

Education and Training



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FOREWORD

Throughout history, experience demonstrates that the best prepared armed forces invariably prevail in combat. Superior education and training form the core of this preparedness and provide the structure for deterring potential enemies or, if necessary, defeating adversaries in battle. It is equally important to note that education and training also play an integral role in preparing air and space forces for new and challenging types of military operations other than war (MOOTW).

While education and training are linked in application, they are distinct in purpose, with each producing markedly different results. In essence, education teaches broad concepts and communicates information upon which to base decisions, whereas training teaches skills necessary to accomplish a task. An Air Force member's education emphasizes critical thought, enabling sound decision making regardless of the situation, while the airman's training provides the skills necessary to master Air Force core competencies.

The diversity of today's military missions, the sharp increase in the number of operations, and the drawdown of military resources have combined to place incredible demands on every member of the Air Force. Officers, enlisted personnel, and civilians face new challenges at every turn. A dynamic education and training process spanning an airman's career is essential to the Air Force's readiness to attain military objectives and contribute to national security.

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INTRODUCTION

PURPOSE

This doctrine provides guidance for the education and training of Air Force members. This guidance is based on a body of knowledge gained from experience in preparing airmen for their role in supporting national security objectives. The focus of Air Force education and training programs is to develop officers, enlisted personnel, and civilians who possess the critical thinking skills and technical expertise demanded by today's military challenges. Complementary education and training programs which span an airman's career enable the successful employment of aerospace power across the range of military operations.

APPLICATION

This document applies to all active duty, Air Force Reserve, Air National Guard, and civilian Air Force personnel. It is authoritative but not directive. Therefore, commanders need to consider not only the contents of this Air Force Doctrine Document, but also their particular needs when accomplishing education and training.

SCOPE

This document reflects principles contained in AFDD 1, *Air Force Basic Doctrine*, and describes how air and space forces may best be prepared to accomplish military operations. It discusses the air and space education and training processes that effectively prepare Air Force forces for war and MOOTW.

CHAPTER ONE

OVERVIEW

If we have to fight, we should be prepared to do so from the neck up instead of from the neck down.

Jimmy Doolittle

The complexity and dynamic nature of modern military operations make them among the most demanding of all human activities. *Only through comprehensive education and rigorous training can individual capabilities be expanded to match these demands.* All Air Force personnel must be fully integrated into a continuous education and training program with the goals of gaining and maintaining occupational skills, increasing professional qualifications and judgment, and preparing airmen for leadership and supervisory challenges.

Education prepares members for planning and leadership roles and makes them more responsive to the dynamic environment in which they will operate, while realistic training provides improved professional skills for all ranks at all levels of command. Properly designed and implemented training programs hone members' skills and motivate them to achieve their full potential. Education and training combine to shape a highly efficient force that assures friends and foes alike that the Air Force is prepared for success. To achieve these ends, education and training programs are established that enable individuals to fulfill the Air Force mission.

EDUCATION AND TRAINING PROCESS

The education and training process begins upon entry into precommissioning and enlistment programs. This process, starting with accession and initial skills training and eventually extending to large-scale, joint, and multinational force training, is a continuum along which an airman moves throughout a career. Air Force members learn the skills and knowledge necessary not only to recognize the interdependence of air and space roles and missions, but also to understand how to apply Air Force forces as a component Service within the framework of a joint/multinational team. The men and women of the Air Force carry out its



Missileers continue to develop their skills long after completing their initial training.

core competencies of air and space superiority, global attack, agile combat support, rapid global mobility, precision engagement, and information superiority. The ultimate goal of education and training programs is to develop airmen ready to employ these core competencies and apply sound principles and analysis in unfamiliar situations.

Here, the key relationship between education and training becomes clear. **While education teaches the individual “how to think,” training teaches the individual “how to do.”** The intricate and delicate weave of education and training further provides Air Force personnel with the ability to compensate for the natural limitations of combat training in a peacetime environment. The combination also provides the cognitive ability to adapt war-fighting skills and methods to MOOTW.

INTEGRATION OF RESERVE COMPONENT FORCES

Air National Guard and Air Force Reserve forces are fully integrated into the Air Force with the same high level of standards for performance. *As such, the education and training requirements and opportunities for Reserve component forces should be comparable to those of the active duty force.* It is essential for Reserve component forces to train alongside the active force for effective utilization of Air Force core competencies. Vital to the successful integration of Guard and Reserve members in Air Force education and training programs is the recognition that Reserve component members experience a different day-to-day environment than does the active force. As a result, although standards remain equal, the format and structure of Air Force education and training programs as applied in the Reserve component will likely require modification. Notwithstanding the challenges such modification presents to commanders at all levels, a significant amount of deterrent value and war-fighting capability resides in the Reserve component. It thus becomes absolutely essential to educate and train Reserve component members on a par with the active component.



INTEGRATION OF CIVILIAN FORCES

The term “airmen” refers not only to officers and enlisted personnel, but to Department of the Air Force civilians as well. *Civilians are fully integrated into the Air Force, and as such should have education and training require-*

Civilian employees provide skills that are critical for Air Force operations.

ments and opportunities consistent with those of the active duty force. It is essential to the effective accomplishment of Air Force operations to have integrated, systematic programs for civilian training, education, and development that facilitate and support warfighter requirements. While civilians normally must meet basic requirements to qualify for a position, continuing education, training, and development programs designed to meet current and projected organizational, occupational, and individual performance requirements are essential to military readiness.

CHAPTER TWO

EDUCATION

Perhaps the most valuable result of all education is the ability to make yourself do the thing you have to do, when it ought to be done, whether you like it or not.

T.H. Huxley

Education is the process of imparting a body of knowledge to intellectually prepare individuals to deal with dynamic environments and solve ill-defined problems by using critical thought and reasoned judgment. *Education programs prepare Air Force members to successfully anticipate and meet challenges across the range of military operations.* The Air Force values education as a significant source of combat capability. Military education is essential to the professional development of Air Force members, strengthening their abilities to lead and manage air and space forces. Voluntary education opportunities enable self-development, improve critical thinking skills, and serve as a recruiting and retention incentive for military members. Education programs expand knowledge and increase understanding of the role of aerospace power in fulfilling our national security strategy.

