 technical reports in support of the DSMC training and research missions. The Learning Resource Center offers individual and career development programs in a self-paced learning mode.

In addition to the RCID, DSMC faculty devote about 7 percent of their time to research, an amount considered to be inadequate by DSMC officials. They point out that the average for faculty from public and private universities is more than 16 percent.

Other Institutions

Acquisition research is conducted in varying degrees at other consortium schools but is generally limited in scope. For example, NCAT engages in pedagogical studies, and one of its staff members serves as a consultant to the DAU headquarters on pedagogical issues. Other consortium institutions have had faculty serve as consultants to functional boards, DAU headquarters, other acquisition agencies, and especially to DoD field offices. Former students often ask their DAU instructors for help with issues and analyses, but generally this effort is neither long term nor captured or reported in any standard way.

As an institution, AFIT has a reputation for research, and its Graduate School of Logistics and Acquisition Management offers a masters degree in several areas, such as Acquisition Logistics Management, Information Resources Management,

and Supply Management. However, the portion of AFIT that provides DAU training is not actively involved in research.

Similarly at ALMC, the faculty who teach DAU courses are in close proximity to other ALMC faculty who actively perform research, especially in the area of operations research. In addition, the Dean of the School of Systems and Acquisition Management, where DAU courses are taught, has used and intends to use one or two "visiting professors" from academia and industry to teach, conduct research, and act as a catalyst for other faculty members to engage in their own research efforts.

ICAF, which conducts the Senior Acquisition Course (ACQ 401), has a mission to "prepare selected military officers and civilians for senior leadership and staff positions by conducting postgraduate, executive level courses of study and associated research dealing with the resource component of national power, with special emphasis on material acquisition and joint logistics ...." ICAF itself is not active in research, but faculty do oversee and participate in the research projects required by students. Topics are solicited from throughout the acquisition community and from the national security community at large.

The Naval Postgraduate School is very active in research, granting masters and doctoral degrees in a variety of technical disciplines supportive of the Department of Defense. The Center for Acquisition, Education, and Research (CAETR) is the part of NPS that teaches DAU courses. Drawing on its own faculty and the other NPS resources in close proximity, CAETR also actively solicits funding for research projects in the area of acquisition. CAETR is a candidate for DAU executive agent for research.

Analysis at DAU Headquarters

At DAU headquarters and often with contractor or FFRDC assistance, the Director of Operations conducts analyses of the acquisition workforce for the Director of AET&CD; DUSD (Acquisition Reform) (DUSD(AR)), and the USD(A&T). These analyses are often in response to congressional inquiries or in preparation for congressional testimony.

SHARING KNOWLEDGE

In our exploration of the individual functions performed by DAU, we noted several that we classified under the broad heading of "sharing knowledge." These functions include consulting (which we regard as the sharing of expertise rather than the research-like development of new knowledge or theory), presentation and publication of papers, hosting conferences, library operation, and general communication activities.

Many consortium members actively engage in some or all of these activities. In particular, and as discussed above (research and analysis), DSMC with its Research, Consulting and Information Dissemination Division does a substantial amount of consulting work, hosts and participates in conferences, and operates its own press. ALMC also has a significant information services function, which includes publication of the Defense Logistics Systems Information Exchange and the *Army Logistician* magazine.

The Acquisition Reform Communications Center (ARCC)[5] is an organization related to DAU, chartered in May 1995 with a mission, as its name suggests, of sharing knowledge about acquisition reform by providing and disseminating information on how DoD is changing the way it acquires goods and services. Although the ARCC technically reports to and directly supports the USD(A&T) and the DUSD(AR), it is organizationally "attached" to DAU. While the ARCC is not officially part of DAU, it receives administrative support and funding through DAU.

The ARCC has established a network of contacts within DoD components and agencies and with academia and the private sector to fulfill its mission. The ARCC disseminates information through the following vehicles:

- *Satellite broadcasts.* These periodic broadcasts sponsored by the DUSD(AR) cover a variety of topics focusing on how the department is implementing acquisition reform initiatives. These broadcasts are prepared by DoD personnel, but they are supported by a contractor for technical aspects and broadcast equipment. Although there is no fixed schedule, there are usually two to three broadcasts each month.

- *The ARCC Internet site.* The ARCC has its own site, which can be accessed through the DAU homepage.

- *"AR Now."* The ARCC provides e-mail updates, such as policy changes, major speeches or congressional hearings, and upcoming satellite broadcasts, to permanent subscribers throughout the acquisition community.

- *Mailing lists.* Regular mail updates are provided to approximately 4,000 government and individual addressees.

- *Tapes, compact disks, and videotapes.* These are mailed to requesters without charge. They cover topics such as acquisition reform, earned value management, multiple award task and delivery orders, and cost as an independent variable.

[5] Not to be confused with the Acquisition Research Coordinating Committee, also "ARCC."

WORKLOAD AND RESOURCES

The following selected workload, faculty, and other resource data are provided for background, not definitive analysis. They present a picture of the size and complexity of DAU, as well as the manner in which courses and resources are spread throughout the consortium schools.

Workloads and Student Throughput

A primary source of data is the 63-column spreadsheet used by the DAU Director of Resource Management to obtain data from the consortium schools and to report programmed resources for the given year, in our case FY97.[6] (DAU does not capture actual expended resource data by course.) Programmed data reflect direct, indirect, and general and administrative (G&A) costs (operations and maintenance) and staff-years of effort by school and by course. Appendix E provides a by-course summary of FY97 data, including military and civilian staff-years, the number of students, and the number of classes. DCAI courses are not included in the spreadsheet, since DAU does not fund those courses. These total only about five per year, teaching approximately 100 students. Appendix F lists classes programmed.

The following summary statements are derived from the FY97 DAU spreadsheet data:

- A total of 1,283 classes were programmed for 12 consortium members.
- Classes totaled 2,892 weeks of instruction (55.7 class-years).
- Classes ranged from 3 days in length (BFM 210, Selected Acquisition Report [Review]) to 44 weeks (ACQ 401, Senior Acquisition Course), although most courses are from 1 to 4 weeks in length.
- Faculty staff-years totaled 311 (219.2 civilian and 91.8 military).
- A total of 37,404 students were programmed to attend (about 29 students per class, 120 students per faculty work-year).
- About 18 percent of faculty time is spent in a classroom (i.e., approximately 0.18 class-years of instruction per faculty staff-year).

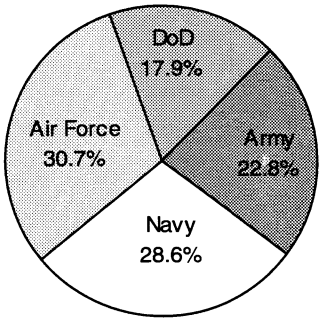
[6] The *DAU Resource Management Guide*, ADS-95-01-GD, describes the spreadsheet used and the process by which data are collected.

- Of the 1,283 classes programmed, more than 60 percent were programmed at 3 schools: ALMC (285), DSMC (271), and AFIT (242). Including NCAT (184) raises that to 77 percent.

- Again, excluding DCAI, of 78 courses taught, 56 were to be taught by only one school, 11 by two different schools, and 11 at three or more schools (CON 201, CON 231, and SYS 201 were to be taught by 4 different schools).

Appendix G sets forth the actual FY97 number of students attending each course, by military department source. The pie chart below (Figure 3-1) depicts the summary percentages for each source.

Figure 3-1. Students Trained by Military Department, FY97



Faculty Composition

The general makeup of the DAU faculty in terms of military, civilian, direct, indirect, G&A, and other staff-years required by course can be obtained from the DAU budget spreadsheet. As can be seen in Table 3-1, a total of 567 staff-years of effort (faculty and support) are required to teach the 1,283 DAU classes (excluding auditing courses), and about 70 percent of programmed instructors are civilian.

Table 3-1. DAU Programmed Faculty and Support Staff, FY97

	Military	Civilian	Total	Percentage military	Percentage civilian
Faculty	91.79	219.26	311.05	30%	70%
Other direct support	2.96	26.81	29.77	10%	90%
Indirect/G&A	38.13	188.5	226.63	17%	83%
Total	132.88	434.57	567.45	23%	77%

In addition, we asked each consortium school for data on that portion of its faculty (professional staff) spending at least 50 percent of their effort for DAU. The results of those queries are in the chart at Appendix H. Among the summary data are the following:

- 434 faculty members had some DAU involvement; of these, 394 (91 percent) devoted at least half of their effort to teaching (or administering) DAU courses.
- 68 percent of the faculty were civilians.
- 80 percent had degrees above baccalaureate.
- 69 percent were Level III certified.[7]
- The faculty averaged nearly 18 years of acquisition-related subject-matter experience, and nearly 6 years at the schools for which they taught.

Funding

In FY97, according to the President's FY98/99 biennial budget submission, DAU's operations and maintenance funding program totaled approximately $95 million. This budget reflects the total DAU operation, including course delivery at consortium schools, operation of the headquarters, student travel, funding for DSMC research, consulting, and information dissemination activities. It does not include funding for the auditing courses provided by DCAI, nor does it reflect the cost of the military personnel who teach or otherwise provide support to DAU (although it does show work-years of effort).

The FY98/99 President's budget submission showed the following FY97 data for DAU:

- $94.736 million total operations and maintenance funding
  - $18.5 million for civilian personnel (257 full-time equivalent) at DAU headquarters and at DSMC;
  - $69.7 million for "other contracts" (funding provided to the consortium schools); and
  - $6.5 million for travel, supplies, equipment, and all other items.
- 114 military work-years.

[7] Based on our visits, most schools considered certification of faculty to be important, although some did not.

- Workload-related data
  - 13 consortium schools,
  - 40,000 students, and
  - 1,310 course offerings (860 resident, 450 on-site).

Operations and maintenance funding for FY97 is also depicted by major funding category in Table 3-2.

Table 3-2. DAU Funding by Major Category, FY97

Funding category	Funded amount ($millions)	Percentage of total
Course delivery	$50.4	53.2
Student travel	33.7	36.6
DSMC RCID activities	4.9	5.2
University operations	3.3	3.5
Distance learning	2.1	2.2
ARCC operation	0.3	0.3
Total	$94.7	100.0

SUMMARY

DAU operates effectively to train the acquisition workforce through sound documented policies and practices. The headquarters and the collection of schools providing the courses is less of a balanced consortium (in terms of shared decision-making authority) and more of a centrally managed, contracted operation. Factors that complicate the arrangement include:

- The role of the Defense Systems Management College, which has a long and distinguished history as an independent provider of acquisition training and is seen by others as seeking to maintain that independence, and which also receives a substantial portion of the DAU budget for research, consulting, and information dissemination activities not directly associated with the DAU training mission.
- The Defense Contract Audit Institute, which is considered part of the consortium but does not receive its funding from DAU and generally operates autonomously.
- The DAWIA requirement for a research and analysis capability, which has yet to be fully satisfied.

- The proper role and extent of functional boards in determining course content, methodologies, and materials, together with the associated issue of where the subject-matter experts for DAU courses reside.

- The changes that should and will result by taking advantage of state-of-the-art technology, particularly computer-based training.

The current DAU is not a consortium of preeminent academic institutions, nor is it the efficiently run, business-like skills-based training institution that it could be; it is somewhere in between. With technological changes occurring, as well as an expected change in the acquisition workforce from less hands on to more management/supervision, the time is right for OSD and DAU to decide the direction of defense acquisition training.

Chapter 4
Determination of the Defense Acquisition Knowledge Base

INTRODUCTION

A primary objective of this study was to determine what constitutes the Defense Acquisition Knowledge Base, that specialized body of knowledge characteristic of DoD's acquisition system. This chapter deals with the process and analysis that we used to make that determination.

The DAKB is a dynamic body of knowledge generated within the department, resident in and promulgated by the Defense Acquisition University faculty and others. The DAKB encompasses both the purveyors and substance of defense acquisition knowledge. The knowledge base includes information specific to each acquisition functional area as well as information of general applicability to the entire acquisition workforce. In the study, LMI was tasked to define and analyze the DAKB and to use it analytically as the basis for determining core curriculum and faculty.

The requirement for a defined "body of knowledge" is not unique to the practice of acquisition within DoD. As noted in a master's thesis by Connie Thornton, the Office of Personnel and Management (OPM) requires that before an occupation can be recognized as a "profession," it have an associated "organized body of knowledge" with certain attributes.[1] Ms. Thornton discussed the (1987) state of the body of knowledge for defense contracting, and concluded that it lacked in meeting OPM requirements, but only because more work was needed to make the body of knowledge definitive. We believe the DAKB is a beginning for establishing a definitive, organized body of knowledge for defense acquisition.

DEFENSE ACQUISITION KNOWLEDGE BASE

The DAKB can be thought of in a number of ways. First, it is the body of knowledge associated with DoD acquisition. Within that body of knowledge, there is a portion directly associated with the Department's acquisition processes, and there is also a portion that may be learned and applied outside of DoD. Some of the knowledge comes directly from a number of disciplines (accounting, statistics,

[1] Connie L. Thornton, "Contracting: A Systematic Body of Knowledge," Master's Thesis, Naval Postgraduate School, Monterey, CA, December 1987.

etc.), and some of it is more functional in nature (program management, contracting, etc.).

The DAKB can also be regarded as the knowledge of the people responsible for developing, practicing, and teaching acquisition policies, programs, and practices. In particular, it is the responsibility of the DAU faculty to be experts in this knowledge. But the knowledge can emanate from a variety of sources, including DoD policymakers, academia and industry, and especially the acquisition workforce itself.

DEFENSE ACQUISITION KNOWLEDGE DATABASE

DAU courses are competency based (although other terms such as "performance objectives" and "learning objectives" may be applied), as is the fulfillment process. These sets of competencies, established by functional boards, should comprise the acquisition knowledge base. If they do not, then new ones need to be included.

The LMI solution for determining the DAKB in the most utilitarian manner possible was to capture all available competencies and then use them to create a relational database. This database could then be queried to answer specific questions. It would serve as the tool for analysis, both in terms of analyzing the knowledge base itself and for determining core curriculum and faculty.

Sources of DAKB Competencies

Competencies were available from several sources. One primary source was the set of programs of instruction (POIs) for all the courses offered by DAU.[2] These documents list the terminal and enabling learning objectives by lesson and by course. These objectives were the basis for competency entries in the database.

Another major source for competencies was the fulfillment guide, used by employees to satisfy mandatory training requirements by documenting achievement of competencies through experience, education, and/or alternative training.[3] These competencies are provided for each mandatory career acquisition course and are similar, if not identical, to competencies from classroom POIs.

Two other sets of competencies resulted from processes facilitated by DAU in 1993 and 1994. In the first instance, functional boards developed lists of competencies by career field. In the second, a functional board work group identified

[2] We use POI throughout, although the particular term may vary from school to school; for example, "lesson plan" is a term equivalent to POI.

[3] *Acquisition Career Management: Mandatory Course Fulfillment Program and Competency Standards*, Department of Defense Guide (ADS-97-03-GD), January 1997.

core body of knowledge competencies, those thought to be common to all career fields.

Unlike competencies from POIs or the fulfillment guide, these functional board competencies can be identified directly with a career field (instead of indirectly by means of the course in which it resides), or with all career fields simultaneously. Using this source of competencies has three disadvantages, however: the competencies were not created in a standardized way, they were not created for all career fields, and they are now dated.

A final source of competencies was the Leadership Effectiveness Inventory (LEI), which identifies management and leadership competencies.[4]

Database Construction

LMI constructed the defense acquisition knowledge database using FoxPro for Windows, Version 2.6, from the various sources discussed above. We chose FoxPro because it provided all the query capabilities desired, and LMI analysts had working familiarity with it. Equivalent databases have also been constructed using Microsoft Access and Microsoft Excel.

The completed database comprises over 13,600 records, reflects about 6,100 competencies, and contains more than 3,300 keywords associated with the competencies. (The totality of keywords forms an extensive, if not complete, list of defense acquisition terminology.)

Database Fields

Each database record contains the following fields:

- *Course.* If a competency was obtained from the fulfillment guide or from a course POI, that course number is indicated in this field; if the competency was from other sources that did not have course identification (e.g., from the LEI), the field is blank.

- *Level.* If the competency came from a course (either POI or fulfillment guide), or if the source otherwise identified the corresponding DAWIA workforce certification level (I, II, or III), that level is indicated in this field; otherwise it is blank.

- *Source.* This field indicates the source of the competency. For example, "FG" represents fulfillment guide.

[4] The LEI is a systematic assessment tool designed to measure leadership and management competencies. It was developed on behalf of the Office of Personnel Management to measure critical tasks and competencies that support the missions and priorities, products and services, and leadership and management skill requirements of an organization.

- *Know or Do.* This field contains either a "K," indicating the competency is knowledge based (what a student should *know*), or a "D," indicative of a performance-based competency (what the student should be able to *do*).

- *Defense Related.* Before embarking on the study, LMI was asked by the sponsor to try to determine what part of the knowledge base is defense unique and use that as the basis for determining core requirements. This field addresses that desire. The possible entries and what they mean are the following:

  - D—The competency is directly (explicitly) or indirectly (implicitly or by virtue of a larger context) knowledge- or practical-application-specific to DoD (i.e., is defense related).

  - F—The competency is not specifically defense related, but is federally related (as are many contracting competencies).

  - N—The competency is neither defense nor federally related.

- *Keyword Expression.* This field contains an abbreviated expression of the full competency.

- *Keyword.* Keywords are determined from each keyword expression (competency); this field contains one keyword from its corresponding keyword expression. Note that one competency can produce several records in the DAKB (one per keyword), each with the same keyword expression, source, etc., but with different keywords.

- *Career Fields.* The DAKB includes one field for each acquisition career field, with Financial Management identified separately from Business Cost Estimating. The field contains a "Y" if the competency is from a course either mandatory or desired for that career field, or if the associated functional board had identified it as a desired competency. If neither, the field contains an "N."

Table 4-1 provides a simple illustration of the record fields and various entries for a specific acquisition competency. In this example, the source is the fulfillment guide, and the competency is from ACQ 201, Intermediate Systems Acquisition. The original competency, Number 31 in the fulfillment guide, stated: "Understand cost accounting purposes, concepts, and terms including how government contractors use cost/management accounting and the use of indirect cost rates."

Table 4-1 Defense Acquisition Knowledge Database Record Fields

Fields	Field entries (one record)
Course	ACQ 201
Level	II
Source	FG
Know or Do	K
Defense Related	F
Keyword Expression	Cost accounting for government contractors
Keyword	Cost accounting
Career Fields	
Auditing	N
Business Cost Estimating	Y
Communications-Computer Systems	N
Contracting	N
Financial Management	Y
Industrial/Contract Property Management	N
Logistics	Y
Manufacturing, Prod, QA	Y
Program Management	Y
Purchasing	N
SPRDE	Y
Test & Evaluation	Y

Note: QA = Quality Assurance; SPRDE = System Planning, Research, Development, Engineering

As can be seen, this competency is identified as a "K" or knowledge-based competency, and while it is not specifically defense related, it has been labeled as federally related. The career fields with "Y" entries all require ACQ 201; the others do not, nor have they identified the course as "desired." In addition, this record pertains to the keyword "cost accounting" from the competency. There is another record in the database with identical entries except for the keyword, which is "government contractor."

APPLICATIONS FOR THE DEFENSE ACQUISITION KNOWLEDGE DATABASE

Database Queries

The database, as previously mentioned, reflects approximately 6,100 competencies in over 13,600 records, with more than 3,300 unique keywords. Users can query the database by any possible combination of keyword, source (such as POI),

course (if applicable), career field, and level, and as to whether the competency is knowledge or performance based, or defense or federally related. Keyword expressions are not useful for direct query purposes (unless the user happens to be searching for a known expression) but can be provided as output when searching for other more specific entities (such as a specific source, or a particular keyword).

Application Within This Study

As noted in the beginning of this chapter, we were tasked to define and analyze the DAKB, and to use it analytically as the basis for determining core curriculum and faculty.

By constructing a database, we have provided in a single entity the complete set of knowledge- and performance-based competencies required of DoD acquisition personnel (aside from more general skills obtained, for example, by virtue of a college education, required for certain career fields and membership in the Acquisition Corps). By creating a relational database and specifying certain fields within its records, we provide a query capability and therefore an analytic tool for assessing particular attributes of the knowledge base.

Our most immediate application of the database was as the basis for determining core curriculum and faculty. We ran inquires that, through meaningful comparisons and analyses of competencies, provide quantifiable input data for the core analysis described in Chapter 6.

Similar to the applications in Chapter 6, although at a more summary level, the following examples provide results about the nature of the DAKB:

- *Slightly more than one-third of all competencies are "defense related."* Of the total of 6,094 competencies in the database, 2,124 (35 percent) were identified as being defense related.

- *More than one-fourth of all competencies, though not defense related, were federally related.* Of the 6,094 competencies in the database, 1,685 (28 percent) were labeled as federally related.

- *Nearly two-thirds of all competencies are either defense or federally related.* The combined total of competencies that are either defense related (2,124) or federally related (1,685) embraces 63 percent of all competencies.

- *Nearly half the competencies are performance based.* Of the total of 6,094 competencies in the database, 2,756 (45 percent) are classified as "do" competencies, requiring the student to apply knowledge gained.

- *Nearly two-thirds of all competencies are either defense related or performance based.* This result is meaningful, assuming that the most critical competencies are those that are either defense related or require the student to be able to perform some task. In this instance, 3,927 (64 percent) of all competencies have either one attribute or the other.

- *Less than one-sixth of all competencies are both defense related and performance based.* If, as in the last example, one attribute or the other contributes to a critical competency, then the most critical will have both attributes. In this case, 942 (15 percent) of all competencies require the student to demonstrate an ability to perform a task specifically related to the practice of acquisition in DoD.

General Applications of the Database

We also believe that the database has applications beyond the interests of the study and offer some examples involving the search, analysis, and comparison of competencies.

By specifying a keyword or a string of words, the user can search for courses in which the subject is taught, or for other sources that might include the concept. Users can look for redundancies in course offerings, or determine whether some subject matter is taught at all. By comparing competencies identified by functional boards with those contained in course materials, one can determine if all desired competencies have been included in formal instruction. Users can also determine what parts of specified training areas are performance based. Inquiries against the database can also determine which competencies are unique to a single career field and which are shared by multiple career fields. Furthermore, competencies reflecting a government or defense orientation can also be identified.

During the course of the study, LMI was asked to demonstrate the capability and utility of the database by providing the results of two types of inquiries.

One was a simple listing of competencies within each career field, for distribution to functional boards.

The second was more complicated, requiring the assistance of someone more familiar with database queries, but the results were nonetheless easy to provide. We were asked to use the competencies determined by functional boards (in 1993 and 1994) as a "baseline" and search for matching competencies in DAU courses. Specifying a particular career field and using keywords from the functional board input, our queries determined competencies with matching keywords in courses required for or desired by that career field. We also determined the few instances where no matching competencies were found, mainly the result of a change in terminology since the original functional board work was done.

In the spring of 1997, the Director of Operations at DAU advised LMI that DAU was developing a competency database, to be part of DAU's reference material supporting CD-ROM and on-line courses. Our understanding is that the database would contain full, literal competencies, listed by course. While a student would be able to search for a particular word or string of words, the DAU database would not contain all the attributes of the LMI database, nor would it contain non-course competencies. In order to assist DAU in its effort, we made the defense acquisition knowledge database available for DAU's use.

Note: Unless provisions are made to update the database, care should be exercised in applying it subsequent to this study. The database we constructed and used was a snapshot in time of the DAKB. As such, it was entirely adequate and appropriate for our use as an analytic tool. However, defense acquisition career fields are consistently evolving, defining and refining skills and training. As a snapshot, the database cannot, nor was it intended to, accommodate such dynamic change. Furthermore, the various sources initially used to identify the competencies differed in format, content, and purpose. For example, there is no standard lesson plan or POI format used by the consortium schools; many use the format of their own institutions. Similarly, in identifying their career fields' competencies, the functional boards employed different schemes. The competency descriptions were more or less complete, depending upon the source. Finally, the sources for the competencies vary in their currency. The functional board input dates from 1993 and 1994. The fulfillment guide used was current in 1997. Programs of instruction and lesson plans are constantly under revision. For these reasons, care should be taken in future applications of the data in the DAKB.

CONCLUSIONS

- As mentioned above, more than one-third of all database competencies are labeled as "defense related," indicative of knowledge or practical application specific to the Department of Defense. This is not an inconsequential amount, and it does, in fact, allow for the establishment of a defensible argument for what any core or in-house capability should be. Such discussions will be addressed in more detail in Chapter 6.

- It is possible to describe a complete knowledge base for a field of endeavor, such as defense acquisition, in such a way as to identify key attributes and allow useful queries permitting analysis of that field and the curriculum which supports it.

- The defense acquisition knowledge database can and will be used as a basis for determining estimates of core curriculum and faculty for the Defense Acquisition University.

- The defense acquisition knowledge database is an effective tool for performing analysis across courses and other sources of competency input in order to provide information by acquisition career field and functional area.

- The totality of database keywords forms an extensive, if not complete, list of defense acquisition terminology. It can be used as a means of query for the database, but more important, it serves as a lexicon for the field of defense acquisition and provides a concrete, discernible basis for the body of knowledge associated with the defense acquisition profession.

RECOMMENDATIONS

- The DAKB is a useful analytic tool and a source of valuable reference information; it should be maintained on a continuing and current basis.

- The DAU-facilitated effort by functional boards several years ago to determine competencies by total career field (not just on an individual course basis as is currently done) provided useful information both in terms of determining curricular needs and in understanding performance requirements within career field and by career level. We recommend that the functional boards undertake such an effort again (and periodically) and do so in a uniform manner for all career fields.

