

Spring 2010

Barriers to Work-Based Learning in Aviation Management Programs

D Scott Worrells
worrelld@erau.edu

Follow this and additional works at: <https://commons.erau.edu/jaaer>

Scholarly Commons Citation

Worrells, D. S. (2010). Barriers to Work-Based Learning in Aviation Management Programs. *Journal of Aviation/Aerospace Education & Research*, 19(3). Retrieved from <https://commons.erau.edu/jaaer/vol19/iss3/2>

This Article is brought to you for free and open access by the Journals at Scholarly Commons. It has been accepted for inclusion in Journal of Aviation/Aerospace Education & Research by an authorized administrator of Scholarly Commons. For more information, please contact commons@erau.edu.

BARRIERS TO WORK-BASED LEARNING IN AVIATION MANAGEMENT PROGRAMS

D. Scott Worrells

Abstract

To what extent do practitioners of Work-based Learning (WBL) in Aviation Management (AVM) programs agree that these programs themselves, their students and faculty, and their industry partners present barriers to participation in a WBL activity? The population for this study was derived from University Aviation Association (UAA) member institutions, specifically those with an aviation management or airway science degree program that participate in some form of WBL.

A Likert scale, 13 question "Survey of Work-Based Learning Within Aviation Management Programs" was developed, tested, and determined to be valid and reliable. This survey was developed to determine the population's degree of agreement/disagreement on the barriers to participation in WBL. These barriers were grouped into four areas: program, student, faculty, and industry partner.

A majority of respondents "disagree/strongly disagree" on two of three statements that AVM programs themselves pose barriers to WBL participation. However, respondents "strongly agree/agree" that not requiring participation in a WBL activity was a program barrier. A majority of respondents reported that they "strongly agree/agree" that students are unaware of the potential benefits of WBL. Responses were fairly equally distributed as to whether or not faculty or student characteristics presented a barrier to WBL. For example a majority of respondents "disagree/strongly disagree" that faculty are not interested in WBL. Respondents were overall "undecided" as to whether or not industry partners played a significant role in setting up barriers to student participation in WBL.

Work-based learning provides supervised learning activities for students that occur in paid or unpaid workplace assignments, and for which course credit is awarded (U.S. Department of Education, n.d., para. 20). Work-based learning provides an opportunity to combine classroom learning with the professional work experience. Work-based learning has become increasingly valuable to participating institutions, students, faculty, and industry partners (Phillips, 1996). In a study by Thiesse, NewMyer, and Widick (1992), five basic types of WBL were identified: (a) academic, (b) departmental rotation, (c) job-shadowing, (d) single department, and (e) specific task.

Aviation management programs prepare graduates for entry-level management positions in the aviation industry. Students enrolled in the AVM major are encouraged to complete the requirements of an aviation-

related associate degree or to have equivalent licensing, aviation-related work experience, internship experience, or technical training ("Undergraduate Curricula," 2006, p. 181). According to Schukert (1992), aviation management programs should:

... concentrate on the preparation of persons to serve in various administrative and supervisory roles with the government and in such private-sector positions as airport and airline managers and as fixed base operators. Students interested in pursuing degrees in this field can anticipate an academic program with a strong business education core including extensive course work in accounting, banking, statistics and finance. Persons aspiring to professional flying careers frequently enroll in these programs in hopes that it will

Barriers to Work-based Learning

enhance their occupational versatility in the eyes of airline or corporate pilot employers. (pp. vi and vii)

As AVM programs gained acceptance and grew into separate baccalaureate degrees, WBL became institutionalized as an essential component thereof, and has been a major factor in AVM program maturation.

The problem is that, although the benefits of WBL are well known and documented in numerous professional journals, the number of students that participate in WBL is low (Mitchell, 2000). When asked what percentage of AVM graduates (2004-2005 academic year) participated in WBL sometime in their academic career, respondents indicated that the average was 1.8% (Worrells, 2007, p. 25).

The purpose of the study was to determine to what extent practitioners of WBL programs agree/disagree on perceived barriers to participation in WBL. Fifty-six program coordinators were asked to respond to a 13 question, Likert scale questionnaire, and indicate the extent to which they agree/disagree on perceived barriers to participation in WBL.