Education is a critical prerequisite to anticipating and meeting the challenges of the broad range of military operations in which air and space forces are employed. Advances in technology have increased the pace and lethality of military operations while the global security environment has increased their complexity. As aerospace power becomes the force of choice in responding to global challenges, flexible and agile intellect is critical to making decisions regarding strategy, doctrine, and tactics.

Continuing education prepares members for supervisory and leadership positions by further developing their professional expertise and analytical ability. *Through professional and voluntary education, individuals develop the abilities necessary to operate effectively in dynamic environments and reach appropriate conclusions.* Education helps develop sound problem-solving abilities that enable airmen to better define problems in a complex operational environment. It provides Air Force members a

breadth of knowledge and problem-solving tools that aid in critical thinking, allowing individuals to address a wide range of problems and weigh alternative solutions.

The skillful deployment and employment of air and space forces can resolve threatening situations, deter aggression, and rapidly halt and defeat opponents. The proper employment of aerospace power, either independently or as part of joint or multinational operations, can be the decisive element in military operations. **At the very foundation of the tremendous capabilities of aerospace power is education.** Only quality education achieved through professional development can ensure the critical thought processes necessary for sound decision making.

What sculpture is to a block of marble, education is to a human soul.

Joseph Addison

OBJECTIVES

Education programs prepare Air Force members to find solutions to ill-defined problems. *Education programs built around realistic scenarios and which demand decision making within realistic time frames serve to increase the educational effect.* This is achieved through dynamic curricula that anticipate the evolving security environment. Education programs involving the full range of aerospace power capabilities within a wide range of military operations provide a comprehensive educational experience.

The most effective education programs form a continuous process in which each educational exposure builds upon previous experience. *Each level of education should be designed to prepare the individual for increasing levels of responsibility by further developing critical thought processes.* This is accomplished through challenging curricula that match the level of education with the position, responsibility, and career progression of the individual.

RESPONSIBILITY

Individuals are responsible for their continued education. Formal education programs provide opportunities for individuals to improve their intellectual talents. Outside of formal programs, individuals may continue their development through professional reading, individual or group study, and peer discussion. Only personal dedication to professional development can secure the maximum benefits of education and prepare individuals for the intellectual challenges and responsibilities of employing air and space forces.

While realizing that unit workloads may preclude some educational opportunities, commanders should ensure individuals are afforded the opportunity to achieve education appropriate to their rank or grade, responsibility, and career point. Commanders provide the direction, purpose, and motivation essential for individuals to achieve their educational goals. Attainment of these goals prepares Air Force members to lead organizations and manage resources across the range of military operations. Additionally, commanders can further their subordinates' development by ensuring a continuing education process through mentoring programs that complement formal educational programs and by fostering a climate that promotes professional development.

MAXIMIZING EFFECTIVENESS

Education programs should never be designed haphazardly. Careful consideration must be given to the desired outcome of the program. *While no two programs will be alike, there are some common aspects that should always be considered.* The benefit of education programs can be maximized through:

- ✦ *Flexibility* to adapt educational objectives to emerging concepts and ideas.
- ✦ *Versatility* to encompass the full range of military operations in education programs.
- ✦ *Priority* on relevant concepts through objective evaluation, feedback and input.
- ✦ *Balance* between academic concept, operational reality, and historical perspective
- ✦ *Centralized development* of education programs through a systematic approach involving mentally challenging, realistic educational goals.

- ✧ *Decentralized learning* through the commitment of the individual.
- ✧ *Synergy* through complementary instructional methods, mentoring efforts, and practical exercises.
- ✧ *Concentration* on aerospace power employment.
- ✧ *Persistent* education that spans the individual's career.

Education programs must retain the flexibility to quickly adapt to emerging concepts and ideas. Within the dynamic global security environment education programs must remain relevant. Education programs that remain entrenched in out-of-date concepts do not adequately prepare individuals to cope with changing environments and lose credibility within the institution and with individuals. Professional journals, current book releases, and discussions of current aerospace power challenges are excellent tools for a relevant education process.

The liberally educated person is one who is able to resist the easy and preferred answers, not because he is obstinate but because he knows others worthy of consideration.

Allan Bloom

Education programs must improve the airman's contribution across the full range of military operations. Air and space forces are employed as an integrated whole across a wide range of military operations. Stovepiped education programs that emphasize limited aspects of aerospace power reduce its effectiveness by limiting the decision-making capabilities of the individual. Airmen should understand how their area of expertise applies throughout the spectrum of conflict.

Priority must be given to educational objectives that are relevant to actual air and space core competencies. While any good education program will confer some benefit upon the student, limits on time and resources demand that emphasis be placed on developing the knowledge and skills essential to mission success. Relevance to operational requirements is best measured through objective evaluation from outside the educational program, feedback from students, and inputs from operational customers.



Education pursued at either civilian or military institutions should help an airman fulfill the Air Force's core competencies.

A balance must be achieved between academic concepts, operational realities, and historical perspective. Overreliance on academic concepts can detract from educational objectives that focus on operations, while overemphasis on operations can reduce the depth of understanding of academic concepts. Learning is increased whenever past lessons or historical examples can be used to illuminate objectives. *The proper balance of academic concepts and operational reality weighed against the lessons of the past make for an effective education program.*

Education programs must begin with a systematic approach. *Systematic programs provide a means to establish objectives, measure achievement, evaluate effectiveness, and provide for feedback.* Whether formal programs are centrally developed or individual programs are developed to meet individual interests, a systematic approach provides the best educational program. Mentally challenging, realistic educational goals are central to a systematic process.

Education, whether formal or informal, requires the commitment of the individual. *Education programs must address the commitment and motivation of the individual.* Only with individual commitment to learning can education be effective. Individuals committed to learning will pursue education across the span of their careers through various means and methods. Education programs that do not evaluate and address individual commitment are less effective.

Education programs can maximize effectiveness when they provide for learning through complementary efforts such as lectures, student-led discussions, mentoring, and practical exercises. *The synergy achieved by combining various educational methods and means far exceeds the results of each individually.* Complementary education programs reinforce key concepts, offer new ways of viewing problems, and expand logic skills. Within individual professional development programs, this

can be accomplished by seeking out mentoring sessions and striving for increased responsibilities and educational opportunities.

