Faculty Professional Development Imperatives in Collegiate Aviation Education

Jeffrey A. Johnson

FACULTY PROFESSIONAL DEVELOPMENT IMPERATIVES IN COLLEGIATE AVIATION EDUCATION

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If the health and well-being of collegiate aviation is to remain intact, it is imperative that faculty professional development is highly prioritized at the programmatic level. Keeping faculty current in their field and knowledgeable about the latest pedagogical techniques and technological changes/innovations in addition to maintaining their interest and enthusiasm for instruction is vital for high-quality education and educational excellence (Hirshberg, 1992). Unfortunately, published literature on faculty professional development, particularly at the collegiate aviation level, is anything but prevalent. To make matters even more difficult, no universally accepted instrument is available to measure the needs of faculty in their ongoing professional development pursuits. The intent of this article is twofold: (a) to define needs assessment/needs analysis in the context of faculty professional development and (b) to provide an overview of traditional and non-traditional methodologies of faculty professional development renewal.

INTRODUCTION

In a post-industrial era of information technology that seemingly changes at exponential rates, it is crucial that effective faculty professional development programs are successfully integrated into collegiate aviation programs. If the ongoing process of faculty development does not stay abreast of industry changes, then the integrity of collegiate aviation programs could become seriously compromised. The real danger in any collegiate technological-based program is irrelevance or, worse yet, obsolescence of information, knowledge, and equipment. This reality is evident in some undergraduate degree programs; the Institute of Electrical and Electronic Engineers estimates that an electrical engineering degree becomes obsolete within 18 months of its award (Orr, Levine, & Takaki, 1995). Is it possible that collegiate aviation programs could eventually suffer the same demise?

If collegiate aviation education is to progress continually toward excellence in a highly competitive global economy, effective faculty professional development programs are essential. Faculty professional development is defined by the Great Lakes Colleges Association as "any activity that provides an opportunity for a faculty member to apply existing professional competencies in a new area, to improve existing competencies, or to develop new ones" (Wylie & Fuller, 1985, p. 104). Colleges with exemplary professional development programs share the following characteristics: (a) the institution has strong leadership that emphasizes growth and development; (b) full-time faculty perceive a supportive environment with professional development as an outcome of such caring; (c) part-time faculty see themselves as significant although lesser members of the institution; (d) both institution and individual benefit from professional development; (e) professional development activities are diverse and oriented to individual needs; and (f) limitations and barriers to professional development are recognized and overcome (Hoerner, Clowes, Lichtman, & Alkins, 1991).

Collegiate aviation programs should consider three types of faculty development programs to keep faculty current and engaged (Hirshberg, 1992): (a) those intended to keep faculty current in their field, (b) those designed to promote faculty renewal, and (c) those meant to help instructors improve instructional techniques. As collegiate aviation departments review faculty professional development programs, it is important that a needs assessment or needs analysis program is conducted for effective program implementation.

1

Table 1
Major Characteristics of Needs Assessment and Needs Analysis

NEEDS ASSESSMENT	NEEDS ANALYSIS
1. Macro-level look	1. Micro-level look
2. Identifies discrepancies	2. Identifies causes for the discrepancies
3. Problem identification stage	3. Problem resolution stage
4. Does not consider solutions	4. Considers solutions
5. Occurs first	5. Occurs second
6. Provides substance and meaning to needs	6. Determines the nature and relationship of the parts of needs
7. Selects most important needs for attention	7. Determines causes of, and solutions to, the most important needs
8. Future-focused	8. Concerned with the present

Note: From "A Closer Look at Needs Analysis and Needs Assessment," by S. Benjamin, 1989, *Performance & Instruction*, p. 14.