Expectations of Respondents

Program-barriers. Respondents would indicate that: (a) not making a WBL activity a program requirement, (b) other program requirements interfere, and (c) too many WBL opportunities present barriers to participation in WBL.

Student-barriers. Respondents would indicate that: (a) students are not aware of the benefits, (b) the financial burden is overwhelming, and (c) the locations of the work-site are overwhelming barriers to student participation in WBL.

Faculty-barriers. Respondents would indicate that: (a) faculty are interested in WBL activities, (b) there are not enough faculty involved, (c) faculty appreciate the importance of WBL, and (d) there is little or no reward or recognition for faculty are barriers to participation in WBL.

Business partner-barriers. Respondents would indicate that: (a) business partners appreciate the benefits, (b) it is difficult for a business partner to justify the costs, and (c) poorly maintained business partner and faculty relationships can present barriers to participation in WBL.

Review of Literature and Related Research

The roots of present day AVM programs can be traced back to the Civil Pilot Training program of World War II. At that time, the demand for pilots was so great that civilian institutions were called upon to supplement military training programs. After World War II and through the 1970s, the pathway to a career in aviation had been turned around and the military became the primary source of aviation professionals for the commercial aviation industry.

By the middle of the 1980s, the military could no longer keep pace with the demand for aviation professionals. This trend continued and by 1995 civilian institutions had emerged as the primary source of personnel for commercial aviation. Not only had the source of personnel shifted, but it was also found that the most desirable personnel qualifications had expanded from technical skills to include administrative and managerial skills as well.

Lindseth (1996) found that increasing numbers of baccalaureate aviation programs in the United States were related to economical factors, increased air travel, and a decrease in the supply of aviation professionals from the military. The shift from the military to civilian sources of personnel and the natural attrition of experienced aviation personnel from the industry focused the search for qualified aviation professionals on colleges and universities. Recognizing that the pathway to a career in aviation had shifted from the military to the civilian sector, Karp (2000) suggested that it might be time for a fundamental change in collegiate aviation education. Oster stated: "As we look to the future, our committee concluded that collegiate aviation programs were likely to become the dominant path into the aviation industry, not only for pilots and aviation maintenance technicians, but for management as well" (as cited in Mitchell, n.d., p. 2). The end result was that the aviation industry would need to rely to a much greater extent on civilian sources for technical and administrative/managerial personnel.

Aviation Management Programs

Aviation management degree programs began to emerge when it was recognized that highly technical aviation careers also demanded a certain degree of managerial skill. According to Fairbairn (1987): "Students graduating from aviation programs frequently move into careers that have a significant management component. As a result, aviation management courses have evolved in aviation curricula to prepare graduates for these positions" (p. 77). Fairbairn further noted that the objective of aviation management courses, "... should be to provide enough depth in the unique aspects of a particular field of aviation to enable the student to engage in critical analysis and problem solving in that field" (p. 77). Lastly, Fairbairn pointed out that:

... courses should be structured in a manner that allows students to integrate material and apply management skills. What is needed is ... to develop activities which will meet the objectives of these courses. Programs must be developed to allow direct observation of students abilities in a managerial role. (pp. 77, 89)

According to Schukert (1992), aviation management programs should:

... concentrate on the preparation of persons to serve in various administrative and supervisory roles with the government and in such private-sector positions as airport and airline managers and as fixed base operators. Students interested in pursuing degrees in this field can anticipate an academic program with a strong business education core including extensive course work in accounting, banking, statistics and finance. Persons aspiring to professional flying careers frequently enroll in these programs in hopes that it will enhance their occupational versatility in the eyes of airline or corporate pilot employers. (pp. vi and vii)

By 1996, there were 276 postsecondary education institutions in the United States offering non-engineering aviation programs. Of these, 70 offered baccalaureate degrees in administration/management disciplines: aviation administration, airport management, aviation maintenance management, and air traffic control. Each of these programs involved some form of flight education. There were six additional programs, however, that offered a non-flight AVM degree (Lindseth, 1996). In 2003, 114 postsecondary institutional members of the UAA reported that there were 72 AVM programs: 21 associates, 44 bachelors, and 7 masters (Williamson, 2003). Seven of these were reported as non-flight AVM programs.

