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Dovie M. Brown

Mary N. Kutz

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21ST CENTURY AEROSPACE AND THE POWER OF HUMAN COMMUNICATION SKILLS

Dovie M. Brown and Mary N. Kutz, Ed.D

ABSTRACT

Aviation played a vital and dynamic role in 20th Century technical and social progress. That role has always represented power and continues to do so as it expands to meet the challenges of aerospace power in the 21st Century. Human communication skills are the transmission vehicle that allows aviation/aerospace information to be converted to the power of usage in this highly specialized and dynamic field. Utilizing the advice gleaned from the literature and studies pertinent to the importance of communications skills in a variety of occupations, this presentation discusses the perceived deficit in communications training for aviation students and further explores the importance of developing those skills for 21st Century aerospace leadership.

INTRODUCTION

Contemporary aviation leaders have repeatedly identified aviation-related communications skills curriculum as critical to the success of future aviation and aerospace leaders. Highly complex technical skills are frequently the only required expertise of today's leaders; yet, those leaders have consistently identified effective communication skills as vital to successful performance in the aviation environment. Many have voiced concerns regarding a deficit in those skills among potential aviation and aerospace leaders of the future.

As aviation power of the 20th Century evolves into aerospace power of the 21st Century, communication skills continue to represent power for its leaders as the ability to articulate information becomes even more urgent. The most recent leadership research supports the urgency of strong communication skills in all environments and aviation and aerospace leadership is no exception.

In a qualitative study of the *Characteristics of Successful Aviation Leaders of Oklahoma*, Kutz (1998) examined the personal traits, skills, practices, behaviors, background, academic, and career success patterns of selected aviation leaders in Oklahoma and sought advice from academia in developing future leaders. In the findings of that study, communication skills were identified by today's aviation leaders as being one of the most important contributors to aviation leadership success. The most frequently identified curriculum need across all aviation disciplines was that of communication skills. For the

aviation leaders in the Kutz (1998) study,

communication skills are foundational to the future of student development as well as the progress and growth of the aviation industry. Any effort to educate future aviation leaders would of necessity begin with effective communication skills (p.174).

In the Summer 2001 Leadership Special Edition of *Aerospace Power*, the U.S. Air Force described its new "Developing Aerospace Leaders (DAL)" initiative which is designed to review development practices and procedures as well as research options and opportunities for creating transformational leaders to bridge the gap between the Air Force of today and the Aerospace Force of tomorrow. General Michael E. Ryan, Chief of Staff, described the need for the effort as follows:

Our aerospace operations require leaders with an increased scope of knowledge and experience beyond that of their initial specialty. They must have a fuller understanding of the development, support, employment, and sustainment of aerospace power—and must be able to articulate to the American public and its representatives the extraordinary capabilities of modern aerospace power.
(p. 4)

Tomorrow's aerospace leadership development must be focused on the power of communication and those

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skills necessary to articulate vital information in a volatile and rapidly changing industry. Without a solid foundation in oral and written communication skills many individuals will be unable to compete in the rapidly evolving Information Age. As one of the leaders in the Kutz (1998) study observed: "If you have a good idea and have no precision of expression or don't know how to develop a concept logically, then you've got a great idea that you'll never be able to do anything with" (p.174).

PURPOSE

The purpose of this article is to examine the research and the consider implications for the development of comprehensive communication skills especially within the aviation/aerospace industry. A review of the literature provides a better understanding of the importance of and justification for a renewed emphasis on aviation communications curriculum as today's students move into tomorrow's leadership roles.

COMMUNICATIONS SKILLS IN THE INFORMATION AGE

Information is a means of acquainting people with data such as rules and regulations, employee handbooks, statistics, etc. It often exists in numerous formats including vast databases or repositories available for use by everyone whereas communication (oral or written) is the process by which this data or information is shared. Information can exist in many physical forms, but until it has been transferred via the communication process it exists merely as information or data. The value of information is determined by how effectively it is converted (transferred) during human communication. According to Thayer (1968), communication takes place only in people, and is not to be confused with electronic or mechanical processing of data. This distinction is important when considering how human communication is defined and used in organizations.