Professional military development is essential to the proper employment of aerospace power, and thus education programs must concentrate on aerospace power. *Education is essential to proper understanding of core competencies, and sound decision making is essential to proper employment in achieving these competencies; therefore, education must focus efforts in this direction.*

Education programs that do not enable the accomplishment of Air Force core competencies should be questioned. Concentration of purpose is vital in all education programs, formal and informal alike, across the continuum of education.

Education should span the individual's career. *Episodic exposure to education reduces learning effectiveness, narrows perspective, and hampers critical thought.* Professional military development begins at accession and continues across a continuum of education. Individual commitment to education is essential to ensuring the persistence of education.

CONTINUUM OF EDUCATION

The continuum of education spans an airman's career. It can be viewed broadly as consisting of these levels:

Accession	Primary	Intermediate	Senior
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The goal of the education continuum is to provide for the ongoing professional development of Air Force members. Professional develop-

In Quest of a Theory

In 1934, Vandenberg began a string of educational and staff assignments that were to fill out the other half of his professional character. The Tactical School was the intellectual center of the Air Corps. Aviators were never accused of being thinkers, but what theorizing was done concerning the proper roles and missions of air power took place at Maxwell. Attendance at the Tactical School was virtually mandatory for all officers aspiring to a command in the Air Corps, and the vast majority of high-ranking American air officers in World War II had either attended or instructed there. The curriculum was designed to train students in the strategy, tactics, and logistics required for air power employment and was also instrumental in the formulation and codification of doctrine.

Phillip S. Meilinger
Hoyt S. Vandenberg:
The Life of a General
Indiana University Press, 1989

ment across the continuum cultivates the airman's view, increases understanding, and improves judgment in the employment of aerospace power. **Accession programs** begin the process by building a general knowledge of Air Force organizations, customs, courtesies, doctrine, and heritage while instilling a sense of service identity as an "airman." **Primary programs** further develop the sense of service identity while developing teamwork, leadership, and fundamental knowledge of Air Force organizational command, forces, and functions as well as individual skills in an air and space discipline. **Intermediate programs** continue to build upon previous levels by imparting knowledge of aerospace power across the range of Air Force and military operations, and within joint and multinational operations while preparing individuals for staff and command positions. **Senior programs** further develop the war-fighting and war-winning intellect while also preparing individuals for senior leadership responsibilities in the command and employment of aerospace power.

A mix of education programs helps airmen attain the proper degrees of knowledge and understanding. *Different types of programs offer students a variety of perspectives and learning styles.*

There is no one "right" means of education. Programs available throughout the continuum include professional military education (PME) and professional continuing education (PCE) programs provided by the Air Force and other Services, graduate education through military and civilian institutions, voluntary education programs at civilian schools, and informal systems such as mentoring by senior officers and NCOs, conferences and symposia, and individual programs.



Air War College offers PME to officers and civilians preparing for senior level leadership responsibilities.

All of these programs contribute to a properly educated, professional military force. PME generally occurs across the continuum from accession through the senior level. PCE and graduate education occur during the primary, intermediate, and senior levels of the continuum. Voluntary education occurs at various points throughout the continuum. Mentoring and informal and individual education programs should begin during accession and are most effective when consistently pursued across the entire continuum. *When education programs are related and complemen-*

tary across the continuum, the goal of professional development can be achieved with the maximum benefit.

PROFESSIONAL MILITARY EDUCATION

PME offers a curriculum of instruction and study that provides individuals with the skills, knowledge, and understanding to function in leadership roles and make sound decisions in progressively more demanding command and staff positions. PME has as its primary themes the development of leadership, management, and communication skills; the employment of combat forces; the military, political, economic, social, and psychological dimensions of national security; Service organizations; joint and multinational operations; and strategy.

These concepts are progressively emphasized over the course of an airman's education continuum.

PME is an essential part of an Air Force member's overall professional development. AU provides PME for the Air Force through colleges, schools, and academies. PME opportunities for airmen are also available through the schools of other Services and numerous other countries, the colleges within the National Defense University, and various fellowship programs. The PME process is available to all military and civilian members of the Air Force and spans an airman's career. It is most

Establishment of Air University September 3, 1946

The War Department established Air University (AU) to correct many of the problems and deficiencies of the pre-war military education system. The schools that comprised the old system had operated independently and were poorly coordinated in terms of scope, doctrine, and curriculum. Unlike the architects of previous and existing military educational institutions, the founders of Air University sought to break away from the...rigidity of thought and the doctrine...that had often characterized military education in the past.

The founding fathers, many of whom were graduates of the Tactical School, wanted to establish a progressive, forward-looking institution that could keep the Air Force's thinking fresh and could project at least five years into the future. "We must guard rigorously against ... accepting answers from the past instead of digging them out of the future," Major General Muir S. Fairchild, the first AU commander, explained. "This is not a post-war school system—it is a pre-war school."

A Short History of Air University
Headquarters Air University,
Office of History, 1995



Air Force Reserve Officer Training Corps, or ROTC, provides professional military education to future officers.

effective when individual programs are linked to form a process of education that builds upon previous levels and provides the foundation for successive levels.

PROFESSIONAL CONTINUING EDUCATION

PCE contributes to an unbroken continuum of education by providing educational opportunities that complement the periodic education provided in PME and enhance the understanding of Air Force members through courses within a particular functional area. It fosters a greater understanding of certain aspects of military missions and operations. This is achieved through a program of diverse courses designed to increase both the depth and breadth of knowledge within a particular field of interest. PCE complements the objectives of PME by sharpening problem-solving skills, refining the thinking process, and increasing sound professional judgment. PCE spans the range of military operations and is offered to all members at all levels of responsibility.

GRADUATE EDUCATION

Air Force graduate education programs support scientific, technological, logistical, and other requirements necessary to perform the Air Force mission. In some cases, advanced academic degrees may be required to perform primary duties. The effectiveness of graduate edu-



The University of Virginia is one of many civilian institutions offering graduate programs that are important for the Air Force.

cation programs depends upon Air Force organizations identifying the advanced degree requirements necessary to meet operational mission objectives. To meet advanced degree requirements, the Air Force selects a limited number of members to receive graduate education through civilian institutions or through military schools such as the Air Force Institute of Technology. These programs are most effective when employed at the primary and intermediate levels of the education continuum.