Work-based Learning in Aviation Management

Aviation-related partnerships between business and education began as maintenance apprenticeships. Gradually, they evolved to include cooperative education opportunities and internships in flight and management. Throughout this evolution, there were no accepted standards for these types of activities. Their definitions and applications were as diverse as the institutions, students, and industry sponsors that participated in them.

Work-based learning evolved in parallel with, and as a significant component of, aviation management programs. As AVM programs gained acceptance and grew into separate baccalaureate degrees, WBL became institutionalized as an essential component and have been a contributing factor in AVM program maturation.

In 1971, LaGuardia Community College established the first mandatory cooperative education requirement in aviation at a community college in the U. S. Enrollment in 1971 was 500 students. By 1998, it was recognized as a leader in WBL with one of the largest cooperative education programs in the country. Enrollment had grown to approximately 10,000 students, 2000 of whom

participated in WBL with over 300 industry sponsors. "Individual internships are often sought which relate to the student's course of study, and students attend seminars in which they study issues such as workplace cultures and career-building skills" (Bailey, Hughes, & Barr, 1998, p. 14).

Soon after becoming a university in 1971, Embry-Riddle Aeronautical University developed a WBL program. The purpose, according to Howell and Scott (2001), was to develop students' professional and personal aspirations and to guide their life in the direction of a sound career. "Our goal was to be practical, motivating and distinctive and to serve students, alumni, faculty and staff, as well as industry" (Howell & Scott). Participants were provided an opportunity to bridge the gap between the classroom and work environment and to earn credit hours toward an undergraduate/graduate degree.

The applied research partnership program developed at Purdue University exemplifies how WBL can be integrated within an AVM program. The program was initiated in 1996 in response to industry representatives who complained of a significant adjustment period for graduates entering aviation careers. Morton, Eiff, & Lopp (2001), found that:

While aviation industry employers generally agree that aviation education programs are providing excellent foundational technical and managerial knowledge and skills, they continue to report that students lack confidence in applying their education during the initial phases of their aviation careers. Additionally, industry feedback often indicates that students lack comprehensive knowledge of aviation industry settings and processes. Graduates are generally reported to understand the concepts of problem solving, project management, team building and work analysis but demonstrate a weakness in applying those concepts within the context of their aviation work settings.

Fuller and Truitt (1997) in a study of airport consultants revealed that WBL industry sponsors had a very positive attitude toward their participation in, and benefits from WBL activities. "We feel very strongly that the internship component is one of the strengths of our program. One cannot be effective without real world experience" (p. 68).

Barriers to WBL

Program barriers. According to Hawley-Miles and Darling-Hammond (1997):

Changing school organizations to better fit an

Barriers to Work-based Learning

instructional vision will require schools to confront long traditions and a host of state, district, and union policies and practices that conflict with many of the changes outlined here. These barriers can loom large. But, the biggest constraint may be lack of vision about the concrete changes in school organization that can create a more professional organization and improve student achievement. (para. 65)

Other programmatic barriers, as reported by a former undergraduate student were: delayed graduation, prerequisites, conflicting course schedules, and grade point average (Tsusako Hashizume, personal communication, August 6, 2008). Lack of proper documentation and/or a learning agreement can jeopardize the credit and grade earned. Additionally, the program must be flexible to accommodate student and intuitional partner schedules, which can be out of sync with an academic schedule.

The learning agreement provides the mechanism for the learner to establish the pace of study and thus the duration of the programme. This approach requires the University to move away from the concept of a normal period of registration for an award to one of considering each proposal on its merits. The learning agreement thus becomes a key administrative document for student records and tracking. (Garnett, 2000, para. 15)

Student barriers. A typical and widely acknowledged barrier to participation in a WBL activity is the low, if there is any, remuneration at all. According to Waldman (2008) "Rare is the internship that doles out more than minimum wage, and who can afford to spend a summer working 40 hours a week for peanuts" (para. 6)? In addition, Waldman identifies another somewhat obscure barrier:

On top of that, college students not lucky enough to be from internship Mecca's like New York, Washington, Los Angeles, San Francisco, Boston, or Chicago are at an even greater disadvantage--unless their parents can help them out with the money to live for the summer in one of these places. (para.6)

Dugan-Waldschmidt (2002) identified eight student related barriers to participation in a WBL activity, seven of which are relevant to the aviation industry: (a) tuition costs, (b) work schedule, (c) books, (d) personal concerns, (e) family issues, (f) child care, and (g) transportation (p. 546). For international students, security issues or inability to obtain a work Visa prevent WBL participation (Hemdeep Dulthummon, personal communication, July 25, 2008).