COMMUNICATION SKILLS IN ORGANIZATIONS

Importance of Communications in Hiring and Promotion

At the most basic level, three core skills desired by employers based on a joint study by the U.S. Department of Labor and the American Society of Training and Development, *Workplace Basics—The Skills Employers Want*, include:

1. Basic academic skills in reading and writing.
2. Good communication skills, including listening

and speaking.

3. Interpersonal/negotiation skills and teamwork.

In a survey by the National Association of Colleges and Employers (NACE), employers rated their hiring intentions as they relate to new college graduates. Good grades and technical skills were cited as only a part of the criteria used to judge the potential success and effectiveness of a job candidate. Communication skills ranked first among the three personal qualities an employer looks for when hiring. Interpersonal, teamwork, and verbal communication skills were ranked as the most important.

In the book *Management of Corporate Communication* (1994), Robert Heath states "emphasis on communication is not intended to ignore the technical skills and knowledge individuals must have to perform their work" (p.21). He goes on to say that communication "holds this knowledge and talent together and focuses it through relationships" (p. 21). William Fallon in *Leadership on the Job* (1981) states that "the importance of communication to management performance is recognized in the high weight given to communication skills when candidates are being screened and selected for management positions" (p.67). He states further that with the increased use of assessment centers in the screening process such centers place a high premium on communication skills in arriving at an assessment rating of a candidate for promotion. Frequently, the higher one goes in the management ranks, the more time is spent in communicating. Fallon refers to Bass and Ryterband's book *Organizational Psychology* which reports executives spend 80 percent of the work time talking with others.

Southwest Airlines has achieved phenomenal success as an airline with a unique hiring philosophy that involves "hiring for attitude and training for skill." (Freiberg & Freiberg, 1998). Employee attitude, which is demonstrated through a combination of core beliefs and interpersonal communications skills, can make or break a company and Southwest recognizes that.

Importance of Communications to Interpersonal Relations

In her book *Fundamentals of Organizational Communication*, Pamela Shockley-Zalabak (1988) defines human communication as "the process through which we construct shared realities" (p.33). Through the transferring of information, these shared realities generate shared meaning among people. Using symbols (words) to transfer information results in creating shared meaning or mutual understanding. Each individual engaged in communication is both a message sender and a message receiver and is involved in the process of formulating (encoding) messages

and receiving (decoding) messages. In turn, encoding and decoding messages are a function of communication competency and past experiences.

In an organization, interpersonal relationships exist at all levels. According to Cohen, Fink, Gadon, and Willits (1992) in *Effective Behavior in Organizations*, personal relations occur at all levels in an organization and result in a network of interconnected relationships. They further state that "the more a job requires two people to work together, the more important is the kind of working relationship that develops" (p.253).

The way in which persons interact with one another is a function of their individual interpersonal styles. Although no one communicates or behaves the same way in every situation, almost everyone has a preferred or dominant interaction style that is the most comfortable. Therefore, an individual's sense of interpersonal competence can be strongly affected by his or her range of interaction styles. It could be useful to assess interpersonal competence by looking at the ability to deal with a variety of people and situations that require interaction in different ways, sometimes not in the preferred style.

In the aviation and aerospace industries a wide variety of potentially life-threatening situations exist. A wide repertoire of interaction styles are important to the aviation professional in adapting effectively to the demands of a complex work environment where effective interaction could mean the difference between life and death.

Importance of Communication Skills in Groups

Organizations have many types of formal and informal groups. Formally structured groups could include: work teams, management teams, unions, process improvement teams, problem-solving groups, and many others; whereas informal groups come together primarily for social events, gripe sessions, etc. As with interpersonal relationships, members of groups are also involved in communications for the purpose of creating "shared realities" (Shockley-Zalabak, 1988). In his book *The Dynamics of Organizational Communication*, John Baird (1977) defined a group as "a collection of more than two persons who perceive themselves as a group, possess common fate, have organizational structure, and communicate over time to achieve personal and group goals." This places communication at the very core of group interaction or activity; as such, groups can be understood in terms of how they are structured, how they understand individual roles within the group, and how they communicate.

In general, the greater the degree of task interdependence required, the more important it is for the group members to maintain continuing exchanges or

communications with each other. In a highly complex environment such as aviation there exists a high level of task interdependence. Thus, it becomes exceedingly important for group members to constantly look at ways to improve task and interpersonal interdependence through effective communication.