In sum the leader has to achieve a balance between the essential need for professional competence in his own technical field and that broader understanding of human problems which can only be achieved from a wide and largely self-acquired education.

S. W. Roskill

VOLUNTARY EDUCATION

Voluntary education programs enhance the intellectual growth and knowledge of Air Force personnel. *When these factors coincide with the individual's technical skills and abilities, the synergy improves mission accomplishment.* To have the greatest impact on job performance and mission effectiveness, the Air Force encourages members to engage in voluntary education programs with an emphasis on continuing their professional development and increasing their contribution to the Air Force.

The Air Force provides quality voluntary educational opportunities designed to complement the professional development of military and civilian personnel. *Commanders ensure there are opportunities for subordinates to participate in voluntary education programs to better themselves and improve their capacity to complete the mission.* These opportunities might include formal programs of study at local colleges or universities, or less formal methods such as a mentoring program, attendance at conferences, or a commander's suggested reading list. Such programs contribute to an individual's personal and professional development and are best pursued during the intermediate portion of the continuum.

SUMMARY

The Air Force education process focuses on producing personnel who can think and act effectively across the range of military operations in complex environments. Education programs are based on the requirements and guidance levied by the Office of the Secretary of Defense, Joint Staff, Air Force, and other agencies involved in defense and national security policy. The Air Force is committed to providing a comprehensive education process that provides a foundation for remaining the world's premier air and space force. By ensuring a quality education in aerospace power for all Air Force members, the Air Force ensures air and space forces are employed as part of the joint team in the most efficient and effective manner. Across the continuum of education the Air Force offers educational opportunities through formal, informal, and voluntary education programs that require the commitment of both com-

The Community College of the Air Force

In the early 1970s with the draw-down of the Vietnam War, the Air Force found its noncommissioned officer force taking on more and more mid-level managerial responsibilities previously accomplished by officers. At the same time, more Air Force jobs were moving into the high technology arena. In 1972 alone the Air Force classified more than 70 percent of its jobs as high technology. Faced with these emerging trends, Air Force leaders recognized that noncommissioned officers would require additional educational opportunities to meet the challenges of tomorrow.

On 9 November 1971 the Air Force Chief of Staff, General John D. Ryan, agreed to the establishment of the Community College of the Air Force. On 25 January 1972, the Secretary of the Air Force approved the plan to activate the college, and Air Training Command established the college on 1 April 1972 at Randolph AFB, Texas.

manders and individuals. Professional development through education is the bedrock of aerospace power.

CHAPTER THREE

TRAINING

Training is light and lack of training is darkness. The problem fears the expert. A trained man is worth three untrained: that's too little...say six; six is too little...say ten to one....

Alexander Suvorov

Training provides the skills necessary for air and space forces to perform their functions and contribute to the accomplishment of United States (US) national security objectives. All Air Force personnel receive training as required throughout their careers. The increasing sophistication of weapon systems places an even greater demand on those who have the ultimate responsibility for employing these weapon systems.

A trained force is vital for deterrence and for employing Air Force core competencies. To deter conflict, potential enemies must perceive that the United States has the capability and resolve to rapidly respond to crises with overwhelming force and engage in military operations either unilaterally or with multinational forces. In addition to preparing forces, training exercises provide a clear demonstration of capabilities and commitment to friend and foe alike. In the event deterrence fails, training significantly contributes to the vital edge over potential opponents.

The only fence against the world is a thorough knowledge of it.

John Locke

OBJECTIVES

Training is the process of imparting knowledge and teaching specific skills required to accomplish tasks under defined conditions. *The objectives of Air Force training are to increase readiness and military effectiveness.* Training prepares individuals and units to employ aerospace



Accession training introduces new airmen to Air Force culture.

power across the range of military operations. This is accomplished through demanding curricula and frequent training under realistic conditions. In addition to individual skill development, training fosters teamwork and an understanding of unit and individual contributions to the overall mission and helps reinforce Air Force culture.

RESPONSIBILITY

Commanders are responsible for the training of their units and for unit performance. Commanders should use the *Air Force Task List* in AFDD 1-1, appropriate Air Force policies and instructions, and their own experience to provide the direction, purpose, and motivation essential to prepare Air Force members for the range of military operations. To fulfill their training responsibilities, commanders should:

- ✦ base training on wartime requirements, peacetime tasking, core competencies, and applicable Air Force directives;
- ✦ assess current levels of unit capability;
- ✦ provide required resources for training;
- ✦ develop and implement effective training systems;
- ✦ demand rigorous evaluation programs;
- ✦ maintain personal proficiency and mission certification.

Commanders provide the continuing emphasis for remaining focused on the operational mission. They centralize training planning and decentralize its execution while establishing effective communica-

Combat Training

Realistic combat training is not a luxury, but a necessity. We have insisted on strong funding profiles for all combat training programs. What began 20 years ago as a modest exercise concept known as Red Flag has since become the backbone of USAF readiness. As one commander put it, “What we did in DESERT STORM would have been impossible if the entire Air Force didn’t have flag exercise experience.” Now all Air Force flag exercises are joint or combined. Similarly, the Air Force is a full partner in all major Army exercises at the National Training and Joint Readiness Training centers. Finally, we bring high training standards to over 50 major joint and combined exercises around the globe each year.

Underpinning this, of course, is the realistic day-to-day training that prepares our people for these exercises. Thus, we maintain high day-to-day training tempos across the force, and daily operations increasingly emphasize composite and joint force operations to build on basic formation skills. Finally, we continue to enhance combat training through simulation, but primarily as a supplement to flight operations. Teamwork and uncompromising standards measured in a realistic flight environment are the touchstones of war-fighting excellence. We will continue to arm our people with experiences that mimic the crucible of war in its most demanding phases.

1995 Report of the Secretary of Defense to the President and the Congress

tion between levels of command. Finally, as the principal mission leader, the commander’s operational proficiency and participation in training programs demonstrate the mission’s overall importance to subordinates.