Faculty barriers. The authors of this study have

more than 13 years experience as WBL program coordinators. The faculty associated barriers that appear on the survey were largely based upon their extensive experience. These barriers range from: faculty are not interested in and they do not appreciate the benefits of WBL, typically one faculty member in the program is assigned "coordinator" responsibilities, faculty do not agree on the importance of a student's participation in a WBL activity, their eventual employment and career development, to lastly but probably most importantly, there is little or no compensation for a faculty members work and their activities do not carry much weight in tenure and promotion reviews.

Business partner barriers. Zinman (2007) identified three basic barriers "Time, Space, and Ability," that industry partners face when contemplating participation in a WBL activity. These barriers were derived from a "five-year study... conducted through post-secondary WBL programs through 14 academic terms" (Zinman, para. 1 & 2). "In discussing why they do not consider including WBL in their development projects, staff and management often cite personal lack of time, mentoring skills, and money as barriers to what they would consider an effective internship initiative" (McGinnis, 2006, para. 1). Dugan-Waldschmidt (2002) adds that on-site mentors lack training and were not experienced (p. 537).

Summary of Literature and Research

Work-based learning activities have become essential components of AVM programs. They have been shown to be an asset to institutions, students, and industry partners. Of the 114 institutional members of the UAA, 73.7% provide one or more WBL activities (Williamson, 2003).

Methodology

Type of Research

A descriptive research method that employed a self-report research instrument was used to collect data for the study. According to Best and Kahn (2006):

A descriptive study describes and interprets what is. It is concerned with conditions or relationships that exist, opinions that are held, processes that are going on, effects that are evident, or trends that are developing. It is primarily concerned with the present, although it often considers past events and influences as they relate to current conditions. (p. 118)

In this study, survey research was used to identify and describe the perceived barriers to participating in a WBL activity.

Subjects

The population for the study was drawn from the 114 institutional members of the UAA as listed in the *Collegiate Aviation Guide* (Williamson, 2003). The *Guide* contains an "Alphabetical Listing with Options and Degrees" offered by various colleges and universities that was analyzed to identify programs having an "Aviation Management/Airway Science Management" curriculum. Seventy-seven institutional members were initially designated as having met the following definition of aviation management according to the U.S. Department of Education's (2000) *Classification of Instructional Programs* and which also participate in WBL.

A program that prepares individuals to apply technical knowledge and skills to the management of aviation industry operations and services. Includes instruction in airport operations, ground traffic direction, ground support and flight line operations, passenger and cargo operations, flight safety and security operations, aviation industry regulation, and related business aspects of managing aviation enterprises. (49.104)

Originally there were 77 UAA programs meeting selection criteria designated as the target population. During the process of conducting follow-up telephone calls it was learned that one additional university had an AVM program even though such information was not included in the *Collegiate Aviation Guide*. As a result of several telephone inquiries and email messages, it was confirmed that this university did have an AVM program and did participate in WBL. As a result, the target population increased to 78. Four institutions were subsequently eliminated because they did not have an AVM program as previously defined. Four others were also eliminated because they did not, in fact, have a functioning WBL program. As a result, the accessible population developed into 70 institutions having AVM programs which offer WBL.

Instrumentation

Information to develop the survey comes from three sources: (a) survey research instruments developed for use outside of aviation related programs, (b) relevant literature regarding WBL within aviation oriented programs, and (c) the authors' personal perceptions of barriers to participation in a WBL activity.