Airline crewmembers in a constant state of rotation benefit from a greater understanding of group interaction particularly as it applies to individual roles and the communication process within the group or crew. That is why we are seeing an increase in the study of Crew Resource Management and other courses designed to improve the communications process.

LEADERSHIP AND MANAGEMENT COMMUNICATION

Granville Toogood, in *The Articulate Executive* (1995), identifies successful leaders as sharing three common characteristics (the three Cs) which combine to create what he calls "supercompetence": competence, clarity, and communication. Beyond being good or [c]ompetent at what you do, you must possess [c]larity or be able to see beyond the job. Most important is the third c—[c]ommunication which is related to the ability to share knowledge and information with others. His prime example of a supercompetent leader is Lee Iacocca who led Chrysler to outperform General Motors and Ford because of his talent to persuade and inspire. Using these powerful tools, Iacocca convinced Congress to extend substantial loans to Chrysler. But, competence and clarity are of little use without the ability to communicate. Toogood (1995) concludes that "those who talk well thrive—those who talk best lead."

Kouzes & Posner (1995) discussed the importance of a positive communication style of leadership. They described the leaders we most admire and willingly follow as those who communicate enthusiasm and energy with a positive attitude and a bounce in their step. We do not follow people who convey a feeling that something cannot be done. Communications of leaders involve not only development of style and accuracy but also the ability to stretch and encourage employees through effective use of the language and nonverbal behavior. They describe the term "charisma" as human expressiveness that utilizes communications skills to convey verbally and non-verbally to others. Successful leaders make full use of the power of verbal and non-verbal language to communicate a shared identity and vision.

In *Leadership Jazz*, Max DePree described the advice of a nurse in helping his premature granddaughter to survive: "She has to connect your voice to your touch." (p.2)

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According to DePree the process of connecting one's voice and one's touch is imperative to becoming a leader. A leader who speaks one way and acts another is devastating to an organization. Learning powerful communication skills (both verbal and nonverbal) creates power in leadership and must be part of the development of future leaders. In fields such as aviation leadership that power often comes from tying technical skills to developing communications skills.

AVIATION COMMUNICATION SKILLS

The world of aviation is a global world, full of opportunities to miscommunicate with all of the associated ramifications ranging from career impact to life and death consequences.

In an editorial appearing in the July 3, 2000 issue of *Aviation Week & Space Technology*, David North, editor-in-chief, discusses some of the safety issues surrounding the increase in runway incursions and potential ground accidents. During a national summit held the previous week, FAA officials identified some of the potential "fixes." Included among the 23 recommendations was one to take a closer look at the evolution of air traffic controller phraseology. For example, simply changing the phrase "position and hold" on the runway to "line up and wait" which is used in many countries would contribute to less confusion in pilot communication.

Andrew Wood in *AIN Online* (January 2002) discussed the need for pilots to become adept at navigating through an acronym-rich environment of new terminology. When the GPS wide-area augmentation system (WAAS) enters operational service new approach classifications will be used that will require more exact phraseology when pilots chose an approach into an "obstacle-rich environment."

Just as technical communications are changing and requiring new patterns of learning and skill development, so are leadership communications, some of which may require unlearning of old communication patterns when working in a leadership role.

AVIATION/AEROSPACE LEADERSHIP COMMUNICATIONS

Leadership in the aviation/aerospace industry of the 21st Century must be characterized by agility in dealing with the volatility and rapid pace of a constantly shifting industry where technological change is a way of life. Access to accurate information at all levels of an organization is critical to agility. Poor communication creates complexity and confusion which leads to poor response. That is where the role of the leader is crucial in

both the process and style of communication exhibited by an organization.

Easy access to key people keeps employees informed and information is power for decision-making purposes so that an organization and its people can change directions rapidly and adapt to new situations quickly. One effective way leaders accomplish that is through organizational structure and streamlining the processes of communication so there are fewer layers for congestion and misinterpretation of information and quicker access to key leaders for accuracy of information. Another way leaders achieve agility is by developing their own communication skills not only for accurate communication of information but for listening and glean accurate data in return.

Listening Skills in Aviation

Both listening and speaking skills are imperative to successful communication in the leadership arena as well as the aviation arena.