- OSD and DAU should evaluate the defense acquisition knowledge database for other possible management applications. Before using it for other applications, however, it should be determined whether a "snapshot" is appropriate for the intended use. If not, application should be deferred until the database is updated to ensure currency and validity of its data.

- If the DAKB is not updated or maintained, DAU should consider incorporating some of its attributes and analytic capabilities into the university's on-line listing of competencies.

Chapter 5
Determination of Core Functions

INTRODUCTION

Of the three major study objectives, determining core requirements could be considered central. Giving definition and form to the defense acquisition knowledge base lays the foundation for what may be considered the core portion of DAU's curriculum. Determining core requirements in terms of functions, curriculum, and faculty will in turn serve as the basis for assessing organization and structure (much as "form follows function").

Our first challenge in this undertaking was to eliminate some of the confusion resulting from use of the term "core," which means different things to different people, as well as from use of the term "requirements." In investigating the latter, we determined that requirements generally meant either functions that DAU must perform, or the curriculum that must be provided, and corresponding to that curriculum the faculty to provide it. In this chapter we deal with core requirements as it relates to functions performed by DAU. Chapter 6 will address core curriculum and faculty.

BACKGROUND

Our starting point in addressing DAU functions was the Defense Acquisition Workforce Improvement Act of 1990,[1] the law that established DAU, provided its purpose, and assigned its missions. In particular, DAWIA directed that

> the Secretary of Defense, acting through the Under Secretary of Defense for Acquisition, shall establish and maintain a defense acquisition university structure to provide for—
>
> (A) the professional educational development and training of the acquisition workforce, and
>
> (B) research and analysis of defense acquisition policy issues from an academic perspective.

[1] Public Law 101-510, Section 1202, directed that Title 10, Chapter 87, be amended to reflect DAWIA implementation.

DAWIA (Section 1205) also directed implementing regulations that would establish a university mission to achieve objectives that include

> (A) the achievement of more efficient and effective use of available acquisition resources by coordinating Department of Defense acquisition education and training programs and tailoring them to support the careers of personnel in acquisition positions; and,
>
> (B) the development of education, training, research, and publication capabilities in the area of acquisition.

Section 1205, in its entirety, can be seen at Appendix I.

DoD's primary implementing regulation is DoDD 5000.57, *Defense Acquisition University*, published by the Under Secretary of Defense (Acquisition), October 22, 1991. This regulation specifies the mission, organization, management, functions, and responsibilities associated with the Defense Acquisition University. DAWIA and DoDD 5000.57 were our primary sources in examining DAU's core functions.

DAU FUNCTIONS

Before addressing the issue of "core," we first had to identify those functions that law and regulation mandated that DAU perform, as well as any others that DAU might be performing either as part of its mission or extraneously. We accomplished this in a two-step process. The first step consisted of review of legislation and applicable regulations; the second step involved interviews with DAU and consortium school representatives as to what functions they in fact performed. These two steps resulted in a detailed list of functions that could be aggregated into six major areas:

- *Teach and provide training.* This function encompasses the provision of instruction and training for all DAU courses.
- *Develop courses.* Course development includes design of both courses and course materials (instructor notes, student handouts, lesson plans, etc.).
- *Ensure quality.* Quality assurance has several facets, including development of evaluation standards, certification and evaluation of instructors, and certification and evaluation of DAU courses.
- *Manage and administer.* The bulk of the functions performed by DAU, except for the teaching of separate courses, fell into this area. Subfunctions included activities in the areas of resource management, personnel management, as well as administrative and logistical support for both students and the university as a whole.

- *Perform research and analysis.* DAWIA gave DAU a research and analysis mission much like that of a traditional university. Besides research and analysis in the area of defense acquisition, sub-functions include pedagogical research and other analytic support, that a university-type staff would be capable of providing.

- *Share knowledge.* Perhaps the least descriptive area heading, the sharing of knowledge refers to the dissemination of information through any available media. This includes publication and presentation of scholarly papers, hosting conferences, and providing expert consultation within and beyond DAU.

The complete list of functions and subfunctions appears in Table 5-1. After determining what functions were mandated for DAU, and what functions the headquarters and consortium schools in fact performed, we turned our effort to the question of core functions.

Table 5-1. Determination of Essential Functions

DAU function/subfunction	Essential by		
	Law	DoD regulation	Common practice
Teach and provide training [a]	Y	Y	Y
Develop courses			
Design courses	N	Y	Y
Review/redesign courses	N	Y	Y
Design materials	N	Y	Y
Ensure quality			
Develop evaluation standards	N	Y	Y
Certify instructors	N	N	S
Evaluate instructors	N	Y	Y
Certify courses	N	Y	Y
Evaluate courses	N	Y	Y
Manage and administer			
Program and budget	N	Y	Y
Allocate resources	N	Y	Y
Administer contracts/MOA	N	Y	S
Produce annual catalog	N	Y	Y
Publish course schedules	N	Y	Y
Allocate course quotas	N	Y	Y
Register students	N	N	Y
Maintain student records	N	Y	Y

Table 5-1 Determination of Essential Functions (Continued)

DAU function/subfunction	Essential by		
	Law	DoD regulation	Common practice
Administer scholarship program	N	Y	S
Support board of visitors, etc.	N	N	Y
Select course providers	N	Y	Y
Designate course equivalencies	N	Y	Y
Administer courses	N	N	Y
Administer personnel	N	N	Y
Manage personnel (hire/supervise)	N	Y	Y
Provide student support	N	N	Y
Perform research and analysis			
Perform acquisition research	Y	Y	S
Analyze acquisition policy issues	Y	Y	S
Perform pedagogical research and analysis	N	N	S
Perform other studies/analysis	N	N	S
Share knowledge			
Communicate activities	N	N	Y
Consult	N	N	S
Publish papers	Y	Y	S
Present papers	N	Y	S
Host conferences	N	Y	S
Operate library	N	N	Y

[a] Training, by virtue of DAU mission, is an essential function; we also presume each current course is essential.

Note: Y = Yes, N = No, S = Sometimes or to some extent.

DEFINING CORE FUNCTIONS

As noted above as well as in Chapter 1, the word "core" is an ambiguous term. Therefore before proceeding, we had to define the term. In exploring a suitable definition, LMI wanted to distinguish between two aspects, or levels, of core as it relates to DAU's functions. The first pertains to the necessity for performing that function at all, and the second to the necessity for performing it using in-house (DoD) personnel. Therefore, we define

- *essential function* as a function that must be performed (by someone, in-house or otherwise) to accomplish DAU's mission, and
- *organic function* as an essential function that *should* be performed in-house (i.e., using DoD personnel).

Originally LMI had sought to define organic function as one that *must* be performed in-house, but we eventually found that few DAU functions qualified on any concrete basis. As a result, we relaxed the definition.

LMI developed criteria for both essential and organic functions; those criteria and their application to DAU functions are described below.

DAU ESSENTIAL FUNCTIONS

The following are LMI's criteria for establishing whether or not DAU functions are essential. These criteria have been reviewed and accepted by the study sponsors. The process we used to evaluate functions is also described, as are the findings from application of the process.

Criteria for Essential Functions

An essential function is one that must be performed for DAU to accomplish its mission. A determination of "essential" can be made only if there is authoritative reason for a function to be performed or—in the absence of authoritative reason—if the mission cannot be completed without performance of the function. Therefore we determine a DAU function to be essential if it meets at least one of the following criteria:

- Performance of the function is prescribed by law.
- Performance of the function is derived from law and promulgated in regulation.
- Performance of the function is unspecified in law or regulation but is a "common practice" for such an organization or institution; and without it, the organization's mission could not be completed fully or in fully satisfactory fashion.

Application of the Criteria and Findings

LMI's assessment by function and by criterion is displayed in Table 5-1. For each function, we asked first whether DAWIA (or other law, such as Title 10, United States Code) mandated that the function be performed by DAU. If not, we searched for a regulatory basis for the function (e.g., DoDD 5000.57 specifies that DAU publish an annual catalog), and if we found no regulatory basis, we examined other institutions of learning regarding performance of that function.

As indicated in Table 5-1, the provision of training is mandated by law and regulation, and we presume each individual course taught to be essential.[2] Also, not surprisingly, most functions satisfy more than one criterion for designation as essential, usually by virtue of regulation and as a common practice for similar institutions.

Note that other than training, only three functions are specified in law for DAU: the performance of acquisition research, analysis of acquisition policy issues, and publication in the area of acquisition. It should be pointed out, however, that DAWIA mandates broader functions and responsibilities for the Secretary of Defense and the Under Secretary of Defense (Acquisition), which may be delegated to DAU. The primary example of this is resource allocation, which DoDD 5000.57 in fact delegates to DAU.

The four functions that did not receive a clear "Yes" as being essential according to at least one of the criteria were as follows:

- Certify instructors
- Perform pedagogical research and analysis
- Perform other studies and analysis
- Consult.

All of these were found to be practiced to some extent by similar training institutions. Certification of instructors per se may not be done, but schools generally have some means, less formal than certification, of ensuring that instructors are qualified. The other functions (pedagogical research, other analysis, and consulting) are often done because the institution either has the capability, which is sought out by others, or because individuals choose to perform those functions on their own or in support of as-required needs of the school. Our conclusion is that performance of these functions by DAU is justified.

DAU Organic Functions

As with essential functions, our criteria for establishing whether or not DAU functions are organic follow, as well as the findings from application of the criteria.

Criteria for Organic Functions

An organic function is an essential function that should be performed by DoD. Our criteria for organic functions provide a spectrum for the basis of in-house

[2] Curriculum is determined largely by functional boards, and both courses and course materials are reviewed on a periodic basis by DAU and the functional boards.

performance, ranging from legal mandate to a common practice of best-practice training institutions. These criteria are the following:

- Performance of the function is prescribed by law or regulation to be organic. (Note, we found no instances of this for the existing DAU functions.)
- The function is inherently governmental in nature:[3]
  - Determination of agency policy
  - Determination of federal program priorities or budget requests
  - Direction and control of federal employees
  - Determination of what supplies or services are to be acquired by the government
  - Approval of any contractual documents
  - Awarding and/or administering contracts.
- The function is based largely on information or processes that are institution specific (i.e., defense related). (Again, with the exception of individual courses which will be discussed elsewhere, we did not find any instances of DAU functions that were highly DoD specific.)
- Similar best-practice organizations choose to perform these functions in-house.
- Performance of the function itself is meant to benefit the institution (e.g., research as a means of increasing staff knowledge).
- The function involves proprietary information. (Note, although considered a valid criterion, we did not find any functions of DAU that dealt with proprietary information. Schools have mentioned that certain courses may get into discussions or point out examples involving proprietary or other sensitive information, and when this occurs proper safeguarding of information takes place, but no lesson plan or other course material uses or requires any proprietary information.)
- In-house performance is the lowest cost method. (Again, this is a valid criterion for in-house performance, but the definitive cost analysis required was not part of LMI's charter.)

[3] These criteria for "inherently governmental" come from Office of Management and Budget (OMB) Circular A-76, *Performance of Commercial Activities*, dated March 1996, and are those that apply to DAU.

Application of the Criteria and Findings

Our assessment of DAU functions by criterion is displayed in Table 5-2, which contains columns for the three applicable criteria as discussed above. As in the case of essential, we addressed each function as to whether it met at least one of the criteria.

Table 5-2. Determination of Organic Functions

DAU function/subfunction	Inherently governmental	Common practice	Benefit institution
Teach and provide training[a]			
Develop courses[a]			
Design courses	N	S	N
Review/redesign courses	N	S	N
Design materials	N	S	N
Ensure quality			
Develop evaluation standards	N	Y	N
Certify instructors	N	Y	N
Evaluate instructors	N	Y	N
Certify courses	N	Y	N
Evaluate courses	N	Y	N
Manage and administer			
Program and budget	Y	Y	N
Allocate resources	Y	Y	N
Administer contracts/MOA	Y	Y	N
Produce annual catalog	N	S	N
Publish course schedules	N	Y	N
Allocate course quotas	N	Y	N
Register students	N	Y	N
Maintain student records	N	Y	N
Administer scholarship program	N	Y	N
Support board of visitors, etc.	N	S	N
Select course providers	N	Y	N
Designate course equivalencies	N	Y	N
Administer courses	N	Y	N
Administer personnel	N	Y	N
Manage personnel (hire/supervise)	Y	Y	N
Provide student support	N	Y	N

Table 5-2. Determination of Organic Functions (Continued)

DAU function/subfunction	Inherently governmental	Common practice	Benefit institution
Perform research and analysis			
Perform acquisition research	N	S	S
Analyze acquisition policy issues	N	S	S
Perform pedagogical research/analysis	N	S	S
Perform other studies/analysis	N	S	N
Share knowledge			
Communicate activities	N	Y	N
Consult	N	S	S
Publish papers	N	S	S
Present papers	N	S	S
Host conferences	N	S	S
Operate library	N	Y	N

[a] Individual courses will be evaluated by other criteria.

Note: Y = Yes; N = No; S = Sometimes or to some extent.

While course development and the provision of training are clearly essential functions, we found no inherent reason on the basis of our criteria why those functions had to be performed in-house. The stronger case can be made for course development, because many institutions choose to develop their own courses, but this is highly dependent on the nature of the material (e.g., general disciplinary versus institution specific). Control of course development, however, is clearly an organic function.

While the broad functions of teaching and development could not be justified as organic, we found that course-by-course arguments could be made for in-house performance and that this warranted separate analysis, which is detailed in Chapter 6.

As seen in Table 5-2, a few functions can be regarded as organic because they are inherently governmental, but most satisfy the common practice criterion. Those that do not have a "Y" (yes) indication in any column do have an "S," indicative of functions practiced to some extent by similar institutions. Two of these functions—produce an annual catalog, and provide support to other bodies (e.g., DAU's board of visitors)—are often performed in-house because the capability exists. Each could be outsourced, but doing so may not be worth the effort unless those functions are part of a larger support contract.

The other functions not clearly justifiable as organic generally fall under the areas of research, analysis, and sharing knowledge. While DAWIA mandates that DAU provide for those capabilities, little is actually done for DAU as a whole. DAU has

no centrally directed research program, and research and analysis is not very widespread. Publication and presentations do occur, but usually as the result of individual school or faculty effort. We will discuss these functions more fully in Chapters 7 and 8, on the basis of our investigations into other, similar institutions.

CONCLUSIONS

The functions currently performed by DAU can all be justified as being essential, and most can be justified as organic. Ironically, however, the functions considered to be least essential (in the truest meaning of the word), and least practiced, are in the areas of research and analysis, two of only four functions specified for DAU within DAWIA. As mentioned, we will discuss this more fully later.

For the remainder of the functions practiced by DAU, a few must be performed in-house as being inherently governmental. Although control of course development should be maintained in-house, teaching and course development both warrant investigation at course level, as we discuss in the next chapter. The rest of the functions are generally done in-house, but there is no compelling reason why they must be. Examples exist (see Chapter 7) where such functions, administrative support, and even quality assurance are contracted out, although such contracting is normally not done piecemeal.

Chapter 6
Determination of Core Curriculum and Faculty

INTRODUCTION

As discussed in the last chapter, the broad functions of teaching and course development could not readily be justified as organic (i.e., should be done using DoD personnel). Many institutions contract out the delivery of instruction, and some contract for the development of courses and course materials. Moreover, DAU courses vary widely in their content, and it is possible that some courses, or families of courses, would be candidates for outsourcing, while others would not. Therefore we attempted to quantify how organic DAU courses were, both in terms of course development and course delivery (teaching), and then extend this quantification to determine numbers (absolute as well as percentages) of core faculty. In doing so, we maintained the basic assumption that the defense-unique (or strongly defense-related) portion of the acquisition knowledge base would serve to underlie our results.

At this point regarding curriculum and faculty, we consider "core" to be synonymous with "organic," since teaching and course development have already been established as essential, and "core faculty" would be more broadly understood than "organic faculty." In the case of curriculum, we will discuss "core" from the traditional educational point of view later (that is, from the point of view of central or common curriculum). We also consider "curriculum" and "courses" to be synonymous in our discussions.

This chapter will present quantitative discussions of core curriculum and faculty. Qualitative aspects (e.g., what we have observed and learned from similar best-practice institutions about outsourcing course development and/or delivery) will be discussed later.

We have developed two quantitative methodologies, which overlap in their applications. One results in a ranking of courses according to how "core" they are, and the other estimates core staff-years by course. We found no good method of determining core faculty by individual faculty position. The same DAU courses are taught by different consortium schools, are taught both in resident and in on-site modes, and often use military faculty who rotate periodically. The remainder of this chapter discusses those two methodologies and their results.

As a final note, all courses and staff-years were current in FY97. Appendix J outlines course changes that occurred between FY97 and FY98.

COMPARATIVE COURSE RANKING METHODOLOGY

The basic methodology for comparative ranking of courses was as follows: first, determine criteria related to or associated with the desirability of maintaining in-house performance of course development and delivery; next, determine weights for the criteria; then rate or score each course according to the criteria; and, finally, sum the weighted scores for each course. The result would be a ranking of courses according to their "coreness." Summary course scores would not represent, however, a computation of the portion of the course that might be considered core. Other means and assumptions will work to that end.

Determination of Criteria for Assessing DAU Core Courses

After discussions with consortium schools, DAU officials, and task monitors, LMI arrived at the following criteria associated with the desirability for in-house performance (each criterion has been labeled with a short title, used in tables and figures, and followed by its definition and description):

- *Defense related.* Course material is "defense related." The material is either unique to DoD or is presented for understanding or application within a DoD context.

- *Entry level.* Course material is entry level and used for acculturation. The course introduces acquisition personnel to a functional area and acculturates them to the principles and values of defense acquisition, much the same as an Army Officer Basic Course is used for "greening" of an Army officer, an introductory Air Force course for "blueing," etc.

- *Senior level.* Course material is senior level and imparts broad understanding of DoD knowledge or practice. The course is meant for senior managers and crosses two or more career fields.

- *Currency.* Course material is dynamic in nature, and course currency is critical. This is often indicated by subject matter involving law, policy, or procedure, where currency is critical to post-class performance of the student.

- *DoD lecturers.* Course presentation depends upon guest lecturers who are from DoD or who are closely associated with DoD practices. DoD guest speakers are designed into the curriculum, with the presumption that they are more easily obtained, and that their presentations will be more applicable to course objectives if the course is more closely controlled by DoD personnel.

- *Research related.* Course material is strongly related to DAU research and/or publication functions. This presumes that DAU should have a

research function that is performed by faculty and/or students, and that the course in question requires original research of the student under direct supervision of a faculty member.

- *Faculty practice.* Course content is such that students benefit significantly from faculty who are current or very recent DoD subject-matter practitioners. This may be indicated by case studies or similar activities that benefit from recent faculty workplace involvement, as well as the need for faculty to be able to respond to student questions on the basis of personal DoD experience.

Determination of Criteria Weights

In the process of determining weighted development and teaching scores for each course, we had the choice of scoring courses twice, once for teaching and again for development, with one set of criteria weights, or of scoring once and having two sets of weights (one for teaching, one for development). Examination of these two alternatives revealed that useful summary information, such as the relative importance of the criteria between teaching and development, could be gleaned from determining two sets of weights. Also when queried, potential scorers said they could differentiate the criteria between teaching and development easier and more discernibly than they could for an individual course. After consultation with study monitors, we chose to develop two sets of criteria weights.

At this point (again with study monitor input) we asked each of the five functional boards to provide representatives who would, as a group, discuss and determine weights for the seven criteria. In practice, however, they were unable to come together as a group, so they individually established their own weights, with LMI personnel providing background information and answering questions as they occurred. One functional board (Business, Cost Estimating, and Financial Management) did not participate. The relative weights provided by the other four representatives were averaged, resulting in the following set of criteria weights (one for course development and another for teaching).

Table 6-1. Criteria Weights

Criteria	Development weights	Teaching weights
Defense related	0.1975	0.1375
Entry level	0.0875	0.1300
Senior level	0.1325	0.0925
Currency	0.2050	0.1750
DoD lecturers	0.0675	0.1525
Research related	0.1225	0.0875
Faculty practice	0.1875	0.2250

Notice that for development, panelists considered the need for currency to be most important, with defense-related material a close second. For teaching, however, highest weighted was the need for faculty practitioners. The need for currency was also considered important (second highest weight), but defense-related material placed in the middle. Having DoD lecturers was considered to be an important criterion for in-house teaching (third highest weight), but finished last among the development criteria. Also interesting was the fact that the panel nearly reversed the relative importance of entry-level and senior-level courses, with senior-level being more important for in-house development and entry-level for in-house teaching.

Rating the Courses

Rating the courses required an impartial panel generally familiar with DoD acquisition processes and organizations and having an equal (unbiased) familiarity with all DAU courses. We obtained such a panel within LMI, and using the DAU catalog as well as course materials and lesson plans as references, the four-member panel individually rated each course (with the exception of defense related), according to each criterion. Each course received a score from 0 to 100 for each of the other six criteria. The score indicated how much the panelist felt the criterion applied to the course. The first three panel members completed an initial round of ratings, then compared and discussed results to ensure that they were working under similar assumptions. The panel satisfied itself that initial scores were reasonably similar, and they scored the courses independently a second time. The fourth panel member then rated the courses, and while his scoring was similar in relation to the others, in magnitude it was generally higher. His scores were then "normalized" to be, in sum, comparable to those of the other three panel members.

A ready-made score already existed for all but a few courses for the defense-related criteria. The defense acquisition knowledge database provides a count of defense-related competencies, as well as the total number of competencies, for each course. LMI queried the database for the total number of nonduplicative competencies (keyword expressions) for each course, and the number that were defense related (had a "D" in the defense-related field). That percentage was used as the defense-related score for each course. (The three courses that had no database entries were scored by the panelists on the basis of their judgment as to how defense-related each was.) In actual application of the methodology, the defense-related percentage for each course was multiplied by 4, since the raw score from the four panelists for the other criteria could total as much as 400.

Applying the Ranking Methodology

Results of the methodology, obtained by multiplying each course criterion score by its respective weight, summing, and ranking in descending order are shown in Table 6-2 (course development) and Table 6-3 (teaching).