Needs Assessment, Needs Analysis, and Accountability in Faculty Development

According to *Webster's II New Riverside University Dictionary*, need is defined as:

(1) A lack of something necessary, useful, or desirable. (2) Obligation or requirement. (3) Something necessary, useful, or desirable: requisite. (4) Poverty or misfortune. ... (1) Used as an auxiliary to express obligation or requirement. ... (2) To require or desire urgency. (3) To be in need or want. (1984, p. 47)

The process of needs assessment manifests itself in many other forms familiar to postsecondary education. These forms include needs analysis, front end analysis, and performance analysis (Sleezer, 1992). Although many terms in the discussion of needs assessment are commonly used, their meanings are often interpreted differently. For example, some scholars interchange needs assessment with needs analysis while others believe that the two phrases are distinctly different. Benjamin (1989) stated that "needs assessment identifies and prioritizes needs, while needs analysis breaks needs down and suggests causes of and solutions to needs" while Kuh (1982), Newstrom and Lilyquist (1979), Trimby (1979), and Zemke and Kramlinger (1982) tend to use these terms synonymously. Kamis argued that "ten references to needs assessment ... are likely to mean ten different things" (Benjamin, 1989, p. 12).

Three themes emerge in needs assessment: (a) the question of the value of a curriculum built primarily on learner perception of needs, (b) the importance of need prioritization, and (c) the inclusion of attainability as a key variable in needs determination (Rossett, 1982). In making a clear distinction between needs assessment and needs analysis, Kaufman (1986) stated that "needs assessments identify, document, and justify gaps in results, and select the most important for attention. Needs analyses break these identified needs down into their constituent component parts and identify causes for needs" (p. 24). Benjamin (1989) has summarized the important characteristics of needs assessment and needs analysis (**Table 1**).

Benjamin (1989) also stated that:

a great amount of the initial interest in analyses and assessments was generated by federal and state laws such as the Elementary and Secondary Education Act and the Community Mental Health

Table 2
Six Practical Questions in Establishing
Assessment Programs

ASSESSMENT PROGRAM QUESTIONS

1. What issues do we need to address?

2. What information will we need to collect?

3. How and when will we need to collect this information?

4. How will we communicate our findings?

5. How will we use the results for improvement?

6. What resources are required?

Note: From *Assessing Student Outcomes: Successful Practices and Procedures*, 1993, p. 9.

Act, both of which tied needs assessments to the attainment of federal funds. (p. 12)

Morrissett and Witkin reported that (Benjamin, 1989) increased pressure for accountability amid shrinking financial resources has created great interest in getting the highest return for each dollar spent on education.

The Needs Assessment Process

In evaluating collegiate aviation professional development programs, the first step in the needs assessment process is to identify the underlying problem. Rossett (1982) stated that "When trying to define needs, the developer usually solicits opinions on optimal and actual conditions from many perspectives" (p. 29). James (1956), McGehee and Thayer (1961), and Moore and Dutton (1978) endorse front end analysis, which relies mainly on how the organization (management) perceives needs. Data may be divided into primary and secondary sources; primary data is gathered from learners directly or through observation of them, and secondary data comes from other's opinions about learner performance (Rossett,

1982). Dichotomies often exist concerning perceived needs by the investigator and the organization -- a disadvantage of front end analysis. When establishing an assessment program, it is important that collegiate aviation investigators formulate a meaningful plan of action. At the *Assessing Student Outcomes: Successful Practices and Procedures* conference (1993), six relevant questions (**Table 2**) were developed for inquiry that can be applied in the context of faculty development.