ASSUMPTIONS

Certain central assumptions form the basis for Air Force training. These assumptions are that training is:

- ✦ readily available;
- ✦ continuously updated;
- ✦ regularly evaluated;
- ✦ flexible enough to accommodate the needs of commanders.

These assumptions lay the foundation for any successful training program that has increased readiness and military effectiveness as its overall objectives.

TRAINING GUIDELINES

Beyond the central assumptions that form the basis for training programs, the following guidelines maximize training value when developing and conducting the training of air and space forces.

- ✦ Make training realistic.
- ✦ Conduct training for all forms and levels of military operations.
- ✦ Tailor training to the target audience.
- ✦ Emphasize joint and multinational training.
- ✦ Balance capability and cost.
- ✦ Evaluate training rigorously.
- ✦ Anticipate that combat performance rarely equals training performance.

The first guideline is realism. *Air and space forces should train in the manner they intend to fight, using training and exercise scenarios that simulate real world situations.* This involves practicing operations and exercising contingency plans to include combat stress and unpredictability. Training scenarios challenge individuals to adapt to fluid environments. In this manner, commanders will receive a more accurate picture of their units' combat capabilities under real world conditions. By emphasizing the goal to "train the way we operate," individuals are better prepared to meet the challenges of operations.

Air Intelligence Training

In July 1941, Major General George H. Brett, Chief of Air Corps—now that Arnold had become Chief [Army Air Forces] AAF—pointed out that the Air Force Combat Command did not have more than twenty five officers assigned to intelligence duties who could be considered even partially qualified for their jobs. Brett urged that the AAF proceed with plans to establish a basic intelligence school...Obviously, trained intelligence officers were better than ones untrained, and had an air intelligence training school been organized before 1941, it would have functioned more effectively once war broke out. The Harrisburg Air Intelligence School—begun with little advance planning, staffed with instructors with no combat experience, enrolled with students unaccustomed to military affairs, and subject to the whims of a personnel system straining to respond to a host of demands—did surprisingly well. In December 1943, the Commanding General of Eighth Air Force, Ira Eaker, stated in his report at the conclusion of his assignment, "Graduates of the Intelligence School at Harrisburg, Pennsylvania, had received excellent basic training."

John F. Kreis
*Piercing The Fog: Intelligence and Army
Air Forces Operations in World War II*
Air Force History and
Museums Program, 1996

Training for War

After the Iraqi invasion in August and the coalition deployment to the Gulf, units conducted training under wartime conditions both at home bases and in theater. Squadrons designated for Gulf duty underwent a training program focusing on aspects of operations that were considered politically unacceptable in densely populated Britain [where they were based], for example, unsafe, too costly, or environmentally hazardous for regular peacetime training. These included nighttime air-to-air, very-low-altitude flight, and heavy load flying.

Once in theater, pilots continued to train with even more realism, including a heavier dose of night operations and flying strike and air-defense packages over mostly featureless desert terrain that placed heavier demands on navigational accuracy. Complex procedures of managing the airspace and safety practices were worked out and learned by allied flight and ground crews.

As plans developed and the Iraqi air-defense threat was further assessed, air crews began practicing for specific missions and adapting training to the threat environment, including medium-altitude bombing. Fighter-bomber aircraft of all services conducted “mirror-image” flights that duplicated the actual flight ranges, profiles, and weapons delivery that would be required once combat operations commenced.

James A. Winnefeld
*A League of Airman:
U.S. Air Power in the Gulf War*
RAND Corporation, 1994

Training should be conducted for all forms of military operations. Comprehensive training allows Air Force forces the versatility to respond to asymmetric threats and the flexibility to meet challenges in a dynamic environment. Those charged with training air and space forces should avoid limiting training only to operations most likely to be encountered. Likewise, those responsible for training should avoid the tendency to only “train for the last war.” Future military operations may be significantly different from previous conflicts. Certain MOOTW, such as peacekeeping and humanitarian assistance, may be based on the inherent capabilities of air and space forces but will require emphasis on different skills, tactics, and staff functions than do higher intensity operations.

Training programs must be designed with the experience and current skill levels of the participants in mind. *Training objectives should take into*

consideration student abilities and requirements. There is no such thing as a “one-size-fits-all” training program. Individuals and units undergoing training already possess certain skills which should be reinforced and have requirements for improved performance or abilities which must be

Realistic training across the range of military operations creates a force ready for a variety of scenarios.



Training with foreign partners prepares airmen for likely contingencies.

achieved. Training programs that are expected to meet the needs of everyone in the Air Force will instead be so generic as to have limited benefit.

Training of air and space forces will also emphasize joint and multinational operations. *Effective employment of aerospace power requires an understanding of the capabilities of other Services, components, allies, and potential enemy forces.* The capabilities of other Services, components, and multinational forces may provide the decisive edge in combat. The training of air and space forces within joint and multinational operations increases mutual awareness and refines operating standards and procedures. Air Force personnel who provide training to the forces of other nations must understand the nature of these forces and recognize the effects of different language, culture, geography, and political structures.

Training increases capability, but as the overall level of training increases, the incremental cost of additional training competes for limited resources with other demands. *Commanders strive to achieve a proper balance between other demands and the capability gained by additional training.* Training programs should maximize use of expanding technologies such as modeling and simulation, which may make it possible to achieve realistic training at reduced costs.

Rigorous evaluation provides feedback on the quality of air and space forces and their training programs. *While individual and unit capabilities might be measured by a single "snapshot," trends over time high-*

light the positive and negative attributes of the training program itself. For this reason, it may be better in some cases to have students evaluated by a different agency than the one which conducted the training. This allows for more objectivity in identifying student deficiencies and finding potential problems in the training process.

Despite training in the most realistic of environments, actual performance during military operations may not attain levels of performance demonstrated during training. Military operations are demanding and unpredictable. During training, constraints such as cost, safety, and practicality limit the ability to fully simulate actual military operations. Personnel may have to do more, in less time, in war and MOOTW than in peacetime training. During military operations, friction and uncertainty will be increased by factors such as tempo and fatigue. *As a consequence, airmen may face demands in actual military operations that they have not encountered during training.*

LEVELS OF TRAINING

Continuous specialty training ensures Air Force members can satisfy operational requirements throughout their careers. *This process includes those training components designed to teach Air Force members the basic skills required to perform a specialty and those that refine those skills over time.* The concept of specialty training encompasses accession, operations, advanced, and continuation training.