Table 6-2. Organic Course Criteria—Combined Scores and Ranking (Course Development)

Course	Defense related	Entry level	Senior level	Currency	DoD lecturers	Research related	Faculty practice	Unweighted score	Weighted score
Weight	0.1975	0.0875	0.1325	0.2050	0.0675	0.1225	0.1875	—	—
ACQ 401	345	7	318	291	347	390	316	2,014	300.99
CON 301	320	0	193	191	215	10	226	1,155	186.04
PMT 305	328	0	68	306	43	0	216	961	179.92
PMT 303	120	0	163	316	125	0	266	990	168.39
BCF 301	380	0	138	66	165	0	226	975	160.38
TST 301	364	0	28	151	35	0	201	779	146.61
BFM 210	400	14	25	91	0	0	216	746	142.69
CON 234	367	14	9	46	12	0	306	754	142.52
PMT 302	152	0	193	66	239	15	261	926	136.03
BFM 209	400	14	15	61	0	0	216	706	135.22
LOG 304	356	7	163	36	24	0	161	747	131.71
PQM 301	96	7	163	166	199	10	216	857	130.36
TST 202	364	7	9	90	0	0	192	662	128.15
ACQ 101	164	328	5	90	24	0	191	802	117.64
LOG 205	400	14	14	25	0	0	151	604	115.52
SAM 301	240	0	89	41	74	0	212	656	112.34
LOG 101	288	178	0	13	100	0	152	731	110.37
LOG 201	332	14	5	33	0	0	176	560	107.22
PMT 304	40	0	118	166	43	0	241	608	105.66
PMT 341	268	0	68	26	35	0	176	573	102.63
PQM 104	328	128	0	53	0	0	82	591	102.22
PQM 103	264	153	0	53	0	0	132	602	101.14
CON 333	168	0	78	36	135	0	196	613	96.76
PMT 202	176	7	14	91	0	0	191	479	91.70
TST 101	152	163	0	13	145	0	177	650	89.92
SYS 301	164	0	68	36	0	0	216	484	89.28
ACQ 201	132	38	25	75	24	0	201	495	87.39
SAM 201	200	7	9	55	0	0	177	448	85.77
IND 102	344	32	5	25	0	0	47	453	85.34
IND 202	104	0	14	66	160	10	191	545	83.76

Table 6-2. Organic Course Criteria—Combined Scores and Ranking (Course Development) (Continued)

Course	Defense related	Entry level	Senior level	Currency	DoD lecturers	Research related	Faculty practice	Unweighted score	Weighted score
PMT 203	132	7	14	91	0	0	191	435	83.01
BFM 201	208	28	0	38	0	0	157	431	80.76
LOG 203	240	14	5	23	0	0	141	423	80.44
BFM 203	144	14	5	65	0	0	182	410	77.78
IND 201	52	7	9	145	0	0	172	385	74.05
PQM 201	180	14	5	25	0	0	136	360	68.06
AUD 1130	0	278	0	38	0	0	166	482	63.24
BFM 204	128	14	5	50	0	0	137	334	63.11
BCE 206	96	14	5	15	0	0	202	332	61.80
IRM 303	172	7	43	41	0	0	66	329	61.06
PQM 101	124	198	0	23	0	0	72	417	60.03
SAM 101	136	139	0	63	0	0	40	378	59.44
AUD 8560	160	7	18	12	24	0	100	321	57.43
BCE 101	0	163	0	38	0	0	187	388	57.12
BFM 102	48	88	0	38	100	0	132	406	56.47
AUD 1320	40	14	9	55	0	0	186	304	56.47
CON 101	28	298	0	23	0	0	107	456	56.38
CON 103	24	298	0	23	0	0	107	452	55.59
CON 102	24	298	0	23	0	0	107	452	55.59
PUR 101	20	153	0	33	0	0	166	372	55.23
SYS 201	52	7	9	35	0	0	186	289	54.13
PUR 102	0	153	0	33	0	0	166	352	51.28
PQM 203	0	14	5	156	0	0	91	266	50.93
CON 221	92	14	5	35	0	0	116	262	48.98
BCE 207	56	14	5	15	0	0	172	262	48.27
CON 241	80	14	5	35	0	0	112	246	45.86
PUR 201	28	14	5	35	0	0	166	248	45.72
LOG 204	64	14	5	23	12	0	136	254	45.55
IRM 201	104	14	5	35	0	0	82	240	44.98
BCE 204	20	14	5	15	0	0	192	246	44.91
CON 233	16	14	5	45	0	0	162	242	44.65
IND 101	32	228	0	23	0	0	61	344	42.42
IRM 101	59	89	0	25	0	0	82	255	39.94
CON 212	32	14	5	35	0	0	112	198	36.38
GRT 201	48	0	14	35	0	0	92	189	35.76
CON 222	0	14	5	35	0	0	116	170	30.81
PQM 202	0	14	5	56	0	0	91	166	30.43
CON 211	0	14	5	35	0	0	112	166	30.06
CON 223	0	14	5	35	0	0	112	166	30.06
CON 106	4	158	0	23	0	0	52	237	29.08

Table 6-2 Organic Course Criteria—Combined Scores and Ranking (Course Development) (Continued)

Course	Defense related	Entry level	Senior level	Currency	DoD lecturers	Research related	Faculty practice	Unweighted score	Weighted score
CON 104	0	158	0	23	0	0	52	233	28.29
CON 105	0	158	0	23	0	0	52	233	28.29
AUD 4120	0	7	5	22	0	0	120	154	28.29
CON 201	0	14	5	55	0	0	77	151	27.60
AUD 4230	0	7	5	12	0	0	115	139	25.30
BCE 208	32	14	5	15	0	0	72	138	24.78
CON 232	4	14	5	25	0	0	82	130	23.18
IND 103	0	32	9	25	0	0	47	113	17.93
CON 231	0	14	5	25	0	0	57	101	17.70

Table 6-3. Organic Course Criteria—Combined Scores and Ranking (Teaching)

Course	Defense related	Entry level	Senior level	Currency	DoD lecturers	Research related	Faculty practice	Unweighted score	Weighted score
Weight	0.1375	0.1300	0.0925	0.1750	0.1525	0.0875	0.2250	—	—
ACQ 401	345	7	318	291	347	390	316	2,014	286.83
CON 301	320	0	193	191	215	10	226	1,155	179.79
PMT 303	120	0	163	316	125	0	266	990	165.79
PMT 305	328	0	68	306	43	0	216	961	160.10
BCF 301	380	0	138	66	165	0	226	975	152.58
PMT 302	152	0	193	66	239	15	261	926	146.79
PQM 301	96	7	163	166	199	10	216	857	138.06
CON 234	367	14	9	46	12	0	306	754	131.85
TST 301	364	0	28	151	35	0	201	779	129.63
ACQ 101	164	328	5	90	24	0	191	802	128.04
BFM 210	400	14	25	91	0	0	216	746	123.66
BFM 209	400	14	15	61	0	0	216	706	117.48
LOG 101	288	178	0	13	100	0	152	731	114.47
LOG 304	356	7	163	36	24	0	161	747	111.12
TST 202	364	7	9	90	0	0	192	662	110.74
SAM 301	240	0	89	41	74	0	212	656	107.39
TST 101	152	163	0	13	145	0	177	650	106.30
PMT 304	40	0	118	166	43	0	241	608	106.25
CON 333	168	0	78	36	135	0	196	613	101.30
LOG 205	400	14	14	25	0	0	151	604	96.47
IND 202	104	0	14	66	160	10	191	545	95.40
PQM 103	264	153	0	53	0	0	132	602	95.17
LOG 201	332	14	5	33	0	0	176	560	93.31
PMT 341	268	0	68	26	35	0	176	573	92.63

Table 6-3. Organic Course Criteria—Combined Scores and Ranking (Teaching) (Continued)

Course	Defense related	Entry level	Senior level	Currency	DoD lecturers	Research related	Faculty practice	Unweighted score	Weighted score
PQM 104	328	128	0	53	0	0	82	591	89.47
ACQ 201	132	38	25	75	24	0	201	495	87.41
PMT 202	176	7	14	91	0	0	191	479	85.31
SYS 301	164	0	68	36	0	0	216	484	83.74
AUD1130	0	278	0	38	0	0	166	482	80.14
PMT 203	132	7	14	91	0	0	191	435	79.26
SAM 201	200	7	9	55	0	0	177	448	78.69
BFM 203	144	14	5	65	0	0	182	410	74.41
BFM 201	208	28	0	38	0	0	157	431	74.22
IND 201	52	7	9	145	0	0	172	385	72.97
LOG 203	240	14	5	23	0	0	141	423	71.03
CON 101	28	298	0	23	0	0	107	456	70.69
CON 103	24	298	0	23	0	0	107	452	70.14
CON 102	24	298	0	23	0	0	107	452	70.14
BCE 101	0	163	0	38	0	0	187	388	69.92
BFM 102	48	88	0	38	100	0	132	406	69.64
IND 102	344	32	5	25	0	0	47	453	66.87
PUR 101	20	153	0	33	0	0	166	372	65.77
BCE 206	96	14	5	15	0	0	202	332	63.56
PQM 101	124	198	0	23	0	0	72	417	63.02
PUR 102	0	153	0	33	0	0	166	352	63.02
PQM 201	180	14	5	25	0	0	136	360	62.01
AUD 1320	40	14	9	55	0	0	186	304	59.63
BFM 204	128	14	5	50	0	0	137	334	59.46
SYS 201	52	7	9	35	0	0	186	289	56.87
SAM 101	136	139	0	63	0	0	40	378	56.80
AUD 8560	160	7	18	12	24	0	100	321	52.84
IND 101	32	228	0	23	0	0	61	344	51.79
BCE 207	56	14	5	15	0	0	172	262	51.31
BCE 204	20	14	5	15	0	0	192	246	50.86
IRM 303	172	7	43	41	0	0	66	329	50.56
PQM 203	0	14	5	156	0	0	91	266	50.06
PUR 201	28	14	5	35	0	0	166	248	49.61
CON 233	16	14	5	45	0	0	162	242	48.81
LOG 204	64	14	5	23	12	0	136	254	47.54
CON 221	92	14	5	35	0	0	116	262	47.16
CON 241	80	14	5	35	0	0	112	246	44.61
IRM 101	59	89	0	25	0	0	82	255	42.51
IRM 201	104	14	5	35	0	0	82	240	41.16

Table 6-3. Organic Course Criteria—Combined Scores and Ranking (Teaching) (Continued)

Course	Defense related	Entry level	Senior level	Currency	DoD lecturers	Research related	Faculty practice	Unweighted score	Weighted score
CON 212	32	14	5	35	0	0	112	198	38.01
CON 106	4	158	0	23	0	0	52	237	36.82
CON 105	0	158	0	23	0	0	52	233	36.27
CON 104	0	158	0	23	0	0	52	233	36.27
GRT 201	48	0	14	35	0	0	92	189	34.72
CON 222	0	14	5	35	0	0	116	170	34.51
CON 223	0	14	5	35	0	0	112	166	33.61
CON 211	0	14	5	35	0	0	112	166	33.61
PQM 202	0	14	5	56	0	0	91	166	32.56
AUD 4120	0	7	5	22	0	0	120	154	32.22
AUD 4230	0	7	5	12	0	0	115	139	29.35
CON 201	0	14	5	55	0	0	77	151	29.23
CON 232	4	14	5	25	0	0	82	130	25.66
BCE 208	32	14	5	15	0	0	72	138	25.51
IND 103	0	32	9	25	0	0	47	113	19.94
CON 231	0	14	5	25	0	0	57	101	19.48

Summary

The following observations are readily apparent. First and most obvious, ACQ 401, the Senior Acquisition Course, is a "curve buster" or outlier, scoring nearly twice both the unweighted and weighted scores of the second-place course (CON 301). Second, the two sets of rankings, for teaching and for course development, are not very different; only 9 courses (out of 79) change 10 or more positions, with IRM 303 changing the most, from 40th on the "develop" list to 55th on the "teach" list.

Given the subjectivity of the ranking process and methodology, the ranking of an individual course is not very meaningful in itself. It does allow, however, comparative analysis (especially when one course is considerably different in ranking from another). Table 6-4 presents the number of courses, by level (e.g., "100" courses are generally Level I; "200," Level II, etc.) as they fall within the top, middle, and bottom thirds of the ranked lists. ACQ 401 has been excluded as an outlier and because it is not a Level I, II, or III course.

Table 6-4. Course Rankings by Thirds

	Top third (teach)	Top third (develop)	Middle third (teach)	Middle third (develop)	Bottom third (teach)	Bottom third (develop)
Level I	5	5	12	11	5	6
Level II	9	8	12	13	20	20
Level III	12	13	2	2	1	0

Notice that about half the Level I courses fall in the middle third of each ranking, with the other half split between the top and bottom thirds. About half of the Level II courses, which generally receive low scores for the entry-level and senior-level criteria, fall in the bottom third of the rankings. Level III courses for the most part fall within the top third of each ranking. In other words, as a group and on the basis of our criteria and methodology, Level III courses are most "core" and Level II least "core."

METHODS TO ESTIMATE CORE STAFF-YEARS

To estimate what part of DAU's staff and faculty is core, the minimum that should be maintained in-house, we began with the FY97 DAU Resource Management Office spreadsheet as a data source. This document provides detail on each consortium school's budget estimate, including staff-years of effort in support of the delivery of training. These data are arranged by school, by course, and by military, civilian, faculty, and nonfaculty staff-years of effort. The total number of in-house staff-years in support of DAU courses at consortium schools for FY97 was 564.4 (which excludes less than five staff-years of effort for DAU auditing courses, taught by the Defense Contract Audit Institute (DCAI) and not funded by DAU).[1]

The second element of estimating core staff-years is deciding what factor determines core, e.g., the percentage of defense-related competencies within a course could be used, then quantifying that factor for each course as a percentage, and applying that percentage to the course's staff-years. These data could then be summed for DAU as a whole or examined by course, school, or functional area. On the basis of our own analysis as well as discussions with study monitors and school representatives, we have developed several alternatives for estimating core staff-years. These methods are discussed in the following subsections.

[1] The total number of staff-years for DAU as a whole in FY97, excluding DCAI, was approximately 707.

Defense Related

From this perspective, core is synonymous with defense-related curriculum and considered to be equivalent in percentage to the faculty who teach that curriculum. To determine the amount of defense-related material within a course, we queried the defense acquisition knowledge database for nonduplicative competencies (keyword expressions), then computed the percentage that were defense related (had a "D" in the field indicating a defense-related competency).

Defense Related or Performance Based

In this alternative, core curriculum is defined to be that curriculum which is *either* defense related, *or* requires the student to be able to perform some task (vice having to know something to meet a particular competency requirement). As mentioned in Chapter 4, a logical assumption is that the most critical competencies for students to learn are those that are either defense related or performance based. The argument can be made further that more critical competencies are better taught by government personnel. To obtain a percentage score for each course in this regard, we queried the defense acquisition knowledge database, counting for each course the competencies that are either "defense related" or "do," and dividing by the total number of competencies. The result will be at least as great as the percentage for either criterion, and in many cases greater.

Faculty Practice or Currency

A third way to view what is core is to combine the two criteria rated most important by the Functional Board panel, "faculty practice" (the benefit obtained by faculty who are current or recent DoD practitioners), and "currency" (curriculum that is dynamic in nature, where currency is critical). We obtained a percentage score for each course based on these two criteria by using the maximum of the percentage score for currency for that course given by the rating panel, the percentage score for faculty practice, and the percentage obtained by adding the two percentages (high sum was 151.8 and low sum was 18.8), and then scaling the sums from 18.8 to 100. As in the case of the method discussed above, the resulting percentage will be at least as great as the percentage for either of the criteria.

Combination of Criteria

In viewing the work done by the panels to weight criteria and rank courses, we asked ourselves how we could equate a course's summary score with the percentage of the course that might be considered core. In doing so, we obtained a fourth alternative similar to the prior one by combining scores in the following way. Examining the seven criteria (which were used for relative ranking, not core determination per se), "Research related" received very low scores, since few courses involve or require research. In addition, less than one-third of all courses

received a nonzero score for "DoD lecturers." Although each is important in its own right, we felt that they could be excluded from consideration for combining criteria scores (their low scores would unfairly lessen any combined core score). In addition, two criteria—"Entry-level" and "senior-level"—were counteractive; a course scoring high in one would automatically score low in the other. Therefore we combined the two criteria into one: "Entry-level" *or* senior-level." The score for this criterion was taken to be the sum of the two individual scores. Finally, the percentage score ascribed to a course was taken to be the maximum of the four remaining criteria scores. As with the previous two methods, the resultant score will be at least as large as any individual score.

Summary

Table 6-5 sets forth the summary results for the entire DAU faculty and staff from applying each of the four different methodologies. (Appendix K contains the complete, by-course and by-school computation for each methodology.)

Table 6-5. Results of Core Staff Computation Methodologies

Methodology	Core staff-years	Percentage of DAU total
Defense related	192.1	34.0
Defense related or performance based	369.3	65.4
Faculty practice or currency	261.5	46.3
Combination of criteria	313.0	55.5

These computations can also be performed by school or functional area; those summary results are provided in Tables 6-6 and 6-7.

Table 6-6. Core Staff as Percentage of School Total Staff by Computation Methodology

Methodology	DSMC	ALMC	AFIT	All others
Defense related	41.5	31.2	23.6	30.7
Defense related or performance based	65.5	59.9	60.2	71.0
Faculty practice or currency	57.5	40.6	33.6	40.8
Combination of criteria	61.9	61.4	45.8	49.6

Table 6-7. Core Staff as Percentage by Functional Area (Mandatory Courses)

Methodology	Acquisition Management	BCE&FM	Contracting and Purchasing	Technical, Scientific, and Engineering
Defense related	37.1	34.3	6.5	45.6
Defense related or performance based	59.9	46.4	68.5	54.7
Faculty practice or currency	54.9	49.2	28.6	47.6
Combination of criteria	60.7	60.4	39.4	64.2

BCE&FM = Business Cost Estimating and Financial Management

The methodology described above, while providing precise numbers at the lowest levels of detail (by school, by course, and even by type of personnel), should not be applied at those levels; they are expressed here for illustration. The overall estimates, however, do provide a "minimum defensible core" and a feeling for the range of core faculty in total as well as across schools and career fields.

CONCLUSIONS

The issue of what courses and course development could be outsourced is not an easy one. As will be discussed in Chapter 7, some corporate and federal organizations contract out both areas, retaining in-house control of course development only.

Using a defense-specific acquisition knowledge base to determine core curriculum (and thereby associated faculty) would be easy if all defense-unique material were alone in several courses, but it is not. Moreover, there is relatively little material that is unique to the Department of Defense. At best, we can identify *defense-related* material, such as applying basic cost-estimating principles in a DoD setting. Also, the material is mixed within most courses, some in fact being defense related and the rest of a more general disciplinary or functional nature. Should DAU choose to split the material into courses that are either highly defense related or more disciplinary and functional in nature (perhaps as it moves to more modular, "just-in-time" training), then outsourcing would be more feasible as well as easier to decide on. Certainly DAU could not do this immediately, but might look to doing so in the future, as part of a long-term "business plan."

Our estimates of core curriculum and therefore of faculty who provide it, constitute a range of values for what might be considered core. The lower estimate (34 percent) can be used as a minimum defensible core, meaning the minimum

amount of curriculum and faculty that should be retained in-house under the FY97 set and configuration of courses.

Again, the methodologies and data described above lack precision and validity and should not be applied at the lowest levels of detail. Instead, decision makers should apply the quantitative findings in combination with other, more qualitative considerations.

Chapter 7
Comparisons with Other Models

INTRODUCTION

An important element of this study was the comparison of DAU with other training institutions and educational models. Best practices were sought, as were similar and common practices among leading training institutions. We examined the functions, organization, and operation of the traditional university, the corporate university, and other federal training institutions, three distinctly different educational models, but each having some similarity to DAU. In several cases we made site visits for personal interviews.

In the process of our study, we identified a number of elements of organization, structure, and operations that would permit meaningful comparison of DAU with the other models. These elements include mission and philosophy; governance, organization, and functions; facilities; staffing and outsourcing; curriculum; modes of training delivery; research; and financing. They were used to distinguish and assess the differences among the institutions we sought out for best practices. Our ultimate goal was to make comparisons and draw conclusions related to the organization, structure, and operations of DAU. These elements may not all apply to each institution, but they are the focus of our discussions within each of the three sections that follow.

UNIVERSITIES AND COLLEGES

The word "university" comes from the Latin *universitas*, which in the Middle Ages was used to indicate a group with a special purpose. The ancestors of today's universities were called *universitates magistorum et scholorum*, meaning guilds or unions of "masters" and "scholars." Early universities rejuvenated themselves by turning out more teachers, called "masters." A "bachelor" was merely a candidate for the teaching degree. To get a master's degree, or the later doctor's degree, the candidate had to demonstrate to superiors the absorption of a body of knowledge and competence in using it. In a ritualistic ceremony, the successful candidate was granted a degree called a *facultas ubique docenti* "the ability to teach anywhere." The phrase evolved into "faculty."[1]

The Random House College Dictionary (1980 edition) defines "university" as "an institution of learning of the highest level, comprising a college of liberal arts, a

[1] James L. Bess, ed., *Foundations of American Higher Education*, ASHE Reader Series, Needham Heights, MA: Simon & Schuster, 1991, p. 25.

program of graduate studies, and several professional schools, and authorized to confer both undergraduate and graduate degrees." *Random House* defines "college" to be "an institution of higher learning primarily providing a general or liberal-arts education," and also as "a constituent unit of a university, furnishing courses of instruction in a particular field of study."

Besides colleges and universities, another tier in higher education is that of the 2-year or community college. Two-year colleges began in this country around 1900, in large part to train workers to operate the nation's expanding industries. In the beginning they were privately supported, but by the 1970s most community colleges were comprehensive, publicly supported institutions.

The Defense Acquisition University is not a university in the traditional sense, but the two institutions do share common functions and purposes. DAWIA did require DoD to establish a university complete with a research requirement, perhaps indicative of a desire for education as well as skill training. In looking at colleges and universities, we sought to know how they were similar to DAU, and how and why they were dissimilar.

Mission

Universities and colleges usually speak of a three-part mission: teaching, scholarly research, and public service. Collectively, the most effort is spent teaching, and the least effort (though still considerable) is spent in the area of public service. Research varies considerably, both in terms of individual effort and institutional effort, depending on the type of institution.

The teaching mission of a university imparts an education to its students, which most experts feel is much more than just a collection of courses within specified disciplines. The goal of a college education is often described to result in "the whole person," one conversant in several disciplines and capable of contributing to society in many ways. In addition, other influences on students, such as association with peers and faculty and campus life itself, are deemed to be important.

Curriculum

A number of people and institutions have attempted to describe the kinds of knowledge college graduates should possess, and—as mentioned earlier—most speak of a "whole person." The American Association of Colleges identified the

following eight areas, together with "study in depth," considered to be basic to an undergraduate education:[2]

- Inquiry, abstract logical thinking, critical analysis
- Literacy: writing, reading, speaking, listening
- Understanding numerical data
- Historical consciousness
- Science
- Values
- Art
- International and multicultural experiences.

Most colleges and universities ensure that their graduates obtain such skills and knowledge through` the degree-granting requirements. Within a university, each college or school may have its own degree requirements, but there is also some common curriculum from which each graduate has taken courses. For example, English composition, some mathematics, and foreign language courses are common requirements, as is some minimum amount of course work in the arts, humanities, natural sciences, and social sciences.

Harvard University requires its students to take a core curriculum in six areas: foreign culture, historical study, literature and arts, moral reasoning, science, and social analysis.

> The philosophy of the Core Curriculum rests on the conviction that every Harvard graduate should be broadly educated, as well as trained in a particular academic specialty or concentration. It assumes that students need some guidance in achieving this goal, and that the faculty has an obligation to direct them toward the knowledge, intellectual skills, and habits of thought that are the hallmarks of educated men and women.

[2] James L. Bess, ed., *Foundations of American Higher Education*, ASHE Reader Series, Needham Heights, MA: Simon & Schuster 1991, p. 461.

> But the Core differs from other programs of general education. It does not define intellectual breadth as the mastery of a set of Great Books, or the digestion of a specific quantum of information, or the surveying of current knowledge in certain fields. Rather, the Core seeks to introduce students to the major *approaches to knowledge* in areas that the faculty considers indispensable to undergraduate education. It aims to show what kinds of knowledge and what forms of inquiry exist in these areas, how different means of analysis are acquired, how they are used, and what their value is. The courses within each area or subdivision of the program are equivalent in the sense that, while their subject matter may vary, their emphasis on a particular way of thinking is the same.[3]

Common to all colleges and universities is a fundamental, core curriculum. As with Harvard, it is not that set of curriculum alone, but the interaction with faculty and other students, and the ability to impart reasoning and questioning skills, that produce a well-rounded graduate. The basic mission of the university is to prepare this foundation, so that the individual can enter society and seek a profession, or go on to more specialized, professional study.

Governance and Organization

The authority to establish a college or university belongs to the state, which exercises it by forming through statute, charter, or constitutional provision an institution with a corporate existence and a governing board of trustees.[4] The organization of a typical university can be visualized as consisting of three major elements: the trustees, the administration, and the faculty. It can also be viewed as having three levels of organization: institutional (the board of trustees and the president), managerial (the administration), and technical (faculty, research, and students).

The board of trustees functions primarily in an advisory or oversight capacity, delegating to the administration and faculty routine decision-making and operational responsibilities. It also provides interface with the community at large.

The administration is headed by a president, and its size and complexity will vary with the size and scope of the institution. The following are typical in a large university. The president is responsible for effective overall operation of the university but usually delegates operational authority to other administrative officers. The provost or vice president for academic affairs has general policy oversight in all academic areas and works directly with deans of colleges and faculty members.

[3] Harvard University, *1996–1997 Courses of Instruction,* Cambridge, MA.

[4] Robert Birnbaum, *How Colleges Work*, Jossey-Bass Publishers, 1988, p. 4.

There are often vice presidents overseeing the following areas:

- Internal administration
- Financial management and budget preparation
- Student affairs
- Research
- Development and fund-raising activities
- Human resources
- Business and administration
- Legal affairs.

In addition, there may be vice presidents or other administrative officials in areas such as minority affairs, health sciences, communications, business and community relations, and agriculture administration.

To students, the most visible part of the university consists of the faculty, organized in departments within schools and colleges. UCLA, for example, has a College of Letters and Science and 11 schools (such as the School of Dentistry and the School of the Arts and Architecture). Ohio State University has 20 colleges and 2 schools. A dean typically heads a school or college. It is interesting to note that Harvard does not have a College of Arts and Sciences but instead refers to the Faculty of Arts and Sciences. Within that faculty are departments and divisions. In a similar vein, the University of Pittsburgh has an undergraduate College of the Arts and Sciences, but for graduate programs has the Faculty of Arts and Sciences.

Usually each school or college (or faculty) has several departments either belonging to it or associated with it; for example, at Ohio State University the Department of English is part of the College of Humanities. The department is usually the lowest level at which faculty are grouped into strongly related academic subspecialties (e.g., mathematics) and also the level at which tenure is granted. The level above department (either school or college) represents a collection of various academic areas with some common bond (e.g., chemistry and mathematics within a college of mathematical and physical sciences). Departments have "heads" or "chairmen."

Staffing and Outsourcing

The following paragraphs discuss the staffing, and use of outsourcing, to achieve the major functions of a college or university. These functions have been grouped

into two categories: the nonacademic functions, which include all the administrative and support functions that a university requires to operate, and the academic functions, especially teaching and research.

STAFFING OF NONACADEMIC FUNCTIONS

In our discussions with several universities, we learned that most administrative functions are provided by permanent, in-house staff, and most support functions as well. The exceptions to this seem to be in the areas of information systems support (which is outsourced in many places on a limited, as-needed basis and at a few smaller institutions on a recurring basis) and support services such as housekeeping and food service. East Carolina University, in Greenville, NC, as an example, has contracted out the management of its housekeeping services (although most housekeepers are university employees) and dining services. In general, however, colleges and universities use in-house personnel to perform their support functions.

STAFFING OF ACADEMIC FUNCTIONS

Teaching is provided through the faculty. While some of the faculty are tenured, others are not tenured but are on a tenure track and considered to be "full" faculty members.[5] Other nontenured faculty include full-time instructors (usually without doctorates) and part-time "associate" or "adjunct" staff. At the institutions we contacted, and based on our research in general, virtually all faculty are employees of their institutions. In the strictest sense, however, they might be considered "contract employees" since their employment vehicle is often a contract. However, this does not fit the general sense of the term "outsourced."

At Ohio State University, for instance, all faculty—tenured, nontenured, and part-time—receive "letters of offer," typically two-page letters describing general terms of employment and basic university policies. The few details within a letter of offer are supplied by the individual departments, which receive a general template from the Vice Provost for Faculty Personnel. Letters of offer have the legal status of a contract but are simpler and more flexible. (Ohio State prefers "letter of offer" to the term "contract" as a descriptor.)

Denison University is a small, private college located near and counterpart to the mammoth Ohio State University. Denison refers to its employment documents as contracts, although they are only one-page letters containing information such as rank, benefits, and general responsibilities; detailed duties and responsibilities are handled on a personal basis at the department level.

[5] Tenure is a status of permanence, subject to some terms and limitations, granted selectively to faculty; standards of the American Association of University Professors prohibit full-time employment of instructors beyond years without tenure, so those who are not granted tenure prior to that period must leave.