Data Collection Procedures

The most efficient method of gathering data was determined to be an on-line survey. To accomplish this task, Instructional Support Services (ISS) in the Department of Library Affairs at Southern Illinois University Carbondale was contacted for assistance. The ISS staff recommended

the use of a software program called "Surveys" that were: ... developed at University of Illinois Champagne-Urbana. It aids in the creation of online survey forms that can be installed on a central server for distribution over the web. Survey questions can be of many types, including multiple choice, Likert scale, short answer, or free text. Responses are sent to a database for collection and analysis. What it lacks in sophisticated control mechanisms it more than makes up for in simplicity of use. (H. Carter, personal communication, December 16, 2004)

The survey was initially disseminated to the 70 AVM program representatives via e-mail. Fifty-six useable responses were received for an 80.0% rate of return.

Treatment of the Data

Analysis of raw data began soon after receiving the last survey. Conventional descriptive statistics were used to tabulate and analyze the data. Data interpretation was based upon logical and analytical means.

The questionnaire consisted of 13 Likert scale questions designed to determine respondents degree of agreement/disagreement with each statement. The scale was typical: "Strongly Agree," "Agree," "Undecided," "Disagree," and "Strongly Disagree." The data gathered from the survey is presented in a table. Means and standard deviations were computed and displayed for each question. Likert scale means were interpreted and discussed in relation to the following approximate intervals: strongly agree (5.0 to 4.5), agree (4.4 to 3.5), undecided (3.4 to 2.5), disagree (2.4 to 1.5), and strongly disagree (1.4 to 0.0).

Findings: Barriers to the Growth and Development of WBL

The survey consists of 13 potential barriers to the growth and development of WBL. The list of barriers was identified from a review of related literature and was supplemented by barriers derived from the authors' personal experiences. The 13 statements encompass four aspects of WBL: (a) program barriers, (b) student-related barriers, (c) faculty-related barriers, and (d) workplace barriers. The intent of this study was to elicit perceptions from AVM program representatives regarding the extent to which they agree/disagree that these barriers to WBL are present in their respective programs.

Frequency counts for statements in the survey, along with means and standard deviations, are shown in Table 1. Inspection of the mean responses reveals that: (a) 6 of the 13 statements (1, 4, 6, 8, 12, and 13) fall within the interval 2.51 to 3.5, indicating that respondents are "undecided," (b) 5 of the 13 statements (2, 3, 7, 9, and 11) fall within the interval 1.51 to 2.5, indicating that respondents "disagree," and (c) 2 of the 13 statements (5 and

Barriers to Work-based Learning

10) fall within the interval 3.51 to 4.5, indicating that respondents “agree.”

Interpreting the data in Table 1 using this approach, however, seems to obscure more meaningful results. For example, respondents appear to be “undecided” about statement 6 based on interpretation of the mean. Yet, 32 respondents (57.1%), a clear majority, “strongly agree/agree” that it is a barrier to WBL. Therefore, the decision was made to analyze and discuss the data in Table 1 based on combined frequencies for “strongly agree/agree” and “disagree/strongly disagree” instead of mean responses.

Strongly Agree/Agree

A majority of respondents “strongly agree/agree” that the following statements from the survey represent barriers to WBL. The frequency of responses and corresponding percentages appear in parentheses following each statement.

1. WBL is not a program requirement (31/55.3%).

4. Students are unaware of the potential benefits of WBL (30/53.5%).
5. Student participation in WBL often results in personal and/or financial sacrifices (38/69.0%).
6. The location of the work-site is not convenient to the student’s campus or home residence (32/58.2%).
10. Faculty participation in WBL is not rewarded for rank and salary purposes (40/71.4%).

Three of the five statements about which respondents agree are barriers to WBL are student related. Respondents apparently recognize that WBL is different than conventional classroom courses in the inconvenience and sacrifice it may cause for students. But, not having it as a program requirement may also be a barrier. There is recognition that students are unaware of the potential benefits of WBL and that faculty participation in WBL is not rewarded.