Accession training prepares members for service by providing indoctrination to the military culture, organization, and mission.

Operational training provides the necessary technical skills to ensure individuals have a basic understanding of their job and how it contributes to the overall mission of the Air Force.

Advanced training increases competence by building upon the foundation established in operations training. This training better qualifies individuals to perform the unit's mission. The establishment of minimum qualifications, combined with commander involvement, creates an orderly system of progression. This ensures individuals accumulate the required experience and expertise for advancement.

Continuation training maintains and refines skills necessary to keep airmen ready to perform the mission. This training maintains the combat



Officer Training School, left, is one program providing accession training. Above, airmen continue to refine their skills throughout their careers.

edge, takes advantage of technological advances, increases unit experience, and provides increased knowledge essential for individuals to progress. Rigorous proficiency training provides the core of continuation training programs.

SUMMARY

Training forms the foundation for successful execution of the Air Force core competencies. Commanders are ultimately responsible for the capability and readiness of their units and are therefore responsible for the training of their units. Individual members also bear responsibility for achieving skills that result in the combat capability and readiness desired. Training programs should be based on a systematic building-block approach that develops basic skills and builds upon them throughout the course of an airman's career.

CHAPTER FOUR

SYSTEMATIC APPROACH TO INSTRUCTIONAL DEVELOPMENT

I have always thought that one man of tolerable abilities may work great changes, and accomplish great affairs among mankind, if he first forms a good plan, and, cutting off all amusements or other employments that would divert his attention, makes the execution of that same plan his sole study and business.

Benjamin Franklin

A major concern for every commander and supervisor is whether personnel are adequately prepared to do their job. It is imperative that people receive the right education and training at the right time. **Decisions regarding the proper timing and levels of preparation necessary for a particular task, operation, or position should be made in a systematic manner to ensure appropriate instruction is developed, conducted, and evaluated.** Such a process can produce alternatives from which the most cost-effective solution may be chosen based on operational requirements, environmental constraints, and the current abilities of the target audience.

TRAINING PROGRAMS

The basic goal of Air Force training programs is to prepare individuals to conduct missions across the range of military operations. *This can be accomplished through a demanding curriculum and frequent training under realistic conditions.* In addition to focusing on the individual, training systems should be structured to foster



Air Force training programs should fit into a comprehensive system.

Training systems are only effective when they incorporate specialized personnel, equipment, and support.



teamwork and an understanding of unit and individual contributions to the overall mission.

The challenge of any training system is to be flexible and adaptable to the full spectrum of Air Force core competencies. As a part of the overall training process, it is essential the Air Force obtain expertise in the development and integration of training systems. Regardless of the training program or the level of military operations it supports, a systematic process should be used to design and employ such systems.

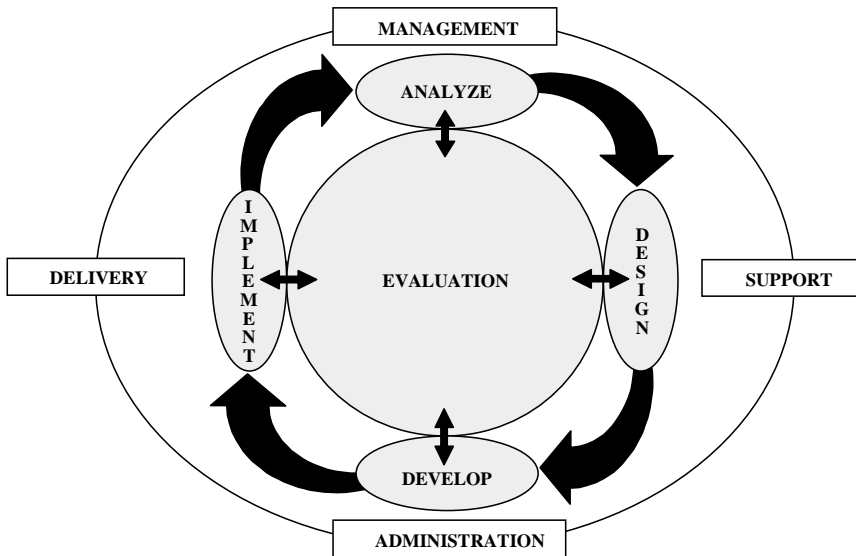


Figure 4.1. Instructional System Development Model

When designing training systems, the Air Force uses the Instructional System Development (ISD) model (see figure 4.1). Using this model, program designers determine specific objectives for student performance based on identified Air Force needs (e.g., through referencing the Air Force Task List). They then determine how to measure student performance, and develop a curriculum and select instructional methods which will enable students to achieve the desired level of skill. Once the training is conducted and student performance has been evaluated, the designers determine the program's effectiveness and adapt it if required.

A training system includes all items necessary to accomplish the desired training goals. These items should include equipment, instructors, curriculum, courseware, hardware, software, and logistics support. Training system designers should consider how to incorporate all the interdependent parts involved in accomplishing effective instruction.

Education costs money, but then so does ignorance.

Sir Claus Moser

EDUCATIONAL PROGRAMS

Educational programs for airmen should also be developed using a systematic approach. *The ISD model may not always be appropriate for educational systems, but those who are responsible for developing an educational program should still use a systematic method to design it.* An understanding of desired outcomes is still essential, but the measurement of student abilities is often more subjective in education than in training.

Education programs should be relevant to operational needs. Program designers need to ensure education complements training and enables airmen to better carry out the Air Force's core competencies. PME and PCE curriculum and instructional methods should relate directly to operational requirements. Graduate education programs should be selected based on the needs of the particular position to be filled. Airmen seeking voluntary education should consider programs which improve knowledge or skills they need in the performance of their duties. The challenge is to translate educational requirements into educational experiences and integrate information, resources, and instructional techniques into overall course planning.



PME programs should help airmen meet operational requirements.

The methods for measuring instructional effectiveness should verify changes in student behavior as a result of instruction. The goals of educational curricula deal largely with *knowledge* learning and *affective* learning (attitudes), rather than with *psychomotor* (physical manipulation) skills. Evaluation systems must be able to demonstrate the effects of instruction on knowledge and attitudes. This can be highly subjective in an educational program, but standards of performance need to be established and measured to evaluate student learning.