Course development, like teaching, is the function and responsibility of the faculty. Most college courses follow from long-established disciplines. Administrators and trustees may decide to expand, contract, or delete some academic areas, but faculty members determine the content, and when necessary, update the content. In terms of responsibilities, the only difference worth noting is that part-time or adjunct faculty have little or no input into course content decisions (unless they have been hired specifically to provide instruction in an area in which the university lacks expertise).

The research function at colleges and universities is performed either by individuals as part of their contract (i.e., financed by their salary) or by an individual or group and financed by research funding from the university or by funding from other sources (e.g., federal grant). In the former case, the individual does research either for personal advancement, personal satisfaction, or to advance the state of knowledge, but in any case the research is clearly the "in-house" performance of a university employee.

The motivation for the other category of research may involve some individual incentives, but most often the research is done to enhance university prestige. In this case of course, the university wants to claim responsibility. At times, however, the research may depend upon expertise not resident within the university. The university may then contract for that expertise or for separate research that will allow completion of the university's project. While outsourcing for research may take place, it is done in concert with a more primary in-house effort.

Modes of Training Delivery

By far the most common instructional mode is the traditional residential form. Some colleges and universities are expanding their capabilities with forms of distance learning (for example, the University of Maryland University College offers courses through "computer conferencing"), but this is minuscule compared to their resident instruction. There are also a few "virtual" universities, and while they do fill a niche, they have not yet established themselves as fully comparable alternatives to residential colleges and universities.

Research

Research is a major function of universities. As mentioned above, it is done by individuals for their purposes as well as by institutions for theirs. The following are the major reasons why research is done in colleges and universities:[6]

- For institutional prestige
- For competitive advantage or financial gain

[6] Leslie H. Cochran, *Publish or Perish: The Wrong Issue*, Step Up, Inc., 1992.

- For individual recognition or award
- To enhance the knowledge base
- To contribute to instructional objectives
- To maintain or demonstrate competence
- For personal satisfaction and accomplishment.

The amount of research done varies by type and size of institution. A 1991 publication reported that at universities, approximately 40 percent of faculty say they are "heavily involved" in research, about twice the percentage for faculty at 4-year colleges. Only 5 percent of faculty at 2-year colleges are heavily involved. Overall, about 24 percent of all faculty claim to be heavily involved in research. The percentages are higher for faculty members with one or more publications in the past 2 years: approximately 70 percent for university faculty, 40 percent at 4-year colleges, and 14 percent at 2-year colleges.[7]

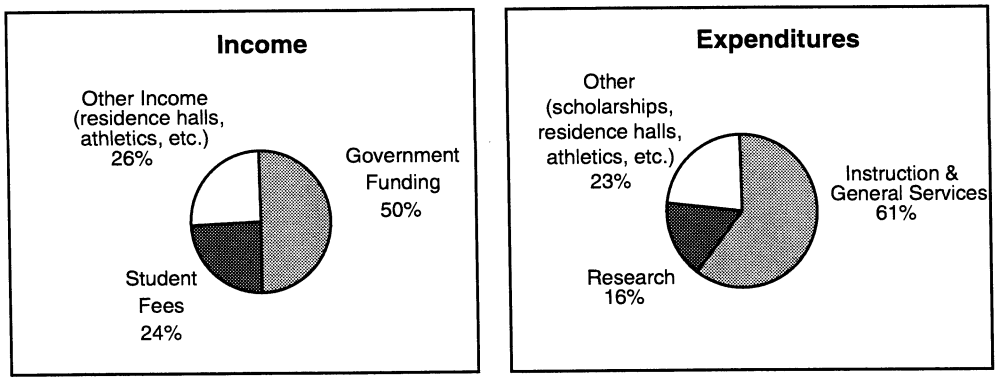
The importance of research at colleges and universities cannot be overemphasized; it is probably the most important factor in a faculty member's quest for tenure, and high-visibility research is the easiest way for an institution to demonstrate high-quality performance.

Financing

Colleges and universities receive their funding from two or three primary sources. For private colleges, most funding comes from tuition; publicly supported institutions receive substantial state funding in addition to tuition. For example, Ohio State University, a large state-supported research university, had a total 1996–97 budget (income and expenditures) of $1.531 billion. Of that amount, about $380 million was income from, and expenditures for, university hospitals. Considering hospitals a "wash," the sources and the uses of the remaining $1.15 billion can be depicted as in Figure 7-1.

[7] James L. Bess, ed., *Foundations of American Higher Education*, ASHE Reader Series, Needham Heights, MA: Simon & Schuster ; 1991, p. 324.

Figure 7-1. Ohio State University Income and Expenditures, 1996–97



By contrast, Denison University, a private residential liberal arts college, receives most of its funding (approximately 80 percent) from tuition, with the remainder from endowments and other gifts. It spends much less—about 5 percent of its budget—on research, with the remainder split much like Ohio State between instructional support and other items.

At Northern Virginia Community College, a "little more than half" of its funding comes from the Commonwealth of Virginia, a "little less than half" from tuition, and a small amount from grants and other sources.

As Henry Rosovsky, former President of Harvard University, has pointed out, a characteristic of American university life different from that of other cultures is its competitiveness. Colleges and universities in the United States compete for faculty, research funds, students, and public attention.[8] In the past they operated as educational institutions first and businesses second. But with competition becoming more intense and technological advances producing both a new curriculum and a new means of instruction, colleges and universities are exploring ways to stay competitive and ways to increase revenue. Distance learning via on-line courses or video presentations is one possible means of adding to an institution's student base. Another practice becoming more widespread is that of "partnering" with commercial entities or the public sector in providing "tailored" instruction or materials. Many universities have established offices just to develop such practices. As examples, the University of Minnesota has established its Executive Development Center, and Ohio State University has formed the President's Council for Outreach and Engagement. The bottom line, however, is that while looking for new sources of revenue, the main university and college product is teaching done in residential form.

[8] Henry Rosovsky, *The University, An Owner's Manual*, W. W. Norton & Co., 1991, p. 31.

Summary

Colleges and universities serve individual and the public interest by providing a broad education which is the foundation for lifelong learning. The following are common elements and characteristics of college-level institutions:

- A required core curriculum ensures that the graduate receives an adequate foundation of knowledge and abilities (especially reasoning and communicating).
- A resident, campus setting provides the student a full life experience, interaction with others, and exposure to diverse thoughts and peoples.
- Faculty are subject-matter experts and therefore determiners and developers of course content.
- Full-time and part-time faculty are employees of the college or university, hired through a simple process using a similarly simple contract-like document.
- Outsourcing is used only for nonacademic functions, and then only to a limited extent.
- Colleges and universities operate as businesses; private institutions are financed by tuition ("fee for service"), and public institutions through a combination of tuition and government support.
- Research, a mainstay of universities, is done for institutional reasons (mainly prestige) and for individual reasons (advancement, recognition, etc.). In either case, research is done to advance the state of knowledge, and in a few instances for financial gain.

CORPORATE UNIVERSITIES

Corporations have always provided for training of their workforces, but only in recent years have "corporate universities" become in vogue. Whereas traditional workforce training is job and skill specific in nature, the training provided by corporate universities generally deals more with corporate culture and strategy, and usually crosses business and production-line boundaries. Jeanne C. Meister, in her book *Corporate Quality Universities*, points out that corporate universities have expanded training from enhancing technical skills to the following objectives:[9]

- Building a competency-based training curriculum for each job classification.

[9] Jeanne C. Meister, *Corporate Quality Universities*, New York: Irwin Professional Publishing, 1994.

- Providing all levels of employees with a common shared vision of the company and its values and culture.
- Extending training to the company's entire customer/supply chain.
- Serving as a learning laboratory for experimenting with new approaches and practices for the design and delivery of both formal and informal learning initiatives.

Ms. Meister also says that corporate university curriculum generally promotes employee development in three broad areas:

- Corporate citizenship, which inculcates in employees at all levels the culture, values, traditions, and strategic goals of the company.
- Contextual framework, which gives all employees an appreciation of the company's business, its customers, competitors, and the best practices of others.
- Core workplace competencies, such as learning skills; basic reading, writing, and computational skills; interpersonal skills; problem-solving skills; leadership and visioning; and self-development and self-management.

In our review, we visited three major corporate universities recognized as leaders in their fields and received extensive information from several other best-practice institutions. Most of our data and the information described were from five corporate universities: General Electric's Management Development Institute (Crotonville), Tennessee Valley Authority University, Motorola University, Southern Company College, and Bank of Montreal's Institute for Learning. The following subsections describe them.

General Electric's Management Development Institute (Crotonville)

General Electric's Management Development Institute at Crotonville, NY, was one of the first corporate universities. Like General Electric (GE) itself, Crotonville has changed its focus and methods drastically since its beginning. The early emphasis on training individuals in business skills has been replaced by action-oriented, team-based problem solving relevant to actual GE issues.

GE today is comprised of 12 unique businesses, all global (for example, lighting, medical systems, aircraft engines, and the National Broadcasting Corporation). Each business "differentiates" with its own technical, leadership, and skill training; Crotonville is considered to be an integrator across those diverse businesses.

MISSION AND PHILOSOPHY

Crotonville's mission is to create, identify, and transfer organizational learning to enhance GE's growth and competitiveness worldwide by

- providing professional growth and development for GE employees;
- transferring best practices, corporate initiatives, change acceleration concepts, and learning experiences across the businesses;
- partnering with the businesses to educate, develop, and build relationships with customers and external constituencies; and
- broadcasting GE's culture and values.

Crotonville's primary training target is GE's "white collar" employees. The training serves two primary purposes: leadership development and agent of change.

- Leadership development training is accomplished through Core Leadership Development Sequence courses, conducted in four stages. The first stage offers an acculturation course for all newly hired college graduates and an introductory Professional Development Course for selected employees with about 3 years of service. The remaining courses in Developmental Stages II, III, and IV are for handpicked managers and potential managers at key career transitional points.
- Courses that assist in facilitating change at GE include Work-Outs, Best Practices, and Change Acceleration Processes. GE's philosophy is that "you can't anticipate all changes that might occur, so you must be prepared to respond—better than your competitors."
  - ➢ Work-Out sessions, often called Town Meetings, are one way in which GE involves employees at all levels in dealing with particular problems and issues; Crotonville courses help managers conduct Work-Out sessions. One particular form of Work-Out is used to transfer best practices across GE. Both forms of Work-Outs are designed to implement "real-time" change.
  - ➢ Crotonville also teaches Change Acceleration Process courses, which provide managers with tools to assist in implementing cultural changes. GE believes that any change in the way business is done requires both a quality technical solution and acceptance by employees; GE's Change Acceleration Process is meant to obtain employee buy-in.

In addition to Core Leadership Development Sequence, Work-Out, and Change Acceleration Process courses, Crotonville offers electives to complement core material. Electives are in the areas of finance, human resources, marketing and sales, personal development, and GE corporate business development.

Crotonville courses place a great deal of emphasis on action-oriented learning, bringing real GE experiences into classrooms, and—when appropriate—working with real business teams, both to learn and to assist in solving real problems. Crotonville's courses are generally GE specific and strive for a cultural mix across businesses and functions. Course delivery requires the involvement (in instruction and delivery) of role-model GE leadership and leadership-effectiveness feedback. Each course is designed around the following "building blocks:"

- Competitive opportunities in global markets
- Corporate initiatives
- Competitive best practices
- Boundaryless leadership
- Cultural diversity
- Commitment to integrity.

Subject matter developed and taught at Crotonville is also taught at GE sites around the world. But just as courses at Crotonville are intended for a mixture of students coming from around the world and from diverse business areas, courses taught elsewhere are presented to similar audiences. For example, a course given in Asia is not just for local employees; GE brings employees selected for the course from around the world to experience Asian culture and GE's function within it.

Crotonville also serves as a source of expertise for business units that may need help or consultation. Business areas with problems can bring them to Crotonville and use faculty "brainpower" to work out solutions.

Some research is done at Crotonville, but most of it focuses on what Crotonville does and how effectively it does it. Publication may result, but only internal to GE.

FACILITIES

Crotonville is located on the Hudson River about 35 miles north of New York City. Its 52-acre campus consists of a residence hall with dining and conference facilities, an education building, a clubhouse for social activities, an administrative building, and extensive recreation facilities. In addition to providing GE

courses, Crotonville is a world-class conference center, hosting business and professional conferences on a fee-for-service basis.

STAFFING AND OUTSOURCING

Staffing at Crotonville consists of about 25 full-time staff, who teach some, perform administrative tasks, and act as program managers. Each course has a program manager to handle course administration and evaluation. GE feels it is important to keep ideas fresh at Crotonville, so program managers rotate every 2 or 3 years to and from business units. The staff also includes contracted ("adjunct") faculty. They can be full- or part-time, come from universities (e.g., Harvard), or be independent consultants, and generally have had a long association with GE. Crotonville prefers not to use "big name" faculty but rather those more likely to adapt their instruction to GE methods and philosophy.

Instruction is also provided on a part-time and as-needed basis by internal GE employees, from all levels of management. The internal/external instructor mix is about 10/90 percent for early program stage courses, but changes to about 70/30 percent for the senior programs.

Course development is contracted, but only in the sense of what Crotonville calls "mechanics." Crotonville staff either provide the input or work closely with contracted faculty as they develop the course and its materials. Besides adjunct faculty and course development mechanics, Crotonville also contracts in technical areas such as multimedia and simulation support, and for facilities support services.

Quality assurance is part of GE's "360-degree feedback" program, and within courses, is the responsibility of Crotonville program managers. For their part, instructors have to identify "visible results" that should be expected from course attendees.

MODES OF TRAINING DELIVERY

The significant majority of Crotonville's training is done in residence, either at Crotonville or in on-site classroom settings around the world. Distance learning at Crotonville is minimal, and present plans call for it to remain that way. A limited part of early-stage financial management training is available by correspondence, and Crotonville is currently exploring videotapes as a means of ensuring that employees meet course prerequisites (so all students begin their on-site Crotonville courses on the same footing). GE is hesitant to expand distance learning, however, feeling that face-to-face contact is critical to their courses. They do use video-teleconferencing to allow students working on real-life business problems to discuss those problems with the field managers and executives who actually have had to deal with and solve them.

FINANCING

Crotonville operates as a business; that is, each course has a specified tuition, priced like similar university courses and paid for by the business unit sending or sponsoring the student. Each major course is operated like a business by the course program manager, who markets the course, reports revenue and expenses, etc. In addition to tuition, Crotonville receives revenue as a conference center and for consultation provided to business units.

Tennessee Valley Authority University

The Tennessee Valley Authority (TVA) is the largest public producer of electrical power in the United States, covering seven states in the Southeast. Its 16,500 employees are spread among 12 major suborganizations or business units. Historically, TVA education and training was fragmented and independently run, not directly accountable to the corporation. TVA University (TVAU) was formed to help all employees understand TVA goals and assist TVA in meeting those goals; to integrate and coordinate all education and training, both technical and nontechnical; and to be a strategic tool for change.

MISSION AND PHILOSOPHY

The stated missions of TVAU are

- to provide employees with continuous learning opportunities to maintain high individual performance and be full partners in achieving TVA business goals; and
- to offer TVA customers the continuous learning opportunities and related services provided to employees.

Technical education and training has been and continues to be conducted locally and paid for by specific business units. TVA University courses fill a gap that had existed between employee learning and TVA's corporate goals. TVA leadership determined that to bridge the gap, learning was needed in four main areas: business, environmental, personal, and career.

These areas are addressed through TVA University core curricula, which in turn focus on four TVA continuous learning domains: interpersonal skills, continuous improvement skills, leadership skills, and TVA business skills. Specific curricula have been established for four employee levels: non-supervisory, front-line supervisors, mid- to senior-level line managers, and executives.

In addition to core courses, TVAU is responsible for

- craft apprenticeship programs,
- various specialized training (eight areas),
- electives,
- student interns,
- Weekend Academy (for elementary school children),
- on-site degree programs, and
- TVA scholarships.

TVAU manages technical training provided through 800 different courses to 115,000 participants per year at numerous locations and provides core training (15 to 20 different courses) to 20,000 participants per year at 25 to 30 locations. Courses are taught at Knoxville and Chattanooga campuses, at TVA facilities in other major cities in the Southeast, and at power plants as well.

ORGANIZATION AND FUNCTIONS

The university operates as a "matrixed structure" with "dotted line" relationships among the TVAU staff, the TVA Executive Council, and the TVA Education and Training Managers' Forum. TVAU is headed by a president who oversees a corporate staff consisting of a general manager and managers for the following areas:

- Design, Development, and Faculty Management, whose functions and responsibilities include core curricula content, course design and delivery, and faculty management.
- Education Support Services, with functions that include the following:
  - Information technology
  - Financial management
  - Contract administration
  - Performance reporting
  - Facilities management
  - Registration, scheduling, materials
  - Work/life planning centers.

- Assessment and Evaluation, whose functions include quality control for TVAU core courses, demonstration of a return on investment, evaluation services, needs assessment for curricula and services, and cultural assessments.

- External Programs, whose functions include the following:

  - Internal communications, such as the annual catalog, quarterly schedule, corporate newsletter, e-mail, and information kiosks.

  - External communication, which includes the TVAU brochure and video, conference booklets, press releases, and journals and professional publications.

  - Management of all external training (to customers and others).

  - Management of TVA's student programs, including the internship and scholarship programs and the Weekend Academy.

The TVA Executive Council has approximately 15 members, consisting of vice presidents and senior vice presidents of line organizations and company human resource officers. The council's roles include setting TVAU missions, purposes, and policies and providing guidance on program design and delivery as well as resource allocations. The Managers' Forum is made up of representatives from line organizations who bring local needs and concerns to the attention of TVAU and recommend solutions when warranted.

STAFF, FACULTY, AND OUTSOURCING

TVAU's total staff size is about 30, all but four of whom are TVA employees. The four positions that are currently outsourced are three graphic designers and one faculty administrative support. TVA is an "exempted" federal agency, meaning it does not have to comply with OMB Circular A-76 to justify in-house performance of commercial activities.

There are currently about 25 faculty members. Half are permanent, professional trainers; the other half are mid- to senior-level managers brought in from line organizations. Managers attend a 2-day faculty workshop before being "certified" as instructors and then are scheduled to teach periodically over the next year. This requires them to leave their line organization duties frequently. This is a contentious issue in many organizations, but TVAU feels very strongly that the benefits of having managers as teachers far outweigh the disadvantages.

A team of four does course design, using subject-matter experts from line organizations. TVA generally prefers not to buy "off-the-shelf" courses. Considerations that drive this preference include cost, time constraints, how well they meet TVA

learning objectives, and their external marketability (TVA wants the freedom to buy and then market items to their customers).

Modes of Training Delivery

Much of TVAU's training is delivered in residence. However, concerns expressed by line mangers about time away from the job are causing TVAU to explore the use of distance learning. At present, TVAU uses some multimedia delivery (paper and video) for local training and wants eventually to use self-paced PC-based instruction when appropriate. But TVAU sees cultural barriers, such as many low-skilled jobs and employees, to impeding the extent to which they can employ technology. TVAU is also developing arrangements with the Executive Education Network for satellite (business) training, and with the University of Tennessee for an executive MBA program to be offered on-line.

Financing

TVAU core curriculum is centrally funded from the corporate budget. TVA looks at TVAU as an "investment" and allocates 2 to 3 percent of total payroll (all elements) for TVA courses. Organizations sending employees to the mandatory training must absorb the lost time and productivity, a fact that does not sit well with many line organizations. Technical and elective courses are funded by line organizations. TVAU also markets its services to business lines, customers, and other entities as a way of obtaining revenue.

Motorola University

Motorola is one of the world's leading providers of wireless communications, semiconductors, and advanced electronic systems and services. Motorola is located in 50 countries, and nearly half of its 142,000 employees work outside the United States.

Mission and Philosophy

The missions of Motorola University are similar to those of other major corporate universities in that they extend well beyond training provided to individuals. The following are Motorola University's stated mission and the roles the university plays in executing that mission:

> To be a major catalyst for change and continuous improvement in support of the corporation's business objective. We will provide for our clients the best value, leading edge training and education solutions and systems in order to be their *preferred partner* in developing a Best in Class work force.

To accomplish this mission, Motorola University plays the following roles:

- Agent of change
- Teacher of values
- Value-added service provider
- Tester/modeler of organization and individual development
- Education and development provider
- Knowledge creator and integrator.

The training and education policy at Motorola requires that each employee receive a minimum of 5 days of job-relevant training and education each year. Individuals develop annual training plans with their managers; they can opt to go elsewhere for training, and business units can elect to use outside vendors instead of Motorola University. This practice helps ensure that Motorola University provides relevant, cost-effective training.

CURRICULUM

The university offers about 350 courses; and among these are about 80 core courses. Core courses contain material considered to be central to learning requirements of Motorola employees. Core courses are prescribed (but not mandated) for each of seven career types (e.g., engineers, marketing) and are identified as "should attend" either within first 2 years in a position, as continuing development, or based on organization need. Core courses are characterized by

- directly linking to one or more of Motorola's key beliefs, goals, initiatives, or fundamental objectives;
- containing content that applies to at least two Motorola sectors;
- targeting population in at least two Motorola regions; and
- having content specific to Motorola.

ORGANIZATION

Motorola University is headed by a president and has directors for three regional areas (Asia; the Americas; and England, France, and Scotland); a Director for Learning Development and Research; and Directors for Planning, Quality, and Communications, Emerging Technologies, Consulting and Training Services, Human Resources, and Support Services.

Motorola University has a total of seven permanent campus sites. The campus at Schaumberg, IL, is the university's largest, with 19 classrooms, 36 breakout rooms, 8 laboratories, and an auditorium seating 120. Motorola also has two other campuses in the United States (the Phoenix campus is nearly the size of Schaumberg's) and four in Asia. In addition there are regional delivery centers that operate somewhat like mini-universities, with regional training consultants who consult with site managers, make presentations, communicate new information, and evaluate local feedback.

STAFFING AND OUTSOURCING

Instructors are "contracted for" from employees, university faculty, and other sources. While there are long-term faculty, this arrangement allows many Motorola employees to rotate to and from their business sectors. Course design is accomplished largely by in-house staff (designers) supplemented by Motorola subject-matter experts, external "content experts," and contract developers. Courses are designed to train competencies determined by the business units (their customers). The course design process tries to be as rigorous as a manufacturing process. The design process steps are analysis (the hardest and longest, since curriculum must cover a worldwide business); design; development; formative evaluation with pilot tests; implementation; and maintenance, evaluation, and alteration.

FINANCING

Motorola spends a total of $170 million (direct expenses, not travel or student salary) on all forms of training. This represents about 3 to 4 percent of its total payroll. In addition to Motorola University, the Motorola Corporation has two other forms of training, human resources and technical (within business sector). Motorola University accounts for about $72 million of the total. Business units fund the university directly through tuition for courses ($34 million), direct payments for other services ($11 million), or indirectly through company overhead ($27 million).

MODES OF TRAINING DELIVERY

Motorola has conducted internal research that examined the viability of a "virtual university" versus a "bricks and mortar" campus. That research revealed that their students believe having "a place to learn" is very important. As a result most Motorola training is conducted in a classroom setting.

KNOWLEDGE MANAGEMENT

The company and its customers believe that the university should "know everything," so the university's role in knowledge management includes the capture,

storage, transfer, and utilization of information. Elements of the university's knowledge management function include the following:

- Motorola University Press
- Media services
- Print technologies
- Knowledge bank (emerging technologies)
- Research
- Motorola Museum of Electronics
- "Tribal stories" capture
- Knowledge/learning networks.

RESEARCH

Motorola University's research function (under the Director for Learning Development and Research) provides for research and consulting as well as institutes, conferences, and seminars to support the corporate areas of management and quality, technology, and market development.

Southern Company College

The Southern Company is an Atlanta-based amalgamation of six utility companies, all located in the southern United States, with five other affiliated companies, national and international. The corporation has over 30,000 employees and maintain offices in 13 countries. The Southern Company is not content to maintain its current share of the energy market but believes it needs to be aggressively competitive to survive. As a result, the company sees requirements to practice business better and expand globally.

MISSION AND PHILOSOPHY

In 1988 company leaders saw a need to prepare for future industry changes. They initiated task forces in the areas of cost, marketing, structure, and culture. Their "vision for change" meant emphasizing three factors:

- One company (instead of many)
- Core company values
- "Our business is customer satisfaction."

Leaders felt the basic issue to be addressed, as changes were about to occur, was the relationship between employee satisfaction and business unit performance. In addressing this issue, the company decided to focus on leadership (assessment and development), using a "360-degree feedback" of information, and creating a corporate college. The fundamental mission of the college was to "champion and accelerate learning." In addition, the college was to respond quickly to business needs with flexible, effective, and competitively priced training and education solutions.

The original charge to the college required it to function in the following ways:

- Be the "corporate glue."
- Act as a "two-way megaphone."
- Develop leaders.
- Maintain and share a business acumen.
- Seek out and share best practices.
- Energize people.

The staff and faculty are formed into nine teams (e.g., business skills, executive education, custom solutions), supporting the functions of the three major groups. They perform the following functions (key processes):

- Strategic business planning
- Budgeting and billing
- Marketing
- Project management
- Course delivery.

The college places special emphasis on executive education, which is designed to be fast paced and high impact. Executive education normally deals with real company issues and seeks to apply what's been learned. The executive curriculum, often taught by company executives, must be relevant ("just-in-time," not "just-in-case" knowledge). The focus is on strategic leadership and presumes that the students already have the required basic skills. When external faculty are used, they must be experienced and comfortable leading executive education sessions.