Table 1

Barriers to WBL

	Statement	SA	A	U	D	SD	M	SD	N
1.	WBL is not a program requirement.	18	13	5	9	11	3.38	1.54	56
2.	Program requirements impede student participation in WBL.	2	13	6	17	18	2.40	1.26	56
3.	Too many WBL opportunities.	1	4	5	26	20	1.91	0.91	56
4.	Students are unaware of the potential benefits of WBL.	7	23	7	14	5	3.23	1.22	56
5.	Student participation in WBL results in personal/financial sacrifices.	14	24	4	11	2	3.67	1.17	55
6.	The work-site is not convenient to student campus or home residence.	9	23	5	14	4	3.36	1.22	55
7.	Faculty are not interested in WBL.	0	5	3	32	16	1.98	0.84	56
8.	Inadequate number of faculty to manage WBL activities.	5	17	1	27	6	2.79	1.24	56
9.	No consensus among faculty regarding importance of WBL.	1	9	7	24	15	2.23	1.05	56
10.	Faculty participation is not rewarded for rank and salary purposes.	13	27	4	9	3	3.70	1.16	56
11.	Business and industry partners do not perceive the benefits of WBL.	1	6	12	21	16	2.19	1.03	56
12.	Business & industry partners have difficulty justifying WBL costs.	3	20	14	13	6	3.02	1.11	56
13.	The business & industry sponsor & campus faculty relationship has not been adequately maintained.	6	21	8	14	7	3.06	1.25	56

Barriers to Work-based Learning

Disagree/Strongly Disagree

A majority of respondents “disagree/strongly disagree” that the following statements from the survey represent barriers to WBL. The frequency of responses and corresponding percentages appear in parentheses following each statement.

2. Program requirements impede student participation in WBL (35/62.5%).
3. Too many WBL opportunities (46/82.1%).
7. Faculty is not interested in WBL (48/85.7%).
8. Inadequate number of faculty to manage WBL activities (33/58.9%).
9. No consensus among faculty regarding the importance of WBL (39/69.6%).
11. Business and industry partners do not perceive the benefits of WBL (37/66.0%).

Three of the six statements about which respondents disagree are barriers related to faculty: that faculty are not interested in WBL, that not enough faculty are available to manage WBL, and that faculty do not agree on the importance of WBL. Respondents disagree that business and industry partners do not perceive the benefits of WBL and that program requirements do not impede student participation in WBL. The third statement was written in reverse polarity to counter potential rater bias. Since respondents disagree that too many WBL opportunities are a barrier, it is assumed that they do perceive that too few opportunities are a barrier.

Undecided

The tendency of respondents was to indicate that they were “undecided” that the following statements from the survey represent barriers to WBL. The frequency of responses and corresponding percentages appear in parentheses following each statement.

12. Business and industry partners may have difficulty justifying costs associated with participation in WBL. Twenty (35.7%) of those responding agree, 14 (25.0%) are undecided, and 13 (23.2%) disagree.
13. The partnership between business and industry sponsors and campus faculty has not been adequately developed and/or maintained. Twenty-one (37.5%) of those responding agree, 8 (14.3%) are undecided, and 14 (25.0%) disagree.

Respondent’s uncertainty about these two statements involving business and industry is not surprising. They may not possess, or have access to, this type of information.

Additional Information

Two respondents indicate that “WBL opportunities require a great deal of time” and “little time or patience” are additional barriers to the growth or further development of WBL in their programs. The remaining six comments have little statistical significance. These eight responses are presented verbatim and in no particular order of importance.

1. Every program in the College of Technology has at least one co-op experience required; faculty are therefore strongly in favor. The partnership is never adequately developed, but that is the nature of the relationship. Students working full or part time in an aviation business do a co-op right there—they are not asked to go elsewhere. Many employers routinely hire the better co-op students. Wages paid are typically around \$5-10/hr. The co-op experience is 600 hours.
2. WBL partners have had bad experiences with bad etiquette with interns. Also, students consider it an entitlement and do not work hard.
3. We have some aviation industries who have chosen not to take the time to hire Coop students, namely, the airport itself and a repair facility.
4. Questions in Part A of your questionnaire required too much research time.
5. Unpaid internships place financial hardship on students and may eliminate students from participation. 12. This is especially true in today’s economy when companies are laying off [sic] full time workers. It is then hard to justify paying interns with no experience, but students find it hard to accept unpaid internships regardless of their importance to their future careers.
6. We could do much more if we had more faculty. We have no time to pursue Work Based Learning to its [sic] full potential due to our teaching-research-service responsibilities. We all agree that we would like to have more internship opportunities – we just don’t have the time to do it.
7. WBL opportunities require a great deal of time to develop and maintain – our college is not realizing the full potential of this concept due to lack of staffing. Our students are very interested in WBL.
8. For our students, transport or location are not