In the book *Contemporary Business Communication*, Louis Boone and David Kurtz (1994) define listening as "the act of sensing, interpreting, evaluating, and reacting to what is said" (p.57). Although frequently identified as one of the critical skills for success, listening is the least taught of the communication skills. Successful business leaders stress that good listening skills can make the difference between working effectively with fellow employees, maintaining customer relationships, and performing well on the job; however, most people are poor listeners. In most organizations and schools, listening skills training is not offered perhaps because the value of listening as an effective communication tool is not recognized.

According to Boone and Kurtz, the average person talks at the rate of about 150 words per minute; however, the brain can process up to 400 words per minute. This results in an overcapacity that can lead to inattention and misinterpretation and even boredom. One of the most common reasons given for not listening is "I'm thinking about what I'm going to say!" (p.58).

In Kurtz (1998), several aviation leaders identified the need for listening skills in course curricula along with verbal and writing skills. Although effective listening is not new to the aviation technical type, transitioning into an aviation leadership role may involve a new level of listening that requires a genuine desire to understand the unique needs of others. New students of aviation must also learn and develop those skills in a society where learning to listen has not been a high priority.

At the operational level in aviation listening skills may mean the difference between life and death. In his book *Business Is Combat, A Fighter Pilot's Guide to Winning in Modern Business Warfare*, James D. Murphy, Author and President of Afterburner Seminars, suggests that pilots "take great pride in using efficient, confident, abbreviated communication." The airwaves are always crowded and controllers are masters of brief, efficient communication (p.121). Failure to pay attention with the ears may cost a life.

However in the 1998 Kutz study, several aviation leaders identified the need for listening skills in course curricula along with verbal and writing skills indicating that there is always room for improvement and leadership listening requires a more in-depth utilization of interpersonal interaction. Certainly university-level students of aviation who have not yet acquired strong listening skills can profit from curricula that addresses those needs.

Verbal Skills in Aviation

On the one hand, the sharp, cryptic phraseology on the airways of aviation may be imperative to successful communications in the technical arena. However, it may not be as efficient in the management world where careful communications and feedback are often required. When transitioning to a management or leadership role, experienced aviation technical personnel frequently must unlearn patterns of speech used in the technical arena while relearning appropriate written and verbal speech patterns that comply with management responsibilities.

University-age individuals with little or no flying experience make excellent candidates for development of communications skills before they develop years of "bad flying habits" of communication.

RECOMMENDATIONS FOR DEVELOPMENT OF AVIATION COMMUNICATIONS SKILLS

In July 1999, educators, students, and transportation professionals met in Seattle for a conference to address the importance of "Educating the 21st Century Transportation Professional." The conference was a forum for discussion of major issues facing transportation educators and professionals today and in the future. Among the issues discussed was providing students the educational opportunities to develop and practice the skills necessary to solve the complex and wide-ranging transportation problems of the future. In addition to the need for job-specific technical skills, increased emphasis is being placed on the ability to effectively communicate.

In the Kutz (1998) study, almost 50 percent of the aviation leaders interviewed were "very emphatic about the

deficiencies they are finding in the aviation community in the ability to communicate" (p.174). Specific recommendations were made to incorporate basic listening, non-verbal, speaking and writing skills including grammar, spelling, and punctuation skills into aviation curricula requirements.

In the December 1999 issue of *Business Communication Quarterly*, a study conducted by Melinda Knight, Rochester University, reveals that communication courses at 29 major colleges and universities are offered as part of generic Masters of Business Administration (MBA) programs. The business communications curriculum at Oklahoma State University is similar to that of other universities in that it applies to the generic business setting. Although effective as an overall approach to teaching generic business communications, this approach lacks relevance for teaching communication as it relates to such highly specialized and volatile industries as aviation and aerospace. A certain level of specialization is imperative; however, caution may be necessary when implementing communications skills to ensure they are not taught solely as a technical skill. In an article from the *Journal of Aviation/Aerospace Education & Research* Triant Flouris discusses the effectiveness of Crew Resource Management (CRM) training on flight safety. Flouris states that the main criticism of CRM programs is that while they focus on enhancing communication and cooperation to maximum efficiency of resources, they are primarily technical in nature. Therefore, while the training is supposed to create crewmembers with skills other than technical, it is taught as a technical skill. Further, Flouris asserts that the core of the CRM program is actually to create teamwork and alleviate pilot error. Course content is designed to strengthen management and leadership skills, emphasize decision-making and judgment skills, and improve effective communication among all crewmembers. He concludes that "certain aspects of CRM are helped by technical skills but CRM itself is a non-technical skill" (p.59) and should be taught as such.