The college believes that the following can be used to accelerate learning:

- Encouraging experimentation and incenting learning efforts
- Using technology
- Delivering high-impact "classroom" experiences
- Using action learning approaches (projects, temporary assignments, etc.)
- Committing to an aggressive best practice capturing and sharing process
- Developing organizational learning self-sufficiency throughout the company
- Committing time to reflection
- Importing new people (new knowledge, beliefs, attitudes).

ORGANIZATION

The college operates under the guidance of a board of advisors, nine senior officers from the amalgamation of companies, who are charged with linking the college to the company's agenda and priorities, defining competencies for the future, ensuring that appropriate processes and connections exist, and serving as champions of leadership development at all levels.

The campus, located at the Aberdeen Woods Conference Center in Atlanta, has a residence hall with 223 rooms, 48 classrooms with 13 breakout rooms, and dining and other facilities.

The Southern Company College comprises three overlapping college groups that satisfy different instructional needs:

- *Group 1—Residency courses.* These courses are typically 1 to 3 weeks in duration, have a fixed tuition rate (for business, leadership skills, etc.), and serve a clearly defined corporate need and satisfy specific business objectives.
- *Group 2—Business unit and individual development courses.* These courses satisfy particular business unit needs as well as individual needs (as opposed to the more corporate-wide Group 1 courses). There are about 50 to 60 such courses, and they are tuition based. The Southern Company typically contracts for instructors.

- *Group 3—Customized solutions.* These offerings include distance learning, customer training, and community work. This college group supports major change projects and other similar initiatives.

STAFFING AND OUTSOURCING

The college staff and faculty consists of 32 full-time professionals and administrative associates, 6 sponsored chair positions (1- to 2-year positions filled by people from line organizations), and various administrative temps, consultants, university faculty, subject-matter experts, executives, and senior managers.

FINANCING

The total annual budget for the Southern Company College is about $14 million, spread roughly equally among the three groups. Residency courses (Group 1) and business unit and individual development courses (Group 2) receive just over half of all revenue through tuition payments. Customized training and education (Group 3) receives 36 percent of the revenue, through service contracts, allocations, and direct billing, while the remainder (12 percent of all revenue) comes from corporate overhead.

Bank of Montreal's Institute for Learning

The Bank of Montreal was Canada's first chartered bank (1817) and is currently its third largest, with approximately 35,000 employees. The Bank of Montreal is not yet global in scope, but it has a North American presence with bank affiliations in the United States and Mexico. Our exposure to the Bank of Montreal's Institute for Learning (IFL) was limited to hearing from its executive director, Mr. James C. Rush, at the symposium "Corporate Universities Enter the 21st Century," at Motorola University, September 1996. While we did not obtain the same level of detail as with other corporate universities, the goals, missions, and philosophies of IFL are worthy of mention because they tend to reinforce several common themes.

MISSION

The Institute for Learning (IFL) was founded to support the professional development of its employees, particularly executives, and to build alliances with academia, which would assist in that pursuit. It operates under a charter with missions much like other corporate universities, and it recognizes a set of core competencies that its learning focuses on. The core competencies of the Bank of Montreal are management and leadership, technology, risk management, capital markets and corporate finance, and sales and customer service.

Professional development for managers and executives is designed to assist them in managing in a rapidly changing environment and operating in a global context. The institute sees itself building a cadre of future bank leaders.

The charter that IFL operates under asks that it provide the following:

- Contribute to individual, team, and bank learning and performance.
- Serve as primary cultural integrator.
- Facilitate organizational change.
- Serve as an incubator for new ideas.

The IFL is also similar to other corporate universities in terms of extent of funding and employee training. The average training days per employee was 5.4 in 1995, total training investment was $62 million, and training as a percentage of payroll was 3.2 percent.

FACILITIES

The institute is housed in its own dedicated facilities, since the bank feels that "bricks and mortar" are essential to bringing people together. The residential courses try to maximize three areas of diversity: geography, hierarchy, and line of business.

ACADEMIC PARTNERSHIPS

Its associations with academia are twofold. The more recent effort, begun in 1996, is an MBA program in Financial Services, offered to approximately 35 high-potential middle managers. The program is residential at IFL and is done through the partnership of IFL, Dalhousie University, and the Institute of Canadian Bankers.

The other academic alliance involves Northwestern University and the University of Western Ontario, who assist IFL in its Advanced Executive Program. This 3-week residential program is for executives and senior managers.

Summary

The number of corporate universities has been growing exponentially. While there are many variations in purpose and configuration, there are also several recurring themes and common traits, especially among the larger and more widely respected

corporate universities. There are exceptions, of course, but we have identified the following characteristics as being common to most corporate universities:

- Corporate university training is in addition to, and often separate from, traditional skill-based training.
- Much of the training focuses on organizational values, cultures, traditions, and strategic goals.
- A campus ("bricks and mortar") or place to bring diverse employees together is crucial.
- Broad corporate university training is relevant to students, who as employees are also stakeholders in what the company is doing and where it is headed.
- Besides imparting curriculum material itself, corporate university training is designed to provide a continuous learning capability for the employee (somewhat similar to a college education providing the foundation for lifelong learning); this asset benefits both the company and the individual.
- Part of the training shares best practices (across functional areas) from within the company and from outside.
- In order to survive and prosper, companies are looking to global markets; corporate universities provide a global outlook and ask employees to understand and participate in the process.
- Corporate universities have strong corporate leadership commitment and personal involvement.
- A corporate university is an agent of change for the corporation.
- The university is seen as a "two-way megaphone," not just broadcasting messages to employees, but also listening for messages from employees and passing them on the company leadership.
- Faculty are usually contracted for, either from within the company or from outside sources. (The process is uncomplicated, much the same way as colleges and universities hire their faculty.)
- A major purpose of the university is to promote interchange among diverse groups of employees (across hierarchy and functional areas).
- The corporate university operates as a separate, self-sustaining business entity and ultimately has to prove its worth.

OTHER FEDERAL INSTITUTIONS

We examined several federal institutions engaged in the education and training of government workforces. The purpose of this review was to determine whether there were models and best practices within other departments of the federal government that would provide insight, or would be applicable, to the DAU. LMI researchers visited and interviewed officials from the following institutions:

- Federal Acquisition Institute
- Office of Personnel Management
- U.S. Department of Agriculture Graduate School
- Federal Aviation Administration
- Federal Aviation Administration Academy
- Federal Aviation Administration Center for Management Development.

The next section discusses each institution listed above, focusing on many of the elements of comparison discussed on page 7-1. Following the discussion of the individual institutions, we will summarize the findings from these visits as they relate to DAU.

Federal Acquisition Institute

The Federal Acquisition Institute's (FAI's) charter, which was reconfirmed in the Federal Acquisition Reform Act of 1995 (FARA), includes the following responsibilities:

- Promote and coordinate government-wide research and studies to improve the procurement process and laws, policies, methods, regulations, procedures, and forms relating to acquisition by the executive agencies.
- Collect and analyze acquisition workforce data.
- Analyze the acquisition career fields to identify competencies, duties, tasks, academic prerequisites, etc.
- Coordinate and assist in recruiting of highly qualified candidates for acquisition fields.
- Develop instructional materials in coordination with private and public acquisition colleges and training institutions.

- Evaluate the effectiveness of training and career development programs for acquisition personnel.
- Promote academic programs in private colleges.
- Facilitate interagency intern and training programs.

While this charter is substantially broader than FAI's current operations, FAI is seeking opportunities to expand its operations. Legislation currently being prepared in Congress will support that objective. According to FAI officials, they have had to limit their staff and focus because of lack of funding. Even though the FAI charter includes all acquisition career fields, FAI has had to limit its functional area focus to contracting and procurement. Although FARA lists research prominently among FAI's responsibilities, FAI's current research effort is relatively modest because of a limited research budget. FAI has recently received a grant that will permit an increase in their research.

Until recently, FAI's primary activity was determining competencies and developing courses and instructional materials that was then provided free of charge to other federal agencies. These are in high demand because the acquisition workforces of most federal agencies are too small to justify their own course development capability. FAI uses both internal staff and contractors to develop courses and materials. According to FAI officials, the agencies that obtain the instructional materials use contractors for delivery in virtually all instances. This also may be due to the limited size of their acquisition staffs.

FAI has recently expanded its educational role, moving from course development to course delivery, when it established a "virtual university." In February 1997 the FAI On-Line University began delivering learning opportunities pertinent to the contracting and purchasing career fields through various media. The On-Line University is open to all government employees and to interested private citizens. Under one media option, the On-Line University uses self-paced courseware through its Individual Learning Center (ILC). Currently, there are three course offerings in the ILC. Another option is instructor-led courses using on-line "chat" rooms. The On-Line University also provides on-line information access and performance support. FAI has established a partnership with Arizona State University to develop a degree granting capability for the On-Line University. It also has agreements with the National Association of Purchasing Management to use On-Line University courses toward that association's credential and participation requirements. FAI is coordinating its efforts with DAU's distance-learning initiative and has discussed the possibility of establishing FAI On-Line University courses as equivalents to the DAU courses.

FAI officials advised us that there are no acquisition-specific schools in the federal agencies outside of DoD because of the small size of their acquisition staffs.

Accordingly, the other federal educational institutions LMI reviewed did not specialize in acquisition training and education.

Office of Personnel Management

Until 1994, OPM operated an extensive human resources training program, much of it internally staffed. At that time OPM operated training courses in 22 business areas at 8 regional training centers, with an annual budget of approximately $48 million. In 1994, OPM decided to divest itself of most of its human resources training courses. According to the OPM officials we interviewed, this decision was driven by two factors:

- OPM's senior leadership concluded that classroom delivery of training was not one of OPM's core functions. This policy review was prompted by guidance resulting from the National Performance Review.
- A need to reduce internal staffing to meet reduced end strengths.

After reviewing all the courses and business areas, the OPM leadership decided that they could divest themselves of everything but the Federal Executive Institute (FEI) and the Eastern and Western Management Development Centers (MDCs). According to the OPM officials with whom we met, the rationale for retaining those activities was that they were "developing the next generation of leaders for the federal government."

Once the decision was made as to what courses and training programs would be divested, OPM had less than a year to effect the changes required to reduce organic staffing. The OPM leadership considered four options:

- Contract to a private firm.
- Let the employees involved in the courses/programs form an Employee Stock Option Plan (ESOP) and continue to perform the functions.
- Merge with an existing nonappropriated fund instrumentality (NAFI).
- Turn over the courses/programs being divested to a NAFI.

The first option, contracting to a private firm, was unsuccessful because OPM was unable to find any companies that had the required capabilities (in terms of operational size and nationwide presence) and that were interested in OPM programs. OPM officials found that the commercial firms that deal in education and training are, by and large, local operations with only a few employees (usually 3 to 20). The president of the company is often the founder, and the employees are usually retired from the company or agency for which they conduct the training. As a result, the majority of these companies focus on a specific topic or functional area and geographical region. OPM officials said that the four or five national

companies involved in training and education on a broader scale were invited to make proposals, but they declined. However, the OPM officials also suggested that these companies may have been deterred by the fact that OPM's operation was losing money at the time, and because the implementation period was less than a year away at that point.

The second option, letting the employees form an Employee Stock Option Plan, received limited support from the OPM employees. From other LMI research, we know that forming an ESOP takes a high level of interest and initiative from the employees, plus a few strong employee leaders to make it happen.

Of the two remaining options (merge with an exiting NAFI or turning the programs over to a NAFI), the latter was chosen because the U.S. Department of Agriculture (USDA) Graduate School, a NAFI of the USDA, stepped forward and offered to absorb the courses and programs that OPM was divesting. The transfer was successfully achieved within the short time frame required by OPM. This represented a substantial increase in the Graduate School's mission, in terms of budget, staff, and scope of offerings. According to OPM officials, their annual budget at the time was $48 million, whereas the Graduate School's was about $30 million. The USDA Graduate School hired as full-time staff about 160 of the approximately 200 staff members that OPM employed for its divested programs. Most of these staff members were (and are) planners and managers, not instructors, involved with program development, marketing, and management. OPM's general mode of operation for the programs and courses it divested was to contract actual course delivery to local providers.

As noted above, OPM still operates the Federal Executive Institute and the Eastern and Western Management Development Centers. OPM officials estimated the combined annual graduates of their remaining programs to be 6,000 to 8,000 annually:

- The Federal Executive Institute, located in Charlottesville, VA, was established by a 1968 executive order signed by then President Lyndon B. Johnson. Its primary mission is the development of generalist career executives in federal, state, local, or international governments. The FEI focuses on the generalist role of the senior government executive. Its programs (for example, the 4-week Leadership for a Democratic Society program and shorter seminars of 3 to 5 days) are conducted in residence. Since its founding, some 15,000 senior executives have attended FEI programs. In addition to permanent faculty, the FEI faculty includes Executives-In-Residence (senior leaders in government on 2-year appointments from their agencies) and adjunct faculty from academia, private consulting, and training organizations.

- The Eastern and Western Management Development Centers are located in Lancaster, PA, and Aurora, CO, respectively. The mission of the MDCs

is "... to foster the development of a sense of corporate community within the government's leadership and to improve the performance of government by providing a unique residential, interagency environment for the systematic development of current and future leaders in the areas of leadership, management and the effective implementation of public policy." [10] In 1997 the MDCs offered 29 different 1- and 2-week residential programs. Each is presented in an interagency setting with managers and executives from up to 30 other government agencies. MDC programs are designed and kept current by in-house faculty and staff. Guest faculty from government, academia, and the private sector provide up-to-date information and perspectives on federal government policy and leadership.

U.S. Department of Agriculture Graduate School

The USDA Graduate School is a NAFI of the USDA, affiliated with the Department of Agriculture but receiving no funds from it. The school is supported entirely by tuition fees.

MISSION

The USDA Graduate School states its mission and operational philosophy as follows:

> The USDA Graduate School's mission is, through education, training, and related services, to assist government organizations to increase their efficiency, effectiveness, and productivity and to assist individuals to improve their job performance and pursue lifelong learning.
>
> The School was created in 1921... to provide continuing education for research scientists of the Department of Agriculture but soon was expanded to serve other government personnel. The founders believed that the school primarily would serve people who had already completed a formal education. Today the name "Graduate School" reflects who we are rather than what we do. The school continues to serve adults who have "graduated" from full-time schooling. In addition, many of our students begin their adult educational experience with training or courses while on the job.[11]

Prior to July 1995, the USDA Graduate School's operations were conducted almost entirely in the Washington, D.C., metropolitan area. When OPM transferred most of its training units to the Graduate School, it began operating a nationwide network of training facilities. The Graduate School also acquired OPM's National Independent Study Center (career-related self-study courses) and Career Development Programs (residential leadership training programs and training needs

[10] MDC homepage (http://www.opm.gov/mdc/html/) dated April 29, 1998.

[11] USDA Graduate School web-site (http://grad.usda.gov/org.html) dated April 24, 1998.

assessment). Although the curriculum is oriented to the federal government and most students are U.S. Government employees, significant numbers of nongovernment and foreign students also attend. By the school's estimates, the Graduate School annually conducts 7 percent of all government training, offering more than 1,500 different courses and serving in excess of 100,000 students. Approximately 400 of the school's course offerings have been certified by the American Council on Education's Program on Non-Collegiate Sponsored Instruction as appropriate for college credit. The Graduate School also provides extensive logistical support for conferences when requested by other agencies.

The Graduate School activities in other mission areas such as research, publication, and consulting are very limited. The school is not funded to conduct research. At present it maintains a limited publication capability. In the past it published the *Grad School Press*, but this was discontinued because the students were able to find other academic publications to get their papers published. While it does not have a consulting mission, the Graduate School does participate in team learning with other agencies, primarily in the area of organizational development.

The Graduate School's diverse curriculum can be generally grouped into topical areas, as follows:

- Skill and job competency training: Offerings in this category include areas such as communication skills, acquisition grants and property management, accounting and finance, English and writing, computer skills, management and supervision, office automation, and secretarial and business administrative skills.

- Professional and leadership development: Examples of these are the Senior Executive Service Candidate Development Program, the Executive Potential Program, the Women's Executive Leadership Program, and the New Leader Program.

- Specific area programs, such as the following:

  - The International Institute, which is the international arm of the Graduate School. It provides professional training and educational services to employees of foreign governments, international organizations, nongovernmental agencies, and employees of U.S. agencies engaged in international activities (e.g., the Agency for International Development, the U.S. Information Agency, and the Department of the Interior).

- The Government Audit Training Institute, whose scope of training includes the "Yellow Book," or generally accepted government auditing standards. The institute serves all government levels of the auditing community: federal, state, and local.

- The National Independent Study Center, which offers a curriculum of self-study correspondence training courses largely designed to improve job skills or to develop new ones in areas such as personnel management, supervision, written communication, financial management, and the basic skills.

Approximately 50 percent of the Graduate School's annual training plan consists of scheduled courses published in the school catalog. The other 50 percent of the operation responds to training needs and requests of state, local, federal, and international governments. An example is the Internal Revenue Service (IRS) Modernization Training, a multiyear project now underway.

ORGANIZATION

There is no true "bricks and mortar" aspect to the USDA Graduate School. Programs are offered nationwide and are administered through seven regional training centers (Philadelphia, Atlanta, Chicago, Dallas, San Francisco, Honolulu, and Washington, D.C.). The regional training centers are mutually supporting. They share strategy for course development and all contribute to curriculum review. Each regional training center is headed by a director (usually a GS-12) and staffed by five to six program managers and a similar number of support personnel. Program managers are responsible for a curriculum area, deciding who will teach courses as well as how to develop and market courses. Taking input from curriculum advisory committees, faculty, students, and the community, the program managers determine the scope and direction for their curriculum area. The program managers also serve as members of national curriculum teams in their specialty areas. Support personnel in the regional training centers accomplish the logistical tasks (registration, preparation of course materials, etc.) associated with delivery of training.

The Graduate School regional centers operate their own registration. There is also an Office of the Registrar of the Graduate School in Washington, D.C., which functions as a central registry to record course completion and to generate official transcripts. At present, the regional databases are not linked to the central database.

The Graduate School is also equipped to train globally to meet specific training needs or to support areas with significant workforce populations. The school will take an existing course "on the road" or develop or tailor material for delivery to a specific customer "at the site." However, foreign students from other countries usually come to sites in the United States for training. The Graduate School has

recently begun to offer a few courses via distance-learning technologies. In 1997 only about 2 percent of the school's offerings were available on the Internet. School officials anticipate significant development in this area in the next 5 years but estimate that in the foreseeable future only about a quarter of the curriculum will be delivered via distance learning.

FINANCING

As already noted, the Graduate School receives no federal funding and is supported entirely through tuition fees. The total annual budget is approximately $50 million, about half of it coming from individual students paying their own tuition and half from federal agencies paying the tuition of students. For example, at the time of our interviews the IRS was paying the tuition of employees attending courses in computerized data systems.

STAFFING AND OUTSOURCING

The Graduate School employs more than 1,200 part-time adjunct faculty who have government, academic, and private-sector backgrounds and experience. They are contracted directly to the Graduate School on the basis of individual course offerings, but the Graduate School maintains long-term relationships with most of its adjunct faculty. These faculty are considered to be the school's subject-matter experts, and virtually all of them are, or were, practitioners of the skills they teach. Curriculum development is largely contracted out, although the Graduate School does have a few organic curriculum developers. Each curriculum area has an advisory committee and an extensive advisory network that includes the adjunct faculty. The advisory committees validate course ideas, critique courses, and provide recommendations on new courses.

Federal Aviation Administration

The Federal Aviation Administration (FAA) has two formal training institutions: the FAA Academy located in Oklahoma City and the Center for Management Development (CMD) located in Palm Coast, FL. Before visiting those sites, we met with Dr. Carson Eoyang, Director for Training at FAA headquarters, who discussed FAA training in general and provided an overview of training at the two FAA schools from a headquarters perspective.

The FAA Academy provides technical training for air traffic controllers, flight safety inspectors, security personnel, equipment maintenance personnel, etc. Most of the faculty and staff are government personnel, though there are some contract employees, but these individuals generally have FAA experience. Many contract personnel have been hired recently as a result of FAA training program growth. The FAA has found it faster and easier to hire a contract employee to meet what could be a short-term need than to seek additional in-house personnel.

The academy is organized into divisions aligned to support major "customers." These customers represent the FAA lines of business: air traffic control, equipment maintenance, security, etc. The FAA believes that government personnel are required for the academy's courses because they are technical, specific, and sophisticated (e.g., air traffic control) and because they need to reflect the most current technical and administrative changes. The FAA likens this training, required to meet operational requirements, to DoD's military training. Another similarity to DoD is that the FAA believes it wise to rotate faculty periodically, like military personnel who rotate assignments.

The CMD, unlike the FAA Academy, provides nontechnical courses for supervisors and managers. It is largely a contract operation with a small civil service staff for oversight, but it also involves the participation of several local universities. The FAA believes that contract faculty can be used because much of the instruction involves generic skills, such as those taught in the 1-week "first-line supervisor" course, rather than the technical and operational skills taught at the FAA Academy.

In addition to the FAA Academy and the CMD, FAA customers (i.e., the field agencies and business lines) can independently arrange and negotiate "out-of-agency" training (e.g., with Boeing or with a local university). For example, air marshal training is obtained using the Federal Law Enforcement Agency's training facility in Georgia.

Within the FAA, technical training is generally mandatory for individuals, though some may be optional (such as an individual's desire for cross-training); management training is required for new supervisors and managers, and there are electives that may be taken (e.g., labor relations).

The FAA believes strongly in a dedicated, "bricks and mortar" campus. Strengths include economies of scale (for administration, logistics, etc.), synergy across functional disciplines, and institutional integrity (common standards, evaluation, curriculum design, and architecture). Also, since the FAA is strongly unionized, the superintendent at the FAA Academy can negotiate with one faculty union on behalf of all the lines of business (as opposed to individual schools negotiating separately and individually).

While "bricks and mortar" are considered important, the FAA is sensitive to student travel, per diem, and salary costs, and so is rapidly growing a distance-learning program that includes interactive video teleconferencing, computer-based instruction, and correspondence courses. The FAA is also looking at developing on-line training modules to meet specific workforce needs—to eliminate the need for a student to attend, for example, a week-long course just to receive a portion of the instruction.

At the present time, the FAA can afford to expand both residential training and distance learning. This funding anomaly is due to recent airline disasters that resulted in congressional emphasis on improving FAA operations. The FAA training budget for formal programs, $95 million in FY97, grew to $125 million in FY98.

Federal Aviation Administration Academy

The FAA Academy delivers technical training and related support services for the agency and other aviation organizations, both domestic and international. Its major missions are to

- develop and conduct FAA's technical courses, both resident and nonresident;
- serve as the central funding authority for all technical training;
- plan and coordinate all distance learning for the FAA; and
- provide professional instructional systems services.

The academy offers 1,196 different courses in seven different areas (Airports, Logistics, Training Support, Air Traffic, Airway Facilities, Regulatory Standards, and Aviation Security). The academy trained more than 22,000 students through 2,477 classes in FY97, with resident training provided to more than 15,000 students (71 percent of the total). Customers include FAA line organizations, DoD, and state and foreign governments, as well as the commercial aviation and cellular industries. Instruction is accredited by the North Central Association of Colleges, and some colleges and universities grant credit for FAA training. The FAA Academy campus is part of the Federal Aeronautical Center and operates in over 20 buildings with 112 classrooms and 187 labs.

STAFFING

There are a total of 659 staff at the FAA Academy. Of this number, 70 percent (462) are FAA personnel, most of whom are instructors. All but two of the 197 contract employees are instructors. Contract instructors are not concentrated in certain areas but are interspersed among all areas.

The contract instructors are provided through an instructional services contract with the University of Oklahoma; the contract has stringent requirements for instructor qualifications, including having had FAA experience. Many contract instructors are retired FAA personnel who taught at the academy during their federal service. Contract personnel are not tenured faculty at the University of Oklahoma, but in a special status with some but not all the benefits of other university personnel.

The University of Oklahoma contract stemmed originally out of necessity from the 1981 air traffic controllers' strike and continued until 1985. Since then there have been three contract competitions, with Oklahoma retaining the contract in each case. A number of firms have bid, or have expressed an interest in bidding, for such a contract, including several "8A set-aside" firms.

The FAA Academy (like the FAA headquarters staff) believes that a portion of the in-house faculty should be permanent (currently about 30 percent of the total) and the rest "rotational." Rotational staff serve 2- or 3-year instructional tours at the academy and then return to their line organizations.

Course development is done in-house, but with a two-phase process heavily involving school customers. The business line (customer) determines requirements, then the academy develops curriculum in response to those requirements.

EVALUATION

The academy evaluates its instructional and support services through the use of end-of-course critiques and follow-up surveys of students and supervisors. Some evaluation is done following graduation by outside sources (e.g., air traffic controllers must be certified by an independent agency).

FINANCING

Funding for the academy totaled more than $86 million in FY97, of which $18.5 million (21.5 percent) was spent on support contracts. Student travel is a significant portion of the $23 million spent for "training management," and the FAA would like to decrease that amount through increased distance learning.

The FAA Academy is centrally funded, receiving two kinds of funds: Core 1 and Core 2. Core 1 funds are provided annually for elements of the academy that support all lines of business, while Core 2 funds are allocated quarterly for training tailored to particular business line needs (and "charged" to the line organizations that receive the training or services). Core 2 funds are more variable, since line-of-business entities have the authority to spend those funds for other requirements, or they can choose to obtain training from other sources. The academy also provides courses on a reimbursable basis to some customers, but most training is done through Core 1 and 2 funding. Individual training is also charged to the business service of the student who attended, with costs determined by the length of training and other factors.

RESEARCH

The academy does some "applied research and development," such as development of air tower simulators and a Boeing 727 simulator. Academy officials said that they maintain an "informal" R&D capability to keep instructors and materials

at state of the art. The FAA relies on formal research, however, from an independent R&D Technical Center in Atlantic City that awards grants to companies and universities in support of the FAA mission.