Using Needs Analysis
in Faculty Professional Development

A seven-step procedure (**Table 3**) considers each major characteristic of needs analysis. The purpose of this procedure is to help departments and colleges identify, prioritize, and execute a plan to meet identified student needs (Kiger, 1993). This contextual framework can be used in an aviation setting for faculty needs as well. For example, a collegiate aviation program cites a specific need: to provide opportunities for faculty members to upgrade their technological skills (step 1). Through inquiry (step 2), it is discovered that faculty members are having difficulty staying current with various information technologies (e.g., university mainframe systems, the Internet, upgraded software programs). Solutions offered to meet the need include applying for grant monies exclusively for aviation faculty workshops (step 3). Step four defines the priority of meeting the need; e.g., is it a low, moderate, or high priority? Step five involves meeting with the appropriate personnel in charge to make the necessary arrangements for obtaining instructional trainers and equipment (this includes cost, hours of availability, type of training, etc.). Step five also includes advertising the workshops through a departmental newsletter, meeting, memorandum, and/or a departmental Web page. The sixth step may include a head count of faculty attending the workshops and the development of a follow-up needs assessment itinerary. Step seven involves the distribution of a survey to participating faculty members to solicit their feedback and to document the results for review by faculty and administrators.

The Importance of Faculty/Industry
"Bridge" Programs in Collegiate Aviation

In collegiate aviation, more emphasis is being placed on

Collegiate Aviation Education

Table 3
A Seven-Step Procedure for Needs Analysis

NEEDS ANALYSIS

1. Identify the student need from the needs assessment data

2. Describe the current state of the need and its causes

3. Define the desired state of the need

4. Define the priority for meeting the need

5. Define a plan to meet the need

6. Define methods to assess the effectiveness of the plan

7. Define a plan for reporting efforts, progress, and results to the institution and external agencies

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Note: Adapted from *Assessing and Analyzing Student Needs at Owens Community College*, p. 16, by D. Kiger, 1993.

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the importance of co-op and other internship opportunities for students and, as a result, these programs are becoming more common. Is it conceivable, then, that faculty/industry bridge programs such as co-ops and internships should be developed and encouraged for faculty members based on needs assessment/analysis programs? Students who have asked the question "How can my professor teach us about the real world without experiencing it?" may now be saying "How can my professor teach us about the real world without staying current in it?" and may have reached a profound conclusion as to the current state of some faculty members. Because the entire field of aviation evolves quickly in cadence with technological innovations and improvements in a global society (Johnson, 1993), it is crucial that faculty members stay knowledgeable if they are to remain effective in their teaching and research.

Opportunities abound for collegiate aviation educators to keep on top of changing trends in the aviation industry and to incorporate new knowledge into their professional development. Active membership and participation in aviation professional organizations can provide an avenue for renewal in faculty professional development. Conferences offered by the University Aviation Association and the American Association of Airport Executives are excellent forums in which aviation faculties can exchange ideas and disseminate information. Embry-Riddle Aeronautical University (1995) has teamed up with SimuFlite Training International to offer non-credit seminars in finance/budgeting, aircraft selection, human factors/CRM, and safety management. Embry-Riddle also offers short courses/workshops for professional mechanics and other interested individuals to upgrade their skills in selected aviation maintenance topics. Collegiate aviation faculty members holding current flight instructor certificates may attend the newly FAA-approved two-day flight instructor refresher clinic offered by the AOPA Air Safety Foundation.

Collegiate aviation educators also can stay abreast of changes in the aviation/aerospace industry in others ways besides traditional methodologies. This goal can be accomplished through faculty/industry co-ops, student/industry co-ops, industry ties, and departmental advisory committees that comprise faculty and industry representatives.

Faculty/industry co-ops

This facet of faculty professional development represents a relatively new concept that is mostly unexplored. Perhaps synonymous to the underlying concept of a faculty/industry co-op is the use of adjunct faculty whose primary occupation is employment in business/industry settings. Faculty/industry co-ops could be funded by the university or the industry or through grant monies. Time allocated for faculty/industry co-op endeavors could range from a brief leave of absence, part-time temporary employment at a co-op and a collegiate aviation setting, and sabbatical times, to an exchange program involving faculty members and representatives from industry (assuming that qualifications, experiences, and minimum requirements are at a satisfactory level).

The advantages of such cooperative arrangements are

many. Collegiate aviation faculty members will be on the cutting edge of new developments in the aviation industry. Representatives from industry will develop an appreciation for the collegiate aviation educational environment and can offer suggestions to faculty members for curriculum improvement to produce graduates ready to enter the workforce with refined preparatory and other highly competitive skills.