Leadership in the aerospace industry also mandates that communications skills must go much further than being taught solely as a technical skill but must develop an understanding of communications styles and processes in a highly volatile aerospace environment that includes communicating to feelings and attitudes of the unique personalities of aviation personnel.

One recommended method for integrating communications skills development with technical skills development is to provide opportunities for practicing verbal skills even in technically oriented academic classroom experiences. According to Merrill R. Karp in *University Aviation Education: An Integrated Model*,

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“group learning in small ‘praxis teams’ is particularly applicable for aviation students.” Group learning involves cooperative learning with team presentations, collaborative learning, and observational learning with a post-presentation assessment or direct peer feedback for the presenters.

Research on pilots’ dominant learning styles revealed that the majority “(over 44%) were hands-on learners and almost 60% were either hands-on, or hands-on visual learners.” (Karp, Turney & McCurry, 1999; Karp, Condit & Nullmeyer, 1999). In spite of these findings regarding the needs of aviation learners, the research also indicated that most classroom instruction is done by lecture with some visual supplementation and very little hands-on learning.

According to the Kutz (1998) study, today’s aviation leaders urged academia to get out of the lecture mode in the classroom and give students opportunities to practice communications skills throughout their academic experience. This appears to be consistent with the findings of Karp et al (1999) in that the process of hands-on or actual practice of communications skills best addresses the learning styles of pilots in their study thus enhancing the probability of long-term retention of skills.

Further recommended was a need for curricula tailor-made to the aviation leadership environment, designed to build on technical communication skills and enhance non-technical communication skills through repetitive hands-on practice.

SUMMARY

The need for good communication skills is predominant across all areas of expertise from business leaders, executives, to educators. Within the aviation/aerospace industry, it represents power in dealing with the complexities of aviation in the 21st century and should be given increased emphasis throughout the educational process. In order to fulfill the demands of the rapidly changing aviation industry, aviation students should be afforded the opportunity to develop the requisite writing, speaking, and listening skills unique to the aviation industry through improved curricula and the enhancement of existing curricula to afford opportunities for practice of those skills.

Training and practice are essential in becoming an effective communicator whether it be speaking or writing. In the American Management Association’s curriculum *Communication Skills for Managers*, author Mannie Sherberg (1996) states “You must unlearn old habits, and learn new ones; you must acquire new skills, and you must practice, practice, practice” (p.12).

Educational opportunities must be provided where practice in communication is a regular part of a highly technical curricula and aviation-specific communications coursework provides tailor-made learning opportunities for understanding of both the unique nature of the ever-evolving aerospace environment and the communication skills necessary for success in that environment. □

Dovie Brown, M.S., is a member of the Adjunct faculty in the College of Education, Aviation and Space Education, Oklahoma State University, Stillwater, Oklahoma and is currently completing coursework toward a doctorate. Her experience includes 23 years with the Department of Defense (DOD) and the Department of Transportation, Federal Aviation Administration. Ms. Brown has co-published several articles in the field of aviation and is currently involved in researching the need for aviation communication curricula. She presented a paper on this topic for the Oklahoma Aviation Education Symposium, 2002.

Mary Kutz, Ed.D. is an Assistant Professor in the College of Education, Aviation and Space Education, Oklahoma State University, Stillwater, Oklahoma. Her experience with aviation management and leadership includes 20 years with the Federal Aviation Administration in a variety of leadership and management roles.

Dr. Kutz holds a Doctor of Education degree in Applied Educational Studies, Aviation and Space Education, Oklahoma State University. Her research focuses on aviation leadership and includes the publication “Developing Future Aviation Leaders – Advice From Today’s Leaders” published in the *Journal of Aviation/Aerospace Education and Research (JAAER)* (2000), and “Technical Myopia in Aviation Leadership: Does Research Support the Notion That Technical Expertise is Imperative to Aviation Leadership” published in the *International Journal of Research and Development* (2001). She has presented for the 2001 International Aviation Training Symposium sponsored by the FAA Academy in Oklahoma City and the Oklahoma Aviation Education Symposium, 2002.

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