DISTANCE LEARNING

The FAA Academy is very active in two forms of distance learning: computer-based instruction (CBI) in the form of videodisk, and interactive video teletraining (IVT).

The main use of CBI is to supplement resident courses, especially by providing prerequisites for resident courses. This can reduce the length of a course (and therefore the number of days a student is away from home—a strong union consideration).

CBI at the FAA Academy is handled by 12 personnel who do acquisition, manage contracts, assist with maintenance, and operate help lines. When a line organization determines the need for a computer-based course, it contacts the academy. The academy finds a vendor who can convert course material to computer-based mode. The vendor and FAA line personnel work to construct a prototype course, which is then tested at the academy; after any necessary modifications, the academy purchases sufficient copies of the computer disk and distributes them to the field.

Each FAA site has a site administrator for CBI. Individual courses also contain basic Computer Management Instruction (CMI), which was developed at the academy. Having the CMI means that vendors do not have to establish that capability, thereby reducing course development costs. The FAA also works with OPM, which prequalifies CBI vendors. As a result of these efforts, the FAA estimates course development costs are one-fourth to one-third of costs in the commercial sector.

Interactive video teletraining is conducted at the FAA Academy using one-way video and two-way audio. It operates out of one studio, with one or more instructors and an assisting engineer. There are 31 receiving sites, including regional offices, the Center for Management Development, the R & D Technical Center in Atlantic City, and the FAA in Washington, D.C. Currently there are 30 different courses available through IVT, varying in length from 2.5 to 46 hours. In the past, courses have been received simultaneously by 1 to 26 sites, with from 12 to 591 participants. Future plans call for 26 more download sites.

Federal Aviation Administration Center for Management Development

The FAA's CMD is a federal government, academia, and private-industry partnership of about 160 people that annually trains over 8,000 FAA supervisors and managers.

BACKGROUND

CMD began operations in 1971 on the campus of Cameron University, in Lawton, OK. By 1987 it was determined that Cameron could no longer accommodate CMD requirements, and an open competition was held for a new location and new academic affiliation. Embry-Riddle Aeronautical University won the contract and, as part of the contractual arrangement, constructed facilities to house CMD. These facilities were then leased to the FAA for a 10-year period, and that lease was renewed in 1997. Instructional and other support contracts are for 5-year periods.

CMD trains over 8,000 FAA employees annually, mostly supervisors and managers. The kinds of courses taught by CMD are categorized as Organizational Change (25 percent), Supervisor/Manager (22 percent), Team Training (21 percent), Labor Management (17 percent), and Other/Special Needs (15 percent). About 61 percent of courses are delivered at CMD and 39 percent at field locations, a split that CMD officials consider to be "about right."

FACILITIES

The campus of CMD is a large, self-contained facility consisting of classrooms, dormitories, and recreational facilities adjoining each other. There is also a nearby outdoor "challenge course," that CMD uses in team-building courses (such as labor/management relations).

ORGANIZATION AND STAFFING

The partners in the CMD effort are as follows:

- The FAA, with seven on-site personnel to manage training operations. In addition to the director, the staff includes a budget/contracts manager, a student services coordinator, and four program managers who oversee contract operations in their areas: distance learning, classroom delivery/course development, evaluation, and external (fee-for-service) work.
- Embry-Riddle Aeronautical University, which leases the center to the FAA and, with a staff of about 70 people, provides facility and support services (hotel and cafeteria).

- Education Networks International, which provides technical support services such as media (graphics and video production), library, research and evaluation, administrative and word processing, and health awareness (about 27 people in all).

- The Florida Aviation Management Development Associates (FAMDA), a private-sector management development and training organization, which serves as the instructional services contractor. FAMDA itself is a joint venture between American Systems Corporation (which provides about 60 percent of the approximately 50 instructors), and the University of Central Florida's College of Business Administration (which provides the remaining 40 percent of instructors).

- Ronald K. Vetter, who provides a three-person staff for electronic maintenance and property control services.

The FAA stipulates requirements for the instructors whom FAMDA obtains and uses. The requirements include a minimum of a masters degree (within specified areas), at least 3 years of hands-on management experience, and a rigorous evaluation of teaching skills. FAA experience, while considered desirable, is not mandatory, and only two current instructors have previous FAA experience. Broader contractor requirements include being proficient in action-based (experiential) learning, curriculum development, and distance learning (both interactive video teletraining and computer-based training).

FAMDA operates with a director and five associate directors for

- administration and contracts,

- product development,

- operations (primarily scheduling and resource assignment),

- faculty development and quality, and

- special programs (fee-for-service development).

Each course has a course director, but in the future CMD may go to "content cluster coordinators" as course curriculum becomes more modular. CMD envisions this change as a result of the need to meet specific customer requirements and increased distance learning.

The FAA deems the CMD partnership a success in large part because of the contract vehicle, which provides for a relatively stable operating environment, and the fact that FAMDA has management personnel on-site to handle problems and make decisions. FAMDA can also subcontract easily and quickly as needed to meet small exigencies. The relationship among FAA and all the contractors is

described as collaborative and allows for frank discussions. In addition, the FAMDA contract is cost-plus-award-fee (based on performance), which motivates FAMDA to excel.

COURSE DEVELOPMENT

Course development is a systematic process emphasizing relevant training and measurable outcomes (which are specified and evaluated). Course development is also done in two phases; first, the Headquarters FAA Office of Human Resources and CMD personnel, responding to customer feedback, determine requirements. Then, instructional designers from FAMDA develop the appropriate curriculum. CMD also works closely with customers to develop fee-for-service courses These typically take about 6 months to complete, including prototype delivery.

When queried about subject-matter experts, CMD managers replied that they generally do not consider instructors to be the subject-matter experts; instructors facilitate delivery of the instruction, the content of which is determined by subject-matter experts who are in the field and at headquarters.

FINANCING

In 1993, the FAA intensely scrutinized the partnership and contract operation of CMD. The FAA concluded that such an operation was beneficial and cost effective but decided that future activity should be guided by a business plan. The business plan, created in 1994, requires the majority of CMD funding to come from fee-for-service customers by 2003. Thus far, this goal has been adhered to closely. Currently CMD is centrally funded for general courses and is reimbursed by line agencies for specialty training.

CMD's business plan actively seeks to compare CMD's per-student per-day costs to those of other training institutions. Where comparisons can be made, CMD's computations indicate that CMD is less costly. CMD's "in-residence" cost is $162 per student per day, compared to $299 for the Xerox Institute and $310 for OPM. CMD's "field delivery" cost per student per day is $51, compared to $178 for Motorola, $131 for IBM, and $85 for the General Services Administration.

In FY97, CMD conducted $1.8 million in fee-for-service business, above money appropriated and funded through the FAA. In addition to fee-for-service training, CMD tries to lease its excess facilities and space for private-sector conferences and other purposes. CMD also hosts conferences and workshops for its customers.

In addition to seeking to increase revenue, the FAA and CMD both emphasize the following as ways to reduce training costs: competitive bidding for instructional and other services, field or on-site course delivery, and alternative delivery systems (distance learning).

DISTANCE LEARNING

Distance learning is currently done at CMD through print-based correspondence courses, some computer-based technology application (e.g., Managing Diversity in the Workplace, a CD-ROM course), and satellite-based courses delivered by the FAA Academy's IVT facility in Oklahoma City. However, CMD reports that its customers are experiencing too many problems with satellite training (technological, cost, and student acceptance). CMD's largest customer, Air Traffic Control, prefers classroom instruction and will accept some computer-based instruction but does not like satellite delivery.

Distance learning is considered most valuable for satisfying course prerequisites. For example, the 2-day labor relations course requires completion of specified computer-based instruction modules prior to attendance.

RESEARCH

Research per se is not done, although CMD has a collaborative relationship with the Center for Creative Leadership in Greensboro, NC, and has also worked with Polaroid Corporation in areas termed by CMD to be "applied creativity." The contract with FAMDA requires professional development of instructors and includes funding for that purpose.

Summary

Although the acquisition function occurs throughout the federal government, besides the Defense Acquisition University, there is no other federal "bricks and mortar school of acquisition." Also, from the federal agencies we talked with, it appears that there is no other federal training institution directly comparable to DAU. Rather than simply recount what we learned from the agencies we visited, the following are summary observations having application to DAU:

- The Federal Acquisition Institute, which currently focuses only on the contracting function of acquisition, is aggressively expanding its course delivery role through distance-learning technology. This presents opportunities for DAU to partner in the delivery of contracting courses with FAI's On-Line University.

- Although the Office of Personnel and Management divested itself of most skill-based training, it did retain executive career development and leader development (similar to that done by corporate universities), and it operates those training programs with a mix of in-house and contract staff.

- The USDA Graduate School offers general skill-based and management training, which allows the school to contract for both instructors and course development.

- The FAA Academy may be the institution most similar to DAU. It offers training in technical areas unique to its industry, having parsed out more generic training, which the FAA Center for Management Development provides. The academy partners with academia for contract instructors, albeit all former FAA employees. In-house instructors are a mix of permanent and rotational faculty, and distance learning is growing.

- The FAA Center for Management Development is an almost totally contracted partnership of government, academia, and private industry, teaching general managerial courses. Customers determine course content, and instructors are regarded as facilitators of instruction rather than as subject-matter experts. A growing portion of the FAA CMD training is conducted on a fee-for-service basis.

CONCLUSIONS

From the institutions we observed and the models they represent, DAU appears to be least like the college/university model, shares some characteristics of corporate universities but is not a corporate university, and is unique among federal training institutions as a deliverer of acquisition training.

Colleges and universities serve to provide individuals with broad knowledge and the foundation for professional skill training, a foundation that most members of the career acquisition workforce are presumed to already have. Resident, campus life with active interchange among students and between students and faculty is considered a key part of the college experience. The mission of a university also includes research, mainly for the general good but also for institutional prestige; research areas are often esoteric and not in response to specific needs of either the university or larger society. The areas of education within colleges and universities are well-established disciplines, usually dealing more with theory than with practice, and faculty are clearly the subject-matter experts.

Corporate universities offer training to supplement technical, skill-based training, in areas that provide all levels of employees with a common shared vision of the company's strategies, values, and goals. Resident training and the mixing of diverse employee elements is considered to be important, and strong leadership commitment and personal involvement are critical factors in the corporate university role as agent of change and "two-way megaphone." Faculty are usually contracted for, either as facilitators of company-developed instruction or as subject-matter experts in specific areas.

Federal training institutions vary widely in the training they conduct; DAU is unique among them, although there are lessons to be learned from the other institutions. OPM, for example, successfully divested itself of skill-based training, choosing to retain only its executive development programs. The FAA has parsed its curriculum into specialized, FAA-unique courses and more generic

management courses, and in so doing has allowed for the contracting out of each. The FAA Academy teaches its highly technical courses using tenured and rotational in-house instructors and an academic partnership that provides contract instructors (albeit all former FAA employees). The FAA Center for Management Development demonstrates that a partnership among the federal government, academia, and private industry can work to provide general management training using essentially all contracted-for employees.

As a final note, we observed that several corporations said that they funded their corporate universities (including the costs of employee technical training) at "between 2 and 3 percent of employee pay." For purposes of comparison, DAU total funding in FY97, including estimated military salaries, was approximately $108 million. Using the DoD career acquisition workforce (approximately 105,500 employees), 2.5 percent of their pay and benefits ($6.9 billion) is $172 million. Using the defense acquisition workforce in the broadest sense—i.e., personnel in either acquisition organizations or specialties (approximately 377,000 in FY97)—their pay and benefits total $16.3 billion, 2.5 percent of which is $408 million.

Chapter 8
Conclusions and Recommendations

INTRODUCTION

The Office of the Under Secretary of Defense for Acquisition and Technology asked LMI to recommend a structural framework for DAU that identifies core functions and faculty and is derived from the body of knowledge basic to defense acquisition. The previous chapters discussed results of those specific taskings, and this chapter contains summary conclusions and recommendations. We do not address technological changes, except to note that they are taking place and that DAU is already taking advantage of them. We did, however, take into consideration for our major recommendation recent pronouncements by the Secretary of Defense and USD(A&T) about likely changes required in training the acquisition workforce.

CHARACTERISTICS OF CURRENT OPERATIONS

DAU, as it currently functions, is essentially a contracted operation with the headquarters establishing contractual arrangements with 13 different DoD entities. It is not a consortium in the purest sense, because member institutions do not share equally in decision-making processes, and in some instances they may not participate at all. Training is generally skill and specialty oriented, with limited overlap among stove piped career fields. Good operational policies and procedures are in place for course design, review, etc., although the process has been hampered by the level of detail at which functional boards have wished to participate. Auditor training, much like the independent auditor function, stands apart from other career fields since funding for auditor courses is not provided through DAU headquarters. Also, auditors meet external requirements and standards, with DAWIA certification more a formality than a meaningful career attainment. Research is not widely done (DSMC is the exception, as far as the amount done by any school goes), nor has OSD or industry placed much demand that it be done by DAU, and no central mechanism exists to fund or manage a consortium-wide research program. Many member schools regard their faculty as subject-matter experts and proper determiners of curriculum; however, DoD policy gives that role primarily to functional boards. DAU is moving strongly and properly to distance learning to complement resident instruction and to satisfy the growing need for "just-in-time" and modular training.

DEFENSE ACQUISITION KNOWLEDGE BASE

As discussed in Chapter 4, the most utilitarian means of determining the DAKB was to capture all available competencies and use them, together with meaningful attributes, to create a relational database. The database, reflecting 6,100 competencies and 3,300 unique keywords, serves as a "point-in-time" tool for analysis and was used in this study to help determine core curriculum and faculty. We believe that such a database should be institutionalized and maintained.

CORE FUNCTIONS

In our analysis, we established definitions and criteria for core functions and determined that the functions currently performed by DAU are all essential, in that their performance either derived from law, or that similar institutions customarily perform them in meeting their missions. We also concluded that except for a few inherently governmental functions at DAU headquarters, there are no functions that could not be outsourced. However, it would not make practical or economic sense to outsource the administrative or support functions currently split and performed at the separate schoolhouses. If DAU were consolidated into one or two large campuses, contracting for support services could be done.

In an aggregate sense, the primary functions of DAU—course development and teaching—can also be outsourced; control of course development is the only absolute in-house requirement. Our investigation into organic courses is detailed in Chapter 6 and summarized below. Research is also addressed separately.

CORE CURRICULUM AND FACULTY

Teaching and course development are essential functions of DAU, so "core" in this context is synonymous with "organic." Since DAU courses generally contain a mix of disciplinary and functional material as well as defense-related and non-defense-related material, it was impossible to distinguish easily between courses that absolutely must remain in-house and those that need not. We could, however, make relative comparisons among courses as to how "core" they are. Our methodology ranks the FY97 set of courses from highest to lowest, by first establishing criteria for "coreness," weighting those criteria, scoring each course according to each criterion, and finally summing the weighted scores (for both teaching and course development). The Senior Acquisition Course (ACQ 401) had by far the highest rating. Level III courses tended to rank high on the list, and Level II courses generally ranked low.

As with curriculum and courses, there was no way to determine faculty positions that could not be outsourced. We did, however, develop and apply a quantitative methodology for estimating what part of DAU's faculty and their support staff

might be considered core. This was done using four different factors, or assumptions, to determine the core portion. The results provide a range of values for what might be considered core (34 to 65 percent), and the lower estimate can be considered the "minimum defensible core," at least according to the FY97 configuration of courses.

RESEARCH

The law (DAWIA) addresses research, twice; in one instance, the Secretary of Defense is directed to establish a "defense acquisition university structure to *provide for* ... research and analysis of defense acquisition policy issues from an academic perspective (emphasis added)." In the other, the law asks that the "university mission" include "*development of* ... research, and publication *capabilities* in the area of acquisition (emphasis added)." Taken literally, DAWIA does not specify that research must be conducted in-house, (i.e., by DAU personnel), only that the capability be developed and provided for. On the other hand, establishment of a university (prior to the widespread establishment of corporate universities) would seem to imply that Congress and other DAU founders intended an organic research mission.

In its present form, except for the master's-granting Senior Acquisition Course (ACQ 401), there is no intrinsic requirement for research within DAU; faculty are, for the most part, facilitators of instruction who do not need to do research for the same reasons as university faculty. We believe that the use of one or two visiting professors from academia or industry at each consortium school, as is done at the Army Logistics Management College, would be more than sufficient to stimulate and involve DAU faculty to the extent required.

Whether research is appropriate for DAU ultimately depends on the *need* for research, which can come about in two ways: the *external* demand for research (from OSD, academia, industry), which DAU can either satisfy directly or assist in satisfying indirectly, and the *internal* need for research, which will exist only to the extent that DAU intends to be a preeminent academic institution.

Externally Generated Research

Satisfying an external demand for research, from OSD or from others, requires a mechanism to capture or solicit research projects and then to see to their resolution. This can be done through organic or through external sources, depending on the nature of DAU as an institution. DAU faculty would presumably be involved in either case. Also, much of the external research could be performed on a fee-for-service basis. The mechanism for such a process, however, does not exist today.

Internally Generated Research

An internally generated need to do research comes about when an institution decides to become preeminent in its field or when it seeks to have preeminent faculty. In the former case, the institution can conduct research in-house, or it can outsource it with faculty involvement (at least in monitoring the effort). In the latter case, faculty would be subject-matter experts, responsible for state-of-the-art knowledge of their fields and, as such, also responsible for determining course content. This could be done in several ways, including on a small scale for some or all fields of study (e.g., one or two preeminent faculty per area) or on a large scale for a few fields. Up to this point, OSD and DAU have not committed to having either a preeminent institution or preeminent faculty.

ORGANIZATION AND STRUCTURE

Just as form follows function, the organization and structure of DAU should depend on the answer to the question, "what should DAU *be*?" But that in turn depends on what the DoD leadership wants it to be. The original consortium structure was an expedient arrangement that allowed participation by existing schools from each segment of DoD, and the original focus was on meeting the training and certification requirements established by DAWIA. Acquisition reform, mostly procedural, was under way, and DAU was to be a voice and implement of that reform. Today, however, more change is on the horizon, not just procedural, but also in terms of the nature and makeup of the acquisition workforce. It is the proper time for DoD leadership to reexamine both the function and form of DAU and to decide what it wants DAU to be.

In the course of our study, we considered what DAU is and what it could be, on the basis of the examination of several best-practice institutions. There are a number of possibilities, but these generally fall near or between three different models, skill-based training institution, corporate university, and preeminent acquisition institution, which are discussed below.

Skill-Based Training Institution

One possible model for DAU is that of a skill-based training institution, much as it is today. This outcome requires the least change and is the least costly of the three models discussed in this chapter. Should the leadership opt for such an institution, our recommendation is that DAU focus on efficiency in providing for the training needs of the acquisition community. In particular, this means the following:

- *Minimize research.* Research could be eliminated, except for the beneficial use of visiting faculty, who both teach and perform research while at

DAU, and the pass through of OSD research requirements to external entities.

- *Expand distance learning.* Distance learning, especially in the form of flexible learning modules, should continue to expand and replace resident learning to meet long-term, continuing education, and just-in-time training needs of the workforce.

- *Reduce the number of member institutions.* The current "many-school" configuration of DAU is satisfactory for a skill-based training institution, but 13 consortium schools (the number in FY97) is probably too many. Although this study did not include an organizational analysis at that level, we feel it is possible to reduce the number of schools through consolidation and the elimination of redundancies. The remaining schools would provide a mix of residential and on-site instruction.

- *Establish business-like financial practices.* DAU does not today operate as a business, but as an institution that spent nearly $100 million in FY97, it should strive to implement sound business practices, including

  - establishing and implementing a financial system that accurately determines training costs and assists in the evaluation of cost-based decisions;

  - determining criteria to assist in the selection of "best-value" contractors; and

  - seeking customer-driven, fee-for-service work (from DoD and from external sources).

- *Seek to outsource the delivery of training.* As a business entity, DAU should actively seek best-value sources of training, including those external to DoD. Contract arrangements, such as the FAA has at its academy in Oklahoma City and at the Center for Management Development in Florida, demonstrate that the outsourcing of training is possible under a variety of conditions. Competition can only enhance the efficiency and performance of current consortium members.

Corporate University

Another viable model for a future DAU is that of a corporate university. The current DAU provides mainly skill-based training and has few of the attributes of a corporate university (see Chapter 7). To become more like a corporate university

in the manner of best-practice corporations means adding a new focus and a new curriculum more nearly aligned with DoD's strategic goals. The following relate to DAU becoming more like a corporate university:

- *Maintain skill-based training.* DAU would still be responsible for skill-based training required by the acquisition workforce. This could be done as described above, with emphasis on efficiency, sound business practices, and the optimal mix of resident and on-site training, as well as distance learning and outsourcing.

- *Develop a corporate university curriculum.* A corporate university curriculum, unlike technical, skill-based training, cuts across functions, bringing diverse elements together in one place to learn about and share knowledge of the corporation, where it has been and where it is headed. Such a curriculum might include core material for all employees (corporate values, goals, strategies, best practices) as well as executive training for managers (e.g., as at GE Crotonville, where all newly hired "white collar" workers receive an introductory course; otherwise managers are handpicked for training as they progress within the corporation).

- *Establish a corporate university campus.* A residential campus ("bricks and mortar") is a primary component of many best-practice corporate universities, because a major benefit of corporate university training is the interchange of ideas and knowledge among diverse workforce elements, horizontally across functional areas and vertically spanning employee levels. Skill-based training could be provided entirely separate from corporate university training (in a different location altogether); they could be partially or entirely collocated, allowing for further interchange.

- *Act as an agent of change.* A major role of corporate universities is that of agent of change; but in the corporate university context, this means more than just informing the workforce of new practices. Through corporate university gatherings, the workforce or its representatives have an opportunity to discuss the change and perhaps play a part in determining what the ultimate change will be or how it will be carried out. Change is generally not easy and is often resisted, and having a workforce that feels it is involved in the change process is a positive factor for the corporation.

- *Involve OSD leadership.* Leadership involvement is absolutely imperative for a corporate university to succeed. Corporate university courses often include scheduled "platform" time for corporate leaders. But, equally important, the workforce is permitted dialogue with the leadership, a requirement for an agent of change as discussed above. Many corporate universities describe themselves as "two-way megaphones," meaning they not only impart information but also listen and are receptive to what students (the workforce) have to say. This cannot happen unless the

leadership (policymakers) is actively involved in the university and receptive to what the workforce has to say. For a corporate university to succeed within DoD, not only is close leadership involvement required, but also the continuity of commitment, support, and involvement as administrations and leaders change.

- *Minimize research.* Corporate universities generally do little or no research, so adding a corporate university curriculum does not increase the need for research. Research could be done as discussed above, using visiting professors in DAU schools, or with DAU acting as a pass-through agent for research required by OSD but performed by external agencies.

- *Allow current schools to compete for participation.* Current DAU schools presumably would be competing for participation in the delivery of skill-based training as best-value sources; some schools could also endeavor to play a corporate university role by demonstrating the willingness and commitment to becoming a center of excellence for such a curriculum.

- *Outsource where possible.* As with the skill-based model, DAU should seek to outsource training when it makes sense to do so. Some kinds of corporate university curriculum (e.g., selected management training) could be outsourced under the right circumstances, much the way the FAA Center for Management Development outsources its courses, or the way some corporations contract for instructors from academia.

Preeminent Acquisition Institution

A third possible direction for DAU is that of a preeminent source and deliverer of acquisition knowledge. The attributes of such an institution would be similar in many ways to those of a university, although the academic fields would be acquisition functional areas (e.g., departments could be aligned with career fields and colleges aligned with functional board areas). Such an institution is more expensive than the other two models and would require, at least within its core, topnotch faculty who, as organic expertise, could serve as ready sources for OSD analytic requirements. Preeminence also requires a long-term investment and the long-term commitment of OSD leaders. Organizationally, this model is similar to that proposed by the 1997 process action team on Acquisition Education and Training Structure and Process. Other pertinent factors include the following:

- *Maintain skill-based training.* As in the case of the corporate university model, DAU needs to maintain skill-based training with an emphasis on efficiency, sound business practices, and the optimal mix of resident and on-site training as well as distance learning and outsourcing.

- *Develop an academic curriculum.* The first requirement for a preeminent institution (in addition to justification) would be determination of the areas

in which preeminence is desired. The obvious areas are those core to the defense acquisition community, that is, the acquisition career fields. An institution preeminent in those areas would develop curriculum beyond skill-based training, including theory and broader application as well as research that extends the base of knowledge. Students for such courses could be handpicked on the basis of their records and potential, and they might also include some newly hired personnel, such as Presidential Management Interns.

- *Seek preeminent faculty.* The second requirement would be obtaining preeminence in the designated academic areas through the selection of qualified faculty and with the practice of state-of-the-art research by faculty as well as within designated courses. Faculty should have credentials commensurate with their status (advanced degrees and/or significant experience), should be responsible for performing research and publishing results, and should also be acknowledged as subject-matter experts responsible for curriculum and course design within their purview.

- *Establish a residential campus.* A preeminent institution requires a central "bricks and mortar" campus as a place for interchange and the sharing of knowledge (i.e., for many of the same reasons as the corporate university model and colleges and universities). As before, skill-based training could be provided separate from, or collocated with, academic training.

- *Organize academically.* A new, preeminent institution would be much broader in scope than the current DAU, requiring a different form of administration. The most fitting would seem to be one organized like that of a typical university, although scaled down somewhat. A president would be responsible for overall supervision, and a provost would oversee academic functions. Departments (which might be aligned with career fields or alternatively with functional board areas) would have "heads," and departments could be grouped into two or more colleges, each with a dean. The organization would contain a strengthened business office to manage resources and ensure efficiency and an official responsible for oversight of research, to include the solicitation of projects and funding.