really factors since we are located between the nation's three largest airports. Students have a litany of choices. that is overwhelming to our career services folks who have little time or paitence [*sic*] to deal with our students or the needs of the industry. also, [*sic*] the 'soft' skills of our students is sometimes lacking, they don't have basics to communicate for example effectivley [*sic*] with their fellow peers or potential employer. Perhaps a prep course would be beneficial [*sic*] in this area?

Summary and Conclusions

Aviation management is an academic program that continues to grow and evolve. A contributing factor to this growth and development is program, student, faculty, and industry partner participation in WBL. Participation in WBL seems a function more of practical restrictions than a lack of interest and enthusiasm. There seems to be no insurmountable barrier to participation in WBL. On the contrary, WBL appears to be a strong and viable component of AVM programs across the country. →

David S. Worrells is an assistant professor and associate chair program chair of the Masters in Aeronautical Science program at Embry-Riddle Aeronautical University-Worldwide. His academic experience spans more than 15 years and includes appointments at Universities within the US and at international institutions as well. Scholarly activities include fractional ownership of business jets, general aviation security, workforce education and development, distance learning, case analysis, and writing across the curriculum.

Barriers to Work-based Learning

Author Note

This paper is a longitudinal study based upon the dissertation of the author.

References

- Bailey, T., Hughes, K., & Barr, T. (1998, March). *Achieving scale and quality in School-to-Work internships: Findings from an employer survey* (MDS 902, Office of Vocational and Adult Education, U. S. Department of Education Grant No. V051A30003-97A/V051A30004-97A). Berkeley, CA: National Center for Research in Vocational Education. Retrieved July 14, 1998, from <http://vocserve.berkeley.edu/AllInOne/MDS-902.html>
- Best, J. W., & Kahn, J. V. (2003). Descriptive studies: Assessment, evaluation, and research. In *Research in education* (9th ed., pp.114-158). Boston, MA: Allyn and Bacon.
- Department of Education: National Center for Education Statistics. (n.d.). *Career/technical education statistics*. Washington, DC: Author. Retrieved August 6, 2008, from http://nces.ed.gov/surveys/ctes/tables/glossary_secondary.asp
- Department of Education: National Center for Education Statistics. (2000). *Classification of instructional programs (CIP): 49.0104 Aviation/airway management and operations*. Washington, DC: Author. Retrieved October 21, 2004, from <http://nces.ed.gov/pubs2002/cip2000/ciplist.asp?CIP2=49>
- Dugan-Waldschmidt, E. (2002). Bilingual interns' barriers to becoming teachers: At what cost do we diversify the teaching force? *Bilingual Research Journal*, 26, 537-561.
- Fairbairn, G. R. (1987). Development of aviation management coursework. In W. D. Geibel (Ed.), *University Aviation Association Fall Conference*, (pp. 76-98). Auburn, AL: University Aviation Association.
- Fuller, M., & Truitt, L. J. (1997). Aviation education: Perceptions of airport consultants. *Journal of Air Transportation World Wide*, 2, 64-80.
- Garnett, J. (2000). Organisational cultures and the role of learning agreements. In D. Portwood & C. Costley (Eds.), *Work based learning and the university: new perspectives and practices*. Retrieved on August 16, 2008, from <http://www.mdx.ac.uk/wbl/research/docs/SedaCh6.pdf>
- Hawley-Miles, K., & Darling-Hammond, L. (1997). *Rethinking the allocation of teaching resources: Some lessons from high performing schools* (NCES 98-212). Developments in School Finance. National Center for Educational Statistics. Retrieved August 6, 2008, from <http://nces.ed.gov/pubs98/dev97/98212e.asp>
- Howell, C. D., & Scott, L. M. (2001). Aviation management: The view from below. *Aviation Management Education and Research Conference, Proceedings* [CD-ROM]. Montreal, Canada: Concordia University.