Student/industry co-ops

At the collegiate level, many aviation programs engage in various types of co-ops and internships. For example, Embry-Riddle Aeronautical University created a first-officer internship program with Aero Flight Support for students to gain flight experience in Learjets. University of North Dakota students have co-op opportunities with USAir Express-Piedmont Airlines, performing ground-crew functions. At St. Cloud State University, aviation students have co-op/internship opportunities with Northwest Airlines. Since the inception of the Aerotechnology program in 1980 and the flight training program in 1982 at Bowling Green State University, the co-op has been mandated as a requirement for graduation.

Student/industry co-ops provide not only tangible benefits for students and industry, but also can provide new and innovative avenues of learning for collegiate aviation faculty advisors. Feedback from students and industry representatives through co-ops can offer a means for creating and improving co-ops while expanding a network of representatives in the aviation industry. Collegiate aviation faculties also will have the advantage of remaining in the forefront of industry changes and trends, resulting in a more efficient use of information/product delivery methodologies (Sinn, 1995).

Industry ties

The integration of industry into collegiate aviation is becoming more common. For example, a document released by the National Coalition on Aviation Education (1993) reported that the Alabama Aviation and Technical College, in conjunction with representatives from the Alabama Department of Aeronautics, the Federal Aviation Administration, the aviation industry, and the military, has developed a program for aviation maintenance technicians that also aims to expand opportunities for women, minorities, and other underrepresented groups in high-demand, high-salary technician careers in the aviation industry. At the departmental level, Pettitt and Dunlap (1994) reported that Western Michigan University's School of Aviation Sciences collaborated with the industry to develop a new professional pilot curriculum. In a collaborative relationship with industry, the aviation program coordinator at Inver Hills Community College also is employed as an instructor by Northwest Airlines Training Corporation. Because of the unique relationships collegiate aviation programs are establishing with the aviation industry, faculty collaboration with these industry representatives is an integral part of effective faculty professional development programs.

Departmental advisory committees

The integration of faculty, student, and industry representatives into departmental advisory committees prompts an exchange of information and ideas that enhances the effectiveness of faculty professional development. The Oklahoma State Regents for Higher Education (1994) conducted an evaluation of all aviation/aerospace related programs in Oklahoma by hiring a team of experts. The evaluation looked at aviation trends, merging technologies, personnel needs, and industrial workforce requirements. The identification of strategies to facilitate participation of women and minorities in the aviation industry was encouraged. Recommendations included a statewide comprehensive program planning process to improve efficiency/excellence and to develop strategies to meet current and future needs.

CONCLUSIONS

Effective faculty professional development imperatives in collegiate aviation education will give faculties, students, and industry a competitive edge. Before faculty professional development programs are created or modified, it is essential that collegiate aviation members have a clear understanding of the needs assessment/needs analysis process. Once this goal is accomplished, effective need assessments and/or need analyses must be conducted to ensure program viability.

The degree of success that faculty professional development programs encounter has widespread

implications for the entire aviation industry that may not be realized for years to come. The literature shows that many opportunities for faculty renewal are available to collegiate aviation educators, although empirically based studies on faculty professional development programs are not prevalent. Faculty renewal opportunities currently available for collegiate aviation educators range from traditional methodologies such as conferences, seminars, workshops, clinics, short courses, and FAA-mandated renewal programs to other more non-traditional forms such as faculty/industry co-ops, student/industry co-ops, industry ties, and department advisory committees.

In a world where technology changes quickly, collegiate aviation education must keep pace just to survive, let alone to compete effectively. Unfortunately, no "one right way" exists to create or modify faculty professional development programs. The key importance in truly effective faculty professional development programs in collegiate aviation is adaptability. According to Lehrer (1995), "the personality trait that must accompany technological literacy must be adaptability. You must be able to answer the question, So what do we do now since what was new but familiar yesterday is old today?"(p. 6).□

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