- *Perform and seek research.* State-of-the-art research is an integral part of any academically preeminent institution, as is publishing or otherwise communicating research results. Having a research program that publishes results demonstrates commitment to expanding the knowledge base and is the best way to establish an institution's reputation.

Size of DAU

Although not a specific tasking within this effort, the proper size of DAU has been an issue for OSD. Our study, as it relates to size, was concerned with the

core size, or the minimum in-house faculty required based on the underlying defense-related portion of the knowledge base and curriculum. The total requirement could be satisfied by a combination of in-house and outsourced personnel, as long as the in-house core was preserved.

The total size of DAU, of course, will depend upon many factors, including the workforce to be trained, policies for that training (e.g., continuing education), and the mode of training (resident, on-site, video teletraining, computer-based training, etc.). Other factors include program administration and research-related activities. Our assumption has been that DAU's size was and is appropriate for its missions. Based on information supplied by DAU, the total requirement in FY97 was approximately 707 full-time-equivalent staff-years (excluding less than 5 total-staff-years for auditor courses). Of this amount, 565 were programmed for direct and indirect support of DAU courses at consortium schools. The remainder were used primarily for DAU headquarters activities; DSMC research, consulting, and information dissemination; and courses taught by DSMC but not considered in FY97 to be part of DAU.

In the course of this effort, study monitors asked us to illustrate the relative size differences and—in particular—core staff requirements, based on the three models for DAU discussed above (skill-based institution, corporate university, preeminent institution). Our methodology used as a baseline the 565 faculty and support staff at consortium schools (i.e., excluded the DAU headquarters and DSMC research related and other staff) and a number of very simple assumptions and formulae to provide that illustration (see Appendix L). The most obvious conclusion from the data is that increased staff requirements arising from new curriculum can be offset by distance-learning efficiencies (assuming they are realizable). Otherwise the table at Appendix L provides a "feel" for the range of "core" assets under a variety of conditions.

RECOMMENDATIONS

The following recommendations are based on the analysis described in earlier chapters, particularly Chapter 7, "Comparisons with Other Models," and recent pronouncements by the Secretary of Defense and the Under Secretary of Defense for Acquisition and Technology concerning the future of the acquisition workforce.

The Secretary of Defense, in his report to Congress, *Actions to Accelerate the Movement to the New Workforce Vision*, dated April 1, 1998, discusses several changes required in acquisition education and training. Most are based on a new business-like focus adopting the commercial practice of purchasing services

instead of things, and with a smaller acquisition workforce consisting of more managers and fewer hands-on doers. Among his recommendations are the following:

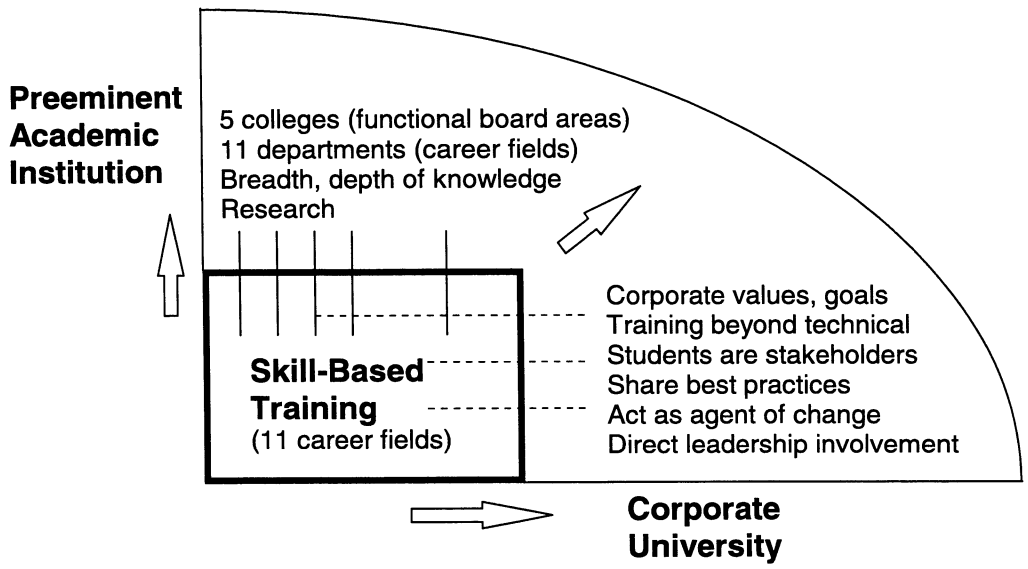
> ... need to train the entire acquisition workforce ... on this new focus. DoD will also have to develop tools to facilitate the change in behavior, and the structuring of the acquisitions themselves.
>
> ... development of a reform-centered, continuous learning program ... to improve ... business knowledge and leadership competencies ... Major program elements ... should be competitively sourced ...
>
> ... develop a program specifically aimed at providing training on commercial business practices ....

The first and the major recommendation, consistent with the Secretary of Defense report, deals with the type of institution LMI feels DAU should be in order to best meet the future needs of the Department of Defense. The other recommendations are independent of the first and concern day-to-day operations of DAU.

DAU Should Be a Corporate University "+"

Of the three models discussed above—skill-based training institution, corporate university, and preeminent academic institution—the skill-based institution is closest to where DAU is today. As depicted in Figure 8-1, DAU can extend vertically, to be strong academically along functional lines (the preeminent institution); it can extend by moving horizontally across functions, as corporate universities do; or it can move taking some of each.

Figure 8-1. Institutional Continuum



Our recommendation is that DAU move to be more like a corporate university, but with some attributes taken from the academic model. In particular, this means the following (as discussed above with the corporate university model):

- Maintain separate skill-based training, with maximum use of distance learning.
- Develop a corporate university curriculum focusing on business practices and executive development.
- Establish a residential campus for the corporate university.
- Act as an agent of change.
- Involve OSD leadership.
- Outsource where possible.

In addition, from the preeminent institution model, we recommend that

- each functional area have a small nucleus of faculty who are preeminent in their fields and resident at the corporate university campus (or campuses), and
- DAU perform some research and analysis, mainly through those faculty, and also under central DAU control and faculty supervision, outsource other OSD research requirements to external agencies.

Other Recommendations

- *Residential instruction.* Most training institutions considered resident training to be important and desirable. In examining the split of resident, on-site, and distance learning, the consensus seems to be that if training is important, then most of it (more than 50 percent) should be done in a resident mode. On-site training is useful in reducing costs, as is distance learning, but distance learning is often considered to augment other residential training. Our recommendation is that DAU increase its distance-learning courses but maintain residential capability for its most core courses. The result will be fewer but more robust DAU campuses.
- *Orientation course*. OSD and DAU should consider developing a short orientation course for all employees new to the acquisition field. Such a course could be provided through distance-learning technologies and could appear in two variations, one for employees new to DoD and one for DoD employees transferring into the acquisition field.

- *Course development and subject-matter experts.* While faculty are and should be subject-matter experts, most best-practice institutions (other than universities) regard faculty as facilitators, not determiners of instruction; subject-matter experts who determine curriculum are in the workforce (including policymakers), and training institutions usually have some formal means and mechanism for getting requirements into the curriculum (much as the current DAU process does now). We believe strongly that oversight of course development is an organic function and recommend that, unless DAU opts for the preeminent institution model, course development be done under the direction of DAU headquarters, with content determined from the leadership and workforce via functional boards.

- *Outsourcing.* LMI has found examples of successful outsourcing of both training and curriculum development. In general the extent and type of outsourcing depends on the nature of the curriculum (for example, disciplinary subject matter is more easily outsourced than functional subject matter), and while cost is a major consideration for some institutions, the desire for quality prevails in others. Our recommendation is that DAU actively seek to outsource its training on a best-value basis and that current consortium members be considered as possible sources.

- *Faculty.* Except for colleges and universities with their tenured faculty, most of the training institutions we examined believe that tenured faculty should be minimized. The proportion of permanent (in-house) faculty is often less than 30 percent, with much of the remaining faculty rotating to and from the workforce, typically in military-like "tours" of 2 to 5 years. Contracting for subject-matter experts is also an option. Our recommendation for training conducted in-house is that approximately one-third of the faculty be permanent and that the remainder rotate to and from DoD acquisition positions.

- *Research.* For most of the institutions we examined, other than advanced degree-granting universities, research is not required of faculty. Corporate universities and federal training institutions often pointed out, however, that it was desirable for faculty to be in touch with research efforts as a means of staying current with state-of-the-art issues. Therefore we recommend as a minimum that (1) DAU headquarters become the conduit and overseer of acquisition research required by OSD but performed by external sources, and (2) DAU make use of visiting professors to enhance and supplement faculty skills and stimulate faculty interest in research issues.

- *Defense Acquisition Knowledge Database.* The acquisition knowledge database as constructed by LMI is a valuable resource tool providing a complete list of competencies, useful associated attributes, and a full list of acquisition terms. We recommend that DAU create and maintain (institutionalize) such a database for reference and for future analysis.

- *Business operation.* LMI has noted that many of the best-practice training institutions, federal and corporate, obtain little or no central funding but instead operate as a business. Their customers are the line business units (and in many cases individual employees) who pay not only for training but also for course development. Central funding may be provided for core curriculum, that instruction every employee is expected to receive (regardless of specialty within the company or line unit). While current DoD regulations, practice, and culture may deter a fee-for-service DAU, we recommend that DAU seek out such work and also implement sound business practices and a financial system that accurately determines training costs and assists in the evaluation of cost-based decisions.

Appendix A
Department of Defense Acquisition Career Fields

The acquisition career fields recognized by the Defense Acquisition University for FY97 are the following:

- Acquisition Logistics
- Auditing
- Business Cost Estimating and Financial Management
- Communications—Computer Systems
- Contracting
- Industrial Contract Property Management
- Program Management
- Purchasing
- System Planning, Research, Development, and Engineering
- Test and Evaluation.

Appendix B
Defense Functional Boards

Each functional board has oversight responsibility for one or more career field. The table presented here depicts those relationships.

Functional board	Career fields represented
Contracting and Purchasing	Contracting Purchasing Industrial/Property Management
Acquisition Management	Program Management Communications—Computer Systems
Business, Cost Estimating, and Financial Management	Business, Cost Estimating, and Financial Management
Technical, Scientific, and Engineering	Acquisition Logistics Manufacturing, Production, and Quality Assurance Systems Planning, Research, Development, and Engineering Test and Evaluation
Auditing	Auditing

Appendix C
Individuals and Activities Interviewed (DoD)

LMI interviewed the following individuals and representatives of the following activities.

INDIVIDUALS

- DUSD(AR)/AET&CD
  - Dr. James McMichael, Director AET&CD
  - Ms. Jeanne Carney, Office of the Director, AET&CD (task monitor)
  - Mr. Herb Cowles, Deputy Director for Acquisition Career Management, Office of the Director, AET&CD.
- Defense Acquisition University
  - Mr. Thomas M. Crean, President, DAU
  - Dr. Lenore Sack, Director for Academic Affairs
  - Mr. Frank Sobieszczyk, Director for University Operations
  - Mr. Joseph Wargo, Director of Resource Management
  - Lt. Colonel Al Gregory, Director, Acquisition Reform Communications Center
- Defense Acquisition Career Managers
  - Mr. Keith Charles, U.S. Army
  - Mr. Bill Hauenstein, U.S. Navy
  - Mr. Joe Diamond, U.S. Air Force

ACTIVITIES

- Business Cost, Estimating, and Financial Management Functional Board
- Acquisition Management Functional Board
- Technical, Scientific, and Engineering Functional Board
- Defense Contracting Career Management Board

Appendix D
Site Visit Agenda

LOGISTICS MANAGEMENT INSTITUTE
DAU CORE REQUIREMENTS AND FACULTY STRUCTURE STUDY
CONSORTIUM SCHOOL VISITS—AGENDA ITEMS

1. LMI overview briefing:

   Why LMI is there
   What we hope to take away

2. Briefing from the school which highlights:

   Organizational structure
   Total entity (independent of DAU)
   As part of DAU consortium

   Relationship to DAU

   How defined
   MOA/ISA frequency, process, etc.
   Data flow between school and DAU HQ, sponsor and offerer, etc.

   Relationships with Functional Boards and DACMs
   Problems encountered (as consortium member)
   Recommendations for change

3. Materials we'd like to receive:

   Organization chart
   List and schedule of classes
   Copy of Interservice Support Agreement
   List (or numbers) of faculty by course/subject area, military/civilian, grade, etc.

4. Interviews with school administration, faculty, and/or staff which focus on the following DAU functions, the extent to which they are performed by the consortium school, the manner in which they are performed, and recommendations for change:

   a. Teach

      What courses and course lengths (sponsor or offerer?)
      What student loads
      Faculty information
      Number by course/subject area
      Proportion military
      Annual turnover rate
      Credentials required to teach
      Instructor evaluation process
      Professional development requirements/opportunities

   b. Develop Courses

      Design courses
      Review/redesign courses and curriculum
      Design materials and media
      Interface with Functional Boards, other schools, etc.

   c. Ensure Quality

      Develop evaluation standards
      Certify instructors
      Evaluate instructors
      Certify courses
      Evaluate courses
      Train instructors

   d. Manage and Administer

      Formulate budget
      Allocate resources
      Administer MOA/ISA
      Publish course schedules
      Allocate course quotas
      Maintain student records
      Sponsor courses (which courses to which offerers)

e. Perform Research and Analysis

Perform acquisition research
Analyze acquisition policy issues
Perform pedagogical research and analysis
Other than DAU research done by faculty and students

f. Share Knowledge

Communicate activities
Consult
Publish papers
Present papers
Host conferences

Appendix E
DAU Data by Course (FY97)

This appendix provides a by-course summary of FY97 data, including military and civilian staff-years, the number of students, and the number of classes, programmed for DAU schools. DCAI courses are not included since DAU does not fund those courses. Source of the data is the 63-column spreadsheet used by the DAU Director of Resource Management.

FY97

COURSE	Civ Faculity Wrkyrs	Civ Other Wkyrs	Tot Civ Wrkyrs	Mil Faculity Wrkyrs	Mil Other Wkyrs	Tot Mil Wkyrs	Tot Mil & Civ Wkyrs	FY 97 # Students	Length of Class in Weeks	# of Classes
ACQ 101	11.50	12.60	24.10	7.06	3.21	10.27	34.37	2714	5.60	77
ACQ 201	24.66	20.16	44.82	11.31	4.47	15.78	60.60	3806	12.00	87
ACQ 401	8.00	6.00	14.00				14.00	75	44.00	1
BCE 101	2.90	3.50	6.40		0.30	1.30	7.70	329	3.00	13
BCE 204	1.00	1.35	2.35	1.00	0.30	1.30	3.65	240	3.00	10
BCE 206	0.70	0.60	1.30				1.30	210	0.90	10
BCE 207	0.70	0.60	1.30				1.30	210	0.70	9
BCE 208	0.70	1.00	1.70		0.10	0.10	1.80	162	1.60	7
BCF 301	1.51	1.01	2.52	1.05	0.31	1.36	3.88	219	2.00	9
BFM 102	1.29	1.90	3.19	1.20	0.48	1.68	4.87	271	3.60	8
BFM 201	0.95	0.88	1.83	0.66	0.28	0.94	2.77	515	1.00	17
BFM 203	1.69	1.12	2.81	1.17	0.27	1.44	4.25	300	1.60	10
BFM 204	0.86	0.76	1.62	0.60	0.24	0.84	2.46	297	1.00	10
BFM 209	0.28	0.32	0.60	0.19	0.10	0.29	0.89	141	1.00	5
BFM 210	0.13	0.16	0.29	0.09	0.05	0.14	0.43	101	0.60	4
CON 101	1.51	0.81	2.32				2.32	119	4.00	4
CON 101	7.30	10.83	18.13	0.70	1.10	1.80	19.93	1003	8.00	34
CON 102	0.08	0.25	0.33	1.55	0.45	2.00	2.33	84	4.00	5
CON 103	2.06	2.06	4.12	0.92	0.13	1.05	5.17	281	4.00	8
CON 104	6.10	4.60	10.70	2.00	0.55	2.55	13.25	1152	8.80	47
CON 105	0.08	0.25	0.33	1.59	0.41	2.00	2.33	173	2.80	9
CON 106	1.89	2.05	3.94	0.44	0.11	0.55	4.49	359	2.80	11
CON 201	7.58	6.81	14.39	1.00	0.84	1.84	16.23	1702	8.00	57
CON 211	6.73	8.36	15.09		0.40	0.40	15.49	1042	9.00	39
CON 221	3.49	3.29	6.78	3.00	0.30	3.30	10.08	643	4.00	25
CON 222		0.25	0.25	1.63	0.37	2.00	2.25	101	2.00	6
CON 223	2.97	1.49	4.46		0.04	0.04	4.50	377	2.00	11
CON 231	8.74	9.21	17.95	2.65	0.46	3.11	21.06	2021	8.00	83
CON 232	1.45	1.52	2.97	1.31	0.54	1.85	4.82	219	4.00	9
CON 233	1.40	1.80	3.20		0.20	0.20	3.40	256	2.00	10
CON 234	2.13	3.87	6.00	3.43	1.21	4.64	10.64	915	5.60	44
CON 241	3.71	4.06	7.77		0.30	0.30	8.07	664	4.00	26
CON 301*								1249	1.00	41
CON 331	1.00	0.75	1.75		0.30	0.30	2.05	150	2.00	6
CON 333	2.97	3.19	6.16	1.70	0.70	2.40	8.56	1131	3.00	47
GRT 201	0.40	0.40	0.80			0.00	0.80	169	1.00	7
IND 101	0.50	0.40	0.90	0.25	0.30	0.55	1.45	72	2.00	3
IND 102	0.40	0.10	0.50				0.50	68	1.00	2
IND 103	0.50	0.20	0.70	0.25	0.30	0.55	1.25	100	1.00	4
IND 201	0.50	0.40	0.90	0.25	0.30	0.55	1.45	60	2.00	3
IND 202	0.50	0.20	0.70	0.25	0.30	0.55	1.25	98	1.00	4
IRM 101	2.90	0.80	3.70		0.10	0.10	3.80	231	2.00	1
IRM 201	4.10	2.07	6.17	1.00	0.20	1.20	7.37	291	3.00	12
IRM 303	4.40	1.73	6.13	1.00	0.20	1.20	7.33	266	4.00	10

LOG 101	1.00	1.00	2.00	1.00	0.30	1.30	3.30	695	2.00	7
LOG 201	7.67	8.17	15.84	1.51	1.06	2.57	18.41	810	6.00	32
LOG 203	1.00	1.00	2.00		0.30	0.30	2.30	720	0.61	30
LOG 204	0.80	0.79	1.59				1.59	473	1.00	14
LOG 205	1.00	1.00	2.00	1.00	0.30	1.30	3.30	450	1.00	15
LOG 304	3.18	4.21	7.39				7.39	501	2.00	17
PMT 202	0.22	0.32	0.54	0.15	0.10	0.25	0.79	100	1.00	4
PMT 203	0.17	0.21	0.38	0.12	0.07	0.19	0.57	80	1.00	3
PMT 302	32.05	31.25	63.30	22.25	10.56	32.81	96.11	830	14.00	28
PMT 303	2.33	1.85	4.18	1.62	0.63	2.25	6.43	85	4.00	5
PMT 304	0.22	0.22	0.44	0.15	0.07	0.22	0.66	97	1.00	4
PMT 305	0.78	0.86	1.64	0.54	0.29	0.83	2.47	119	2.00	7
PMT 341	1.34	1.30	2.64	0.93	0.42	1.35	3.99	393	2.00	12
PQM 101	1.00	1.00	2.00	1.00	0.30	1.30	3.30	243	2.00	9
PQM 103	0.70	0.90	1.60				1.60	173	1.80	7
PQM 104	0.70	0.90	1.60				1.60	288	1.00	10
PQM 201	3.11	2.47	5.58	1.00	0.30	1.30	6.88	436	9.00	15
PQM 202*								325	0.40	13
PQM 203*								295	0.20	12
PQM 301	1.84	1.95	3.79	1.28	0.62	1.90	5.69	357	2.00	11
PUR 101	2.33	4.75	7.08		0.40	0.40	7.48	729	4.00	24
PUR 102		0.25	0.25	1.63	0.37	2.00	2.25	260	2.00	13
PUR 201	2.10	3.00	5.10		0.30	0.30	5.40	569	1.60	23
Research**		1.00	1.00				1.00			
SAM 101***	1.12	2.12	3.24	0.77	0.72	1.49	4.73	375	2.00	DL
SAM 201	6.06	5.31	11.37	2.48	1.52	4.00	15.37	408	6.00	17
SAM 301	2.86	2.10	4.96	1.59	0.59	2.18	7.14	282	6.00	13
SYS 201	7.84	6.14	13.98	0.23	0.26	0.49	14.47	1132	9.60	39
SYS 301	2.23	2.20	4.43	1.55	0.69	2.24	6.67	643	2.00	20
TST 101	0.74	0.85	1.59	1.17	0.39	1.56	3.15	291	2.00	11
TST 202	1.87	3.01	4.88	0.39	0.21	0.60	5.48	359	4.00	12
TST 301	0.72	1.48	2.20	0.17	0.08	0.25	2.45	300	3.00	11
Totals	219.2	215.3	434.6	91.8	41.1	132.9	567.4	37404		1283

* Contracted courses

** Visiting Professor at ALMC

*** Course provided by computer-based instruction

Appendix F
Number of Programmed Classes by School (FY97)

Course	AFIT	ALMC	ASN(RDA)	DCPSO	DSMC	ICAF	IRMC	LACKLAND	NCAT	NFCTC	NPS	NWAD
ACQ101	13	31			33							
ACQ201	9				47				31			
ACQ401						1						
BCE101		13										
BCE204	10											
BCE206		10										
BCE207		9										
BCE208		7										
BCF301					9							
BFM102	6				2							
BFM201					17							
BFM203					10							
BFM204					10							
BFM209					5							
BFM210					4							
CON101		24		4					10			
CON102								5				
CON103										8		
CON104	29			9					9			
CON105								9				
CON106										11		
CON201	23							5	16	13		
CON211		14		15					10			
CON212												
CON221	12								13			
CON222								6				
CON223										11		
CON231	25			17					26	15		
CON232	5				4							
CON233		10										
CON234		14						18		12		
CON241		12							14			

Course	AFIT	ALMC	ASN(RDA)	DCPSO	DSMC	ICAF	IRMC	LACKLAND	NCAT	NFCTC	NPS	NWAD
CON301			41									
CON331	6											
CON333	17	20							10			
GRT201		7										
IND101												
IND102		2										
IND103	4											
IND201	3											
IND202	4											
IRM101							1					
IRM201							12					
IRM303							10					
LOG101	7											
LOG201		25			7							
LOG203	30											
LOG204									14			
LOG205	15											
LOG304											17	
PMT202					4							
PMT203					3							
PMT302					28							
PMT303					5							
PMT304					4							
PMT305					7							
PMT341					12							
PQM101	9											
PQM103		7										
PQM104		10										
PQM201	5			5					5			
PQM202		13										
PQM203		12										
PQM301					11							
PUR101		22							2			
PUR102								13				
PUR201		23										
SAM101					DL							
SAM201					8		9					
SAM301					6		7					

Course	AFIT	ALMC	ASN(RDA)	DCPSO	DSMC	ICAF	IRMC	LACKLAND	NCAT	NFCTC	NPS	NWAD
SYS201					2				24		3	10
SYS301					20							
TST101	7				4							
TST202					5						7	
TST301					4						7	
Totals	242	285	41	50	271	1	39	56	184	70	34	10

Appendix G
DAU Student Loads (FY97)

Course	Army	DoD	Air Force	Navy	Total
ACQ 101	555	368	1981	428	3,332
ACQ 201	637	453	1159	1711	3,960
ACQ 401	8	4	32	31	75
BCE 101	15	8	75	38	136
BCE 204	13	5	9	34	61
BCE 206	19	18	16	50	103
BCE 207	27	22	31	36	116
BCE 208	6	13	5	14	38
BCF 301	41	19	28	78	166
BFM 102	43	12	117	121	293
BFM 201	141	68	95	172	476
BFM 203	20	66	12	41	139
BFM 204	86	51	14	124	275
BFM 209	33	8	25	32	98
BFM 210	5	3	7	10	25
CON 101	228	550	288	181	1247
CON 102	8	2	78	0	88
CON 103	84	1	21	139	245
CON 104	238	456	330	174	1198
CON 105	20	1	146	1	168
CON 106	145	3	27	175	350
CON 201	380	514	259	351	1504
CON 211	210	327	159	145	841
CON 212	26	13	71	5	115
CON 221	191	190	91	68	540
CON 222	9	3	82	1	95
CON 223	88	8	17	178	291
CON 231	457	557	558	305	1877
CON 232	22	95	37	27	181
CON 233	11	99	18	13	141
CON 234	147	27	529	107	810
CON 241	0	0	0	0	0

Course	Army	DoD	Air Force	Navy	Total
CON 301	385	258	243	338	1224
CON 333	301	283	258	285	1127
GRT 201	76	42	21	63	202
IND 101	19	29	8	10	66
IND 102	25	10	3	7	45
IND 103	20	35	7	18	80
IND 201	7	12	2	12	33
IND 202	19	22	5	15	61
IRM 201	41	31	60	47	179
IRM 303	25	32	21	36	114
LOG 101	93	30	378	96	597
LOG 201	147	19	120	341	627
LOG 203	136	42	176	303	657
LOG 204	74	22	56	190	342
LOG 205	68	9	56	217	350
LOG 304	214	31	47	207	499
PMT 202	33	5	33	43	114
PMT 203	27	9	9	23	68
PMT 302	151	36	158	171	516
PMT 303	25	1	38	54	118
PMT 304	20	10	21	26	77
PMT 305	27	4	21	8	60
PMT 341	36	50	121	87	294
PQM 101	36	55	55	48	194
PQM 103	12	82	15	8	117
PQM 104	37	102	16	7	162
PQM 201	28	87	26	128	269
PQM 202	142	20	1	46	209
PQM 203	147	17	0	60	224
PQM 301	68	91	30	117	306
PUR 101	229	66	145	160	600
PUR 102	78	10	38	2	128
PUR 201	171	40	142	153	506
SAM 201	13	6	46	39	104
SAM 301	9	7	9	42	67
SYS 201	158	60	192	397	807
SYS 301	118	74	90	308	590
TST 101	52	14	693	79	838

Course	Army	DoD	Air Force	Navy	Total
TST 202	60	12	88	100	260
TST 301	78	11	85	85	259
Totals	7,318	5,740	9,850	9,166	32,074

Appendix H
DAU Consortium School Professional Staff

We asked each consortium school for data on that portion of its faculty (professional staff) spending at least 50 percent of their effort for DAU. The results of those queries are presented here.