OPERATIONAL EVALUATION

Education and training programs require continuous and rigorous evaluation. *Operational evaluation provides feedback on the quality of air and space forces and their instructional programs.* Evaluation is an integral element of the systematic approach. In addition to providing feedback on the instructional program, the results of operational evaluations

Program designers must ensure systems remain relevant to operational needs.



may be used to critique the organization of forces, strategy, tactics, planning, performance, and equipment design.

METHODS OF INSTRUCTION

Selecting the most appropriate instructional method is crucial to ensuring an educationally sound, cost-effective, and successful course of instruction. Within the limitations of resource constraints, the method selected must enable the student to achieve stated course objectives. The degree of realism needed in the training or educational setting and the level of learning desired will generally govern the instructional methods used.

Modern instructional technologies will become a future force multiplier for instructional systems. *These technologies can increase realism, improve student retention of material, and give the learner greater control over the instructional environment.* High levels of control and realism tend to enhance learning and should be exploited when and where appropriate. In many cases, adults learn better when they can control the learning situation according to their individual needs. However, complete control by the learner leads to inefficiencies in the learning process. Curriculum developers and managers must seek a balance between traditional passive instructional methods (such as lectures) and more active instructional methods that provide varying degrees of learner control. The objective of striking this balance is to maximize student learning within the fiscal and environmental constraints placed upon the instructional situation.

EXERCISES AND WARGAMING

Exercises and wargaming are becoming increasingly important methods of providing instruction and evaluating both student performance and the effectiveness of training and education programs. *Exercises contribute greatly to training while wargaming is typically more appropriate for education.* The same guidelines governing education and training should be followed when developing exercises and wargames to ensure they help meet the desired instructional outcomes. The future of education and training in the Air Force will increasingly rely on the use of exercises, wargames, and other simulations that capitalize upon advanced instructional technologies.

Exercises are designed to improve individual and unit skills, allowing forces to put into practice the concepts and methods they have studied. *Many ideas discussed in hypothetical terms or case studies may not be fully understood until experienced firsthand.*

For example, recent military operations have demonstrated the interdependence of all elements of the Air Force. Acquisition, logistics, air base defense, communications, intelligence, and reconstitution all affect mission effectiveness and the ability to sustain operations.

Application of these elements in an exercise allows learners to go beyond the limitations of a classroom and see how the relationship between different forces leads to the most effective use of aerospace power. The value of an exercise extends beyond the exercise itself and requires a comprehensive report of experience gained. A critical review of exercise experiences can help shape future doctrine, strategies, and operations.

Wargaming at the strategic, operational, and tactical levels of war emphasizes educational outcomes, improving judgment and decision making for students with various degrees of experience and ability. *Through wargaming scenarios, existing strategies and future concepts may be tested that would otherwise be impractical or impossible to validate or disprove.* At the *strategic* level senior leaders develop judgment in applying the core competencies across the range of military operations. At the *operational* level wargaming emphasizes judgment in the employment of air and space forces in an integrated, coherent manner. The goal of wargaming at the operational level is to enhance the individual's ability to design, plan, integrate, react, and redirect operations to support strategic objectives. At the *tactical* level wargaming focuses on individual and unit specialized knowledge, technical skills, and the development of tactical knowledge.

Exercise

A military maneuver or simulated wartime operation involving planning, preparation, and execution. It is carried out for the purpose of training and evaluation. It may be combined, joint, or single-Service exercise, depending on participating organizations.

Wargame

A simulation, by whatever means, of a military operation involving two or more opposing forces, using rules, data, and procedures designed to depict an actual or assumed real life situation.

Joint Pub 1-02
*DOD Dictionary of Military and
Associated Terms*

SUMMARY

Air Force education and training programs are both essential and expensive. The need to educate and train Air Force personnel will always compete for limited resources with other demands. Commanders should strive to achieve a mission-appropriate balance between the other demands and the capabilities gained from educating and training their personnel. To assist the commander in this task, developers and managers of instructional programs should make use of appropriate instructional principles, methods, and technologies, which make it possible to achieve the highest quality instruction at minimal cost.

At the very Heart of Warfare lies Doctrine...

Chief of Staff of the Air Force Professional Reading List for Officers

Basic List

Sun Tzu, *The Art of War*

Phillip Meilinger, *10 Propositions Regarding Air Power*

James Stokesbury, *A Short History of Air Power*

Donald Phillips, *Lincoln on Leadership*

Tom Wolfe, *The Right Stuff*

James Hudson, *Hostile Skies*

DeWitt Copp, *A Few Great Captains*

Geoffrey Perret, *Winged Victory*

John Sherwood, *Officers in Flight Suits*

T.R. Fehrenbach, *This Kind of War*

Jack Broughton, *Thud Ridge*

Harold Moore, *We Were Soldiers Once...and Young*

Richard Reynolds, *Heart of the Storm*

Intermediate List

Peter Paret, *Makers of Modern Strategy*

Tony Mason, *Air Power: A Centennial Appraisal*

George C. Kenney, *General Kenney Reports*

Donald Slayton, *Deke!*

Lee Kennett, *The First Air War*

Thomas Hughes, *Over Lord*

Robert F. Futrell, *The United States Air Force in Korea*

Mark Clodfelter, *The Limits of Airpower*

Richard Hallion, *Storm Over Iraq*

Advanced List

Carl von Clausewitz, *On War*

I.B. Holley, *Ideas and Weapons*

James Belasco and Ralph Stayer, *Flight of the Buffalo*

Walter McDougall, *...The Heavens and the Earth*

Raymond H. Fredette, *The Sky on Fire*

R.A. Overy, *Why the Allies Won*

Phillip Meilinger, *Hoyt S. Vandenberg: The Life of a General*

Ulysses Sharp, *Strategy for Defeat*

James Winnefeld and Dana Johnson, *Joint Air Operations*

Roger A. Beaumont, *Joint Military Operations*

Michael Gordon & Bernard Trainor, *The Generals' War*

John Warden, *The Air Campaign*

Chief of Staff of the Air Force Professional Reading List for Enlisted Members

Basic List

Robinson Risner, *The Passing of the Night: My Seven Years as a Prisoner of the North Vietnamese*