DAU CONSORTIUM SCHOOL PROFESSIONAL STAFF (WITH AT LEAST 50% EFFORT FOR DAU)

	TOTAL	# MIL	# CIV	% CIV	# DEG ABOVE BACH	% DEG ABOVE BACH	LEVEL III CERT'D	% LEVEL III CERT'D	AVG YEARS EXPER	AVG YEARS AT SCH	# WITH < 50% DAU EFFORT	ALL DAU STAFF
DSMC	156	69	87	56%	150	96%	149	96%	22.0	5.6	0	156
ALMC	55	10	45	82%	31	56%	27	49%	15.8	6.5	0	55
NCAT	55	0	55	100%	38	69%	35	64%	12.7	8.4	0	55
AFIT	35	16	19	54%	34	97%	19	54%	17.7	6.0	1	36
LTF	20	16	4	20%	6	30%	1	5%	11.9	2.7	10	30
NFCTC	20	4	16	80%	9	45%	7	35%	3.7	2.9	0	20
IRMC	15	3	12	80%	15	100%	12	80%	21.1	3.6	4	19
ICAF	13	5	8	62%	13	100%	11	85%	24.5	6.2	0	13
DCPSO	13	0	13	100%	8	62%	1	8%	11.9	5.4	1	14
NWAD	2	0	2	100%	2	100%	0	0%	12.5	9.5	7	9
DCAI	0	0	0	0%	0	0%	0	0%	0.0	0.0	11	11
NPS	10	3	7	70%	9	90%	9	90%	25.7	5.4	6	16
TOTALS	394	126	268	68%	315	80%	271	69%	17.9	5.8	40	434

Appendix I
Defense Acquisition Workforce Improvement Act, P.L. 101-510 (Section 1205)

SECTION 1205. DEFENSE ACQUISITION UNIVERSITY STRUCTURE

(a) Establishment of Structure.–Not later than October 1, 1991, the Secretary of Defense, acting through the Under Secretary of Defense for Acquisition, shall prescribe regulations for the initial structure for a defense acquisition university under section 1746 of title 10, United States Code (as added by section 1202). The regulations shall include the following:

(1) Operation under a charter developed by the Secretary of Defense.

(2) Establishment of a university mission to achieve the objectives formulated by the Secretary of Defense. Such objectives shall include–

(A) the achievement of a more efficient and effective use of available resources by coordinating Department of Defense acquisition education and training programs and tailoring them to support the careers of personnel in acquisition positions; and

(B) the development of education, training, research, and publication capabilities in the area of acquisition.

(3) Establishment of appropriate lines of authority (including relationships between the university and each of the existing acquisition education and training institutions and activities) and accountability for the accomplishment of the university mission (as established by the Secretary).

(4) A coherent framework for the educational development of personnel in acquisition positions. Such framework shall cover courses of instruction from the basic level through intermediate and senior levels. At the senior level, the framework shall provide for a senior course as a substitute for, and equivalent to, existing senior professional military educational school

courses, specifically designed for personnel serving in critical acquisition positions.

(5) Appropriate organizations, such as a policy guidance council, composed of senior Department of Defense officials, to recommend or establish policy, and a board of visitors, composed of persons selected for their preeminence in the fields of academia, organization, management, curricula, methods of instruction, facilities, and other matters of interest to the university.

(6) An appropriate centralized mechanism, under the Under Secretary of Defense for Acquisition, to control the allocation of resources for purposes of training, education, and research activities to achieve the objectives of the university, such as funding for students to attend courses of instruction, funding to conduct the courses, and funding to pay instructor salaries.

(b) Implementation.–Not later than October 1, 1991, the Secretary of Defense, acting though the Under Secretary of Defense for Acquisition, shall prescribe and submit to the Committee on Armed Services of the Senate and House of Representatives an implementation plan, including a charter, for the defense acquisition university structure. Not later than August 1, 1992, the Secretary of Defense shall carry out the implementation plan.

Appendix J
Course and Course Name Changes, FY97–FY98

A number of courses changed during the period of our study, particularly from FY97 to FY98. Although the study is based on FY97 courses and data, the following changes took place in FY98:

- Courses deleted:

  PMT 341

  BFM 210

- Courses that changed names (from/to):

  BFM 210 to BCF 103

  BCE 204 to BCF 204

  BFM 204 to BCF 205

  BCE 206 to BCF 206

  BCE 207 to BCF 207

  BCE 208 to BCF 208

  BFM 209 to BCF 209

- Revised courses:

  CON 101 (replaced CON 101, 102, 103)

  CON 104 (replaced CON 104, 105, 106)

  CON 210 (replaced CON 201)

  CON 202 (replaced CON 211, 221, 222, 223)

  CON 204 (replaced CON 231)

  PUR 101 (absorbed PUR 102)

- New courses:

  CON 235

  CON 236

  CON 237

  CON 243

  CON 244

  LAW 801

Appendix K
Core Staff Computations

The table below shows the complete, by-course and by-school computations for core staff, based on four alternative methods (as discussed in Chapter 6):

- Defense related
- Defense related or performance based
- Combination of four criteria
- Faculty practice or currency.

Course/ school	FY97 Total WY	1st Method: Defense related %	WY %	2nd Method: % Defense related or performance based	WY %	3rd Method: Combination of 4 criteria (%)	WY %	4th Method: Faculty practice or currency (%)	WY %
ACQ101									
DSMC	15.71	41.1	6.5	44.0	6.9	83.0	13.0	50.2	7.9
AFIT	4.55	41.1	1.9	44.0	2.0	83.0	3.8	50.2	2.3
ALMC	14.1	41.1	5.8	44.0	6.2	83.0	11.7	50.2	7.1
ACQ201									
DSMC	36.91	33.1	12.2	44.4	16.4	50.0	18.5	50.3	18.6
AFIT	7.3	33.1	2.4	44.4	3.2	50.0	3.7	50.3	3.7
NCAT	16.39	33.1	5.4	44.4	7.3	50.0	8.2	50.3	8.2
ACQ401									
ICAF	14	86.3	12.1	100.0	14.0	86.0	12.0	100.0	14.0
AUD1130		0.0		20.0		70.0		41.5	
AUD1320		10.0		10.0		47.0		46.5	
AUD4120		0.0		10.0		30.0		30.0	
AUD4230		0.0		60.0		29.0		28.8	
AUD8560		40.0		100.0		40.0		25.0	
BCE101									
ALMC	6.7	0.0	0.0	48.8	3.3	47.0	3.1	46.8	3.1
BCE204									
AFIT	3.65	5.4	0.2	48.4	1.8	48.0	1.8	48.0	1.8
BCE206									
ALMC	1.3	24.2	0.3	45.5	0.6	51.0	0.7	50.5	0.7
BCE207									

Course/ school	FY97 Total WY	1st Method: Defense related %	WY %	2nd Method: % Defense related or performance based	WY %	3rd Method: Combination of 4 criteria (%)	WY %	4th Method: Faculty practice or currency (%)	WY %
ALMC	1.3	13.8	0.2	62.1	0.8	43.0	0.6	43.0	0.6
BCE208									
ALMC	1.8	7.8	0.1	15.6	0.3	18.0	0.3	20.6	0.4
BCF301									
DSMC	3.88	95.0	3.7	100.0	3.9	95.0	3.7	56.5	2.2
BFM102									
DSMC	1.23	11.7	0.1	29.9	0.4	33.0	0.4	33.3	0.4
AFIT	3.65	11.7	0.4	29.9	1.1	33.0	1.2	33.3	1.2
BFM201									
DSMC	2.77	51.7	1.4	65.5	1.8	52.0	1.4	39.3	1.1
BFM203									
DSMC	4.25	35.7	1.5	80.4	3.4	46.0	2.0	45.5	1.9
NCAT	0.0	35.7	0.0	80.4	0.0	46.0	0.0	45.5	0.0
BFM204									
DSMC	2.47	32.4	0.8	36.8	0.9	34.0	0.8	35.9	0.9
BFM209									
DSMC	0.9	100.0	0.9	100.0	0.9	100.0	0.9	54.0	0.5
BFM210									
DSMC	0.44	100.0	0.4	100.0	0.4	100.0	0.4	54.2	0.2
CON101									
DCPSO	2.32	7.0	0.2	45.9	1.1	75.0	1.7	27.1	0.6
NCAT	3.93	7.0	0.3	45.9	1.8	75.0	2.9	27.1	1.1
ALMC	16	7.0	1.1	45.9	7.4	75.0	12.0	27.1	4.3
CON102									
LACKLAND	2.33	6.0	0.1	47.5	1.1	75.0	1.7	27.1	0.6
CON103									
NFCTC	5.17	5.9	0.3	47.0	2.4	75.0	3.9	27.1	1.4
CON104									
AFIT	7.3	0.0	0.0	98.9	7.2	40.0	2.9	18.8	1.4
DCPSO	3.16	0.0	0.0	98.9	3.1	40.0	1.3	18.8	0.6
NCAT	2.79	0.0	0.0	98.9	2.8	40.0	1.1	18.8	0.5
CON105									
LACKLAND	2.33	0.0	0.0	100.0	2.3	40.0	0.9	18.8	0.4
CON106									
NFCTC	4.49	0.8	0.0	55.7	2.5	40.0	1.8	18.8	0.8
CON201									
AFIT	7.8	0.0	0.0	36.5	2.9	19.0	1.5	27.5	2.1

Course/ school	FY97 Total WY	1st Method: Defense related %	WY %	2nd Method: % Defense related or performance based	WY %	3rd Method: Combination of 4 criteria (%)	WY %	4th Method: Faculty practice or currency (%)	WY %
LACKLAND	1.75	0.0	0.0	36.5	0.6	19.0	0.3	27.5	0.5
NCAT	3.32	0.0	0.0	36.5	1.2	19.0	0.6	27.5	0.9
NFCTC	3.36	0.0	0.0	36.5	1.2	19.0	0.6	27.5	0.9
CON211									
DCPSO	4.32	0.0	0.0	97.2	4.2	28.0	1.2	29.7	1.3
NCAT	3.47	0.0	0.0	97.2	3.4	28.0	1.0	29.7	1.0
ALMC	7.7	0.0	0.0	97.2	7.5	28.0	2.2	29.7	2.3
CON212									
		8.0	0.0	52.0	0.0	28.0	0.0	29.7	0.0
CON221									
AFIT	7.3	22.8	1.7	50.4	3.7	29.0	2.1	30.4	2.2
NCAT	2.78	22.8	0.6	50.4	1.4	29.0	0.8	30.4	0.8
CON222									
LACKLAND	2.25	0.0	0.0	61.9	1.4	29.0	0.7	30.4	0.7
CON223									
NFCTC	4.5	0.0	0.0	72.8	3.3	28.0	1.3	29.7	1.3
CON231									
AFIT	8.55	0.0	0.0	98.9	8.5	14.0	1.2	19.8	1.7
DCPSO	3.61	0.0	0.0	98.9	3.6	14.0	0.5	19.8	0.7
NCAT	5.46	0.0	0.0	98.9	5.4	14.0	0.8	19.8	1.1
NFCTC	3.44	0.0	0.0	98.9	3.4	14.0	0.5	19.8	0.7
CON232									
DSMC	1.77	1.1	0.0	23.1	0.4	21.0	0.4	23.6	0.4
AFIT	3.05	1.1	0.0	23.1	0.7	21.0	0.6	23.6	0.7
CON233									
ALMC	3.4	4.1	0.1	4.1	0.1	41.0	1.4	40.5	1.4
CON234									
LACKLAND	2.25	91.8	2.1	100.0	2.3	92.0	2.1	76.5	1.7
NFCTC	4.19	91.8	3.8	100.0	4.2	92.0	3.9	76.5	3.2
ALMC	4.2	91.8	3.9	100.0	4.2	92.0	3.9	76.5	3.2
CON241									
NCAT	2.77	20.0	0.6	40.0	1.1	28.0	0.8	29.7	0.8
ALMC	5.3	20.0	1.1	40.0	2.1	28.0	1.5	29.7	1.6
CON301									
ASN(RDA)	0.0	80.0	0.0	100.0	0.0	80.0	0.0	71.0	0.0
CON333									
AFIT	3.05	41.7	1.3	100.0	3.1	49.0	1.5	49.0	1.5
NCAT	1.21	41.7	0.5	100.0	1.2	49.0	0.6	49.0	0.6

Course/ school	FY97 Total WY	1st Method: Defense related %	WY %	2nd Method: % Defense related or performance based	WY %	3rd Method: Combination of 4 criteria (%)	WY %	4th Method: Faculty practice or currency (%)	WY %
ALMC	4.3	41.7	1.8	100.0	4.3	49.0	2.1	49.0	2.1
GRT201									
ALMC	0.8	12.0	0.1	52.0	0.4	23.0	0.2	26.7	0.2
IND101									
AFIT	1.45	7.7	0.1	38.5	0.6	57.0	0.8	20.1	0.3
IND102									
ALMC	0.5	85.7	0.4	88.1	0.4	86.0	0.4	18.3	0.1
IND103									
AFIT	1.25	0.0	0.0	20.7	0.3	12.0	0.2	18.3	0.2
IND201									
AFIT	1.45	12.5	0.2	60.4	0.9	43.0	0.6	55.7	0.8
IND202									
AFIT	1.25	25.6	0.3	61.5	0.8	48.0	0.6	47.8	0.6
IRM101									
IRMC	3.8	14.8	0.6	30.0	1.1	22.0	0.8	23.6	0.9
IRM201									
IRMC	7.37	25.5	1.9	86.2	6.4	26.0	1.9	25.2	1.9
IRM303									
IRMC	7.33	42.8	3.1	100.0	7.3	43.0	3.2	23.6	1.7
LOG 101									
AFIT	3.3	72.3	2.4	72.9	2.4	72.0	2.4	38.0	1.3
LOG201									
DSMC	3.22	82.7	2.7	85.7	2.8	83.0	2.7	44.0	1.4
NCAT	0	82.7	0.0	85.7	0.0	83.0	0.0	44.0	0.0
ALMC	15.2	82.7	12.6	85.7	13.0	83.0	12.6	44.0	6.7
LOG203									
AFIT	2.3	59.6	1.4	61.7	1.4	60.0	1.4	35.3	0.8
LOG204									
NCAT	1.59	16.2	0.3	16.2	0.3	34.0	0.5	34.0	0.5
LOG205									
AFIT	3.3	100.0	3.3	100.0	3.3	100.0	3.3	37.8	1.2
LOG304									
NPS	7.39	89.3	6.6	96.4	7.1	89.0	6.6	40.3	3.0
PMT202									
DSMC	0.8	44.4	0.4	44.4	0.4	48.0	0.4	50.4	0.4
PMT203									
DSMC	0.57	33.3	0.2	33.3	0.2	48.0	0.3	50.4	0.3
PMT302									

Course/ school	FY97 Total WY	1st Method: Defense related %	WY %	2nd Method: % Defense related or performance based	WY %	3rd Method: Combination of 4 criteria (%)	WY %	4th Method: Faculty practice or currency (%)	WY %
DSMC	96.11	39.4	37.9	71.5	68.8	65.0	62.5	65.3	62.8
PMT303									
DSMC	6.43	30.0	1.9	100.0	6.4	79.0	5.1	96.2	6.2
PMT304									
DSMC	0.67	10.0	0.1	10.0	0.1	60.0	0.4	69.5	0.5
PMT305									
DSMC	2.48	81.7	2.0	84.5	2.1	82.0	2.0	87.0	2.2
PMT341									
DSMC	3.99	67.4	2.7	68.5	2.7	67.0	2.7	44.0	1.8
PQM101									
AFIT	3.3	31.1	1.0	37.8	1.2	50.0	1.7	21.8	0.7
PQM103									
ALMC	1.6	66.3	1.1	74.2	1.2	66.0	1.1	35.5	0.6
PQM104									
ALMC	1.6	81.7	1.3	84.5	1.4	82.0	1.3	27.9	0.4
PQM201									
AFIT	2.3	44.7	1.0	54.5	1.3	45.0	1.0	34.0	0.8
DCPSO	2.78	44.7	1.2	54.5	1.5	45.0	1.3	34.0	0.9
NCAT	1.8	44.7	0.8	54.5	1.0	45.0	0.8	34.0	0.6
PQM202									
ALMC	0	0.0	0.0	0.0	0.0	23.0	0.0	29.7	0.0
PQM203									
ALMC	0	0.0	0.0	0.0	0.0	39.0	0.0	45.0	0.0
PQM301									
DSMC	5.69	24.4	1.4	41.2	2.3	54.0	3.1	65.6	3.7
PUR101									
NCAT	0.68	4.8	0.0	30.5	0.2	42.0	0.3	41.5	0.3
ALMC	6.8	4.8	0.3	30.5	2.1	42.0	2.9	41.5	2.8
PUR102									
LACKLAND	2.25	0.0	0.0	76.0	1.7	42.0	0.9	41.5	0.9
PUR201									
ALMC	5.4	7.0	0.4	63.4	3.4	42.0	2.3	41.5	2.2
SAM101									
DSMC	4.73	33.9	1.6	41.9	2.0	35.0	1.7	23.0	1.1
SAM201									
DSMC	11.1	50.3	5.6	86.1	9.6	50.0	5.6	44.3	4.9
IRMC	4.27	50.3	2.1	86.1	3.7	50.0	2.1	44.3	1.9
SAM301									

Course/ school	FY97 Total WY	1st Method: Defense related %	WY %	2nd Method: % Defense related or performance based	WY %	3rd Method: Combination of 4 criteria (%)	WY %	4th Method: Faculty practice or currency (%)	WY %
DSMC	3.9	60.0	2.3	95.7	3.7	60.0	2.3	53.0	2.1
IRMC	3.23	60.0	1.9	95.7	3.1	60.0	1.9	53.0	1.7
SYS201									
DSMC	1.71	12.6	0.2	28.8	0.5	47.0	0.8	46.5	0.8
NCAT	8.81	12.6	1.1	28.8	2.5	47.0	4.1	46.5	4.1
NPS	1.09	12.6	0.1	28.8	0.3	47.0	0.5	46.5	0.5
NWAD	2.87	12.6	0.4	28.8	0.8	47.0	1.3	46.5	1.3
SYS301									
DSMC	6.67	40.6	2.7	84.1	5.6	54.0	3.6	54.0	3.6
TST101									
DSMC	0.84	38.3	0.3	44.7	0.4	44.0	0.4	44.3	0.4
AFIT	2.3	38.3	0.9	44.7	1.0	44.0	1.0	44.3	1.0
TST202									
DSMC	1.95	90.9	1.8	90.9	1.8	91.0	1.8	50.4	1.0
NPS	3.53	90.9	3.2	90.9	3.2	91.0	3.2	50.4	1.8
TST301									
DSMC	0.83	90.9	0.8	90.9	0.8	91.0	0.8	61.1	0.5
NPS	1.62	90.9	1.5	90.9	1.5	91.0	1.5	61.1	1.0
Totals	564.42		192.06		369.25		313.04		261.47
			34.0%		65.4%		55.5%		46.3%
ALSO:									
RESEARCH									
ALMC	1.00								
CON331									
AFIT	2.05								
Total WY:	567.47								

Appendix L
DAU Faculty and Staff Requirements

The table presented here illustrates the relative size differences and core staff requirements based on the three models discussed for DAU (skill-based institution, corporate university, and preeminent institution) and assumptions about the manner and mode of delivery.

Illustration of DAU Faculty and Support Staff Requirements

Formulae for required faculty and staff work-years at consortium schools:*

Skill-based training institution: Total staff-years = .43 * R + .64 * O + .11 * D

Corporate University: Total staff-years = .48 * R + .64 * O + .11 * D (additional 0.05 * R for research)

Preeminent institution: Total staff-years = .63 * R + .64 O + .11 * D (additional 0.2 * R for research)

	Total # of Classes	(R) #Resident Classes	(O) #On-site Classes	(D) #DL Classes	Staff-years Required**	Core (34%)	Range (65%)
Baseline (like FY97):	1,200	960	240	0	**565**	**192**	**367**
Skill-based institution:	1,200	400	400	400	**471**	**160**	**306**
with increased DL:	1,200	200	200	800	**300**	**102**	**195**
Corporate university	1,400	600	400	400	**586**	**199**	**381**
with increased DL:	1,400	400	200	800	**405**	**138**	**263**
Preeminent institution:	1,400	600	400	400	**676**	**230**	**440**
with increased DL:	1,400	400	200	800	**465**	**158**	**302**

Notes: *Calculates faculty and support staff; excludes DAU HQ, DCAI, DSMC RCID staff, and other DSMC staff for courses taught by DSMC but not considered part of DAU in FY97 (total 707 full-time equivalent).

**Required staff could be in-house or partially outsourced.

Assumptions:

Baseline approximated from FY97 actuals (roughly 1,200 classes, 20% on-site, 30 students per class).

Staff requirement for on-site delivery assumed to be 1.5 times resident requirement.

Staff requirement for distance learning assumed to be 0.25 of baseline resident requirement.

Course development requirement assumed to be constant.

Appendix M
Abbreviations

ACPB	Acquisition Career Program Board
ACPRB	Acquisition Career Program Review Board
AET&CD	Acquisition Education, Training, and Career Development
AFIT	Air Force Institute of Technology
ALMC	Army Logistics Management College
ARCC	Acquisition Reform Communications Center
ARCC	Acquisition Research Coordinating Committee
CAE	Component Acquisition Executive
CAETR	Center for Acquisition, Education, and Research
CBI	Computer-Based Instruction
CD-ROM	Compact Disk–Read-Only Memory
CMD	Center for Management Development
CMI	Computer Management Instruction
DACD	Defense Acquisition Career Development
DACM	Director of Acquisition Career Management
DAKB	Defense Acquisition Knowledge Base
DAU	Defense Acquisition University
DAUPRB	Defense Acquisition University Program Review Board
DAWIA	Defense Acquisition Workforce Improvement Act
DCAI	Defense Contract Audit Institute
DCPSO	Defense Logistics Agency Civilian Personnel Support Office
DoD	Department of Defense
DoDI	Department of Defense Instruction
DoDD	Department of Defense Directive
DSMC	Defense Systems Management College
DUSD(AR)	Deputy Under Secretary of Defense (Acquisition Reform)

DUSD(A&T)	Deputy Under Secretary of Defense(Acquisition and Technology)
ESOP	Employee Stock Option Plan
FAA	Federal Aviation Administration
FAI	Federal Acquisition Institute
FAMDA	Florida Aviation Management Development Association
FARA	Federal Acquisition Reform Act
FEI	Federal Executive Institute
FFRDC	Federally Funded Research and Development Center
FG	Fulfillment Guide
G&A	General and Administrative
GE	General Electric
GS	General Schedule
IBM	International Business Machines
ICAF	Industrial College of the Armed Forces
IFL	Institute for Learning
ILC	Individual Learning Center
IRMC	Information Resources Management College
IRS	Internal Revenue Service
ISA	Interservice Support Agreement
IVT	Interactive Video Teletraining
LEI	Leadership Effectiveness Inventory
LMI	Logistics Management Institute
LTF	Lackland Training Facility
MBA	Master of Business Administration
MDC	Management Development Center
MIS	Management Information System
MOA	Memorandum of Agreement
NAFI	Nonappropriated Fund Instrumentality
NCAT	Naval Center for Acquisition Training
NFCTC	Naval Facilities Contracts Training Center
NPS	Naval Postgraduate School
NWAD	Naval Warfare Assessment Division

OASN	Office of the Assistant Secretary of the Navy
OMB	Office of Management and Budget
OPM	Office of Personnel Management
OSD	Office of the Secretary of Defense
PC	Personal Computer
PL	Public Law
PMT	Program Management Team
POI	Programs of Instruction
R&D	Research and Development
RCID	Research, Consulting and Information Dissemination
RD&A	Research, Development & Analysis
ROAR	Research on Ongoing Acquisition Research
SAE	Service Acquisition Executive
TVA	Tennessee Valley Authority
TVAU	Tennessee Valley Authority University
UCLA	University of California at Los Angeles
USD(A&T)	Under Secretary of Defense for Acquisition and Technology
USDA	United States Department of Agriculture
VTT	Video Teletraining

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The Office of the Under Secretary of Defense for Acquisition and Technology asked LMI to conduct a study of the Defense Acquisition University (DAU). The study included determination of core functions for DAU, a quantifiable analysis of core curriculum and faculty, and definition and construction of the defense acquisition knowledge base as a relational database of acquisition competencies, complete with keywords and other useful attributes. The study also compared DAU with similar training models from among "best practice" corporate universities, colleges and universities, and other federal training institutions. The report recommends that DAU should move to become more like a corporate university, but with attributes from the academic model.

14. SUBJECT TERMS

Acquisition; education; training; knowledge base; corporate university; core function; defense

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