Phillip Meilinger, *10 Propositions Regarding Air Power*

Intermediate List

Phillip Meilinger, *10 Propositions Regarding Air Power*

Donald Phillips, *Lincoln on Leadership*

Lee Arbon, *They Also Flew: The Enlisted Pilot Legacy 1912–1942*

Advanced List

John F. Kennedy, *Profiles in Courage*

Michael Shaara, *Killer Angels*

John L. Frisbee, *Makers of the United States Air Force*

Geoffrey Perret, *Winged Victory*

Chief of Staff of the Air Force Professional Reading List for Civilians

Grades GS 1–8

Robinson Risner, *The Passing of the Night: My Seven Years as a Prisoner of the North Vietnamese*

Phillip Meilinger, *10 Propositions Regarding Air Power*

Lee Arbon, *They Also Flew: The Enlisted Pilot Legacy 1912–1942*

Donald Phillips, *Lincoln on Leadership*

John F. Kennedy, *Profiles in Courage*

Michael Shaara, *Killer Angels*

John L. Frisbee, *Makers of the United States Air Force*

Geoffrey Perret, *Winged Victory*

Grades GS 9–12

Sun Tzu, *The Art of War*

Phillip Meilinger, *10 Propositions Regarding Air Power*

James Stokesbury, *A Short History of Air Power*

Donald Phillips, *Lincoln on Leadership*

Tom Wolfe, *The Right Stuff*

James Hudson, *Hostile Skies*

DeWitt Copp, *A Few Great Captains*

Geoffrey Perret, *Winged Victory*

John Sherwood, *Officers in Flight Suits*

T.R. Fehrenbach, *This Kind of War*

Jack Broughton, *Thud Ridge*

Harold Moore, *We Were Soldiers Once...and Young*

Richard Reynolds, *Heart of the Storm*

Grades GS 13–14

Peter Paret, *Makers of Modern Strategy*

Tony Mason, *Air Power: A Centennial Appraisal*

George C. Kenney, *General Kenney Reports*

Donald Slayton, *Deke!*

Lee Kennett, *The First Air War*

Thomas Hughes, *Over Lord*

Robert F. Futrell, *The United States Air Force in Korea*

Mark Clodfelter, *The Limits of Air Power*

Richard Hallion, *Storm Over Iraq*

Grades GS-15 and Above

Carl von Clausewitz, *On War*

I.B. Holley, *Ideas and Weapons*

James Belasco and Ralph Stayer, *Flight of the Buffalo*

Raymond H. Fredette, *The Sky on Fire*

R.J. Overy, *Why the Allies Won*

Walter McDougal, *The Heavens and the Earth*

Phillip Meilinger, *Hoyt S. Vandenberg: The Life of a General*

Ulysses Sharp, *Strategy for Defeat*

James Winnefeld & Dana Johnson, *Joint Air Operations*

Roger A. Beaumont, *Joint Military Operations*

Michael Gordon & Bernard Trainor, *The Generals' War*

John Warden, *The Air Campaign*

GLOSSARY

Abbreviations and Acronyms

AAF	Army Air Force
AFDD	Air Force Doctrine Document
AU	Air University
ISD	Instructional System Development
MOOTW	military operations other than war
NCO	noncommissioned officer
PCE	professional continuing education
PME	professional military education
ROTC	Reserve Officer Training Corps
UNAAF	Unified Action Armed Forces
US	United States

Definitions

certification. A formal indication of an individual's ability to perform a task to prescribed standards. (AFI 36–2201)

continuation training. Training to maintain basic skill proficiency or improve the capability of individuals to perform the unit mission. (AFI 36–2201)

military education. The systematic instruction of individuals in subjects which will enhance their knowledge of the science and art of war. (Joint Pub 1–02)

military operations other than war. Operations that encompass the use of military capabilities across the range of military operations short of war. These military actions can be applied to complement any combination of the other instruments of national power and occur before, during, and after war. Also called **MOOTW**. (Joint Pub 1–02) *[An umbrella term encompassing a variety of military operations conducted by the Department of Defense that normally complement the other instruments of national power. These military operations are as diverse as providing support and assistance (when consistent with US law) in a nonthreatening environment, and conducting combat not associated with war.] {Italicized definition in brackets applies only to the Air Force and is offered for clarity.} (AFDD 1)*

military training. The instruction of personnel to enhance their capacity to perform specific military functions and tasks; the exercise of one or more military units conducted to enhance their combat readiness. (Joint Pub 1-02)

operational level of war. The level of war at which campaigns and major operations are planned, conducted, and sustained to accomplish strategic objectives within theaters or areas of operations. Activities at this level link tactics and strategy by establishing operational objectives needed to accomplish the strategic objectives, sequencing events to achieve the operational objectives, initiating actions, and applying resources to bring about and sustain these events. These activities imply a broader dimension of time or space than do tactics; they ensure the logistic and administrative support of tactical forces, and provide the means by which tactical successes are exploited to achieve strategic objectives. (Joint Pub 1-02)

qualification training. Hands-on performance training that personnel design to qualify an airman in a specific position. This training occurs both during and after upgrade training to maintain up-to-date qualifications. (AFI 36-2201)

specialty training. The total training process (life cycle) used to qualify airmen in their assigned specialty. (AFI 36-2201)

strategic level of war. The level of war at which a nation, often as a member of a group of nations, determines national or multinational (alliance or coalition) security objectives and guidance, and develops and uses national resources to accomplish those objectives. Activities at this level establish national and multinational military objectives; sequence initiatives; define limits and assess risks for the use of military and other instruments of national power; develop global plans or theater war plans to achieve these objectives; and provide military forces and other capabilities in accordance with strategic plans. (Joint Pub 1-02)

tactical level of war. The level of war at which battles and engagements are planned and executed to accomplish military objectives assigned to tactical units or task forces. Activities at this level focus on the ordered arrangement and maneuver of combat elements in relation to each other and to the enemy to achieve combat objectives. (Joint Pub 1-02)

technical training. Instruction and study designed to qualify individuals in their assigned specialty. (AFI 36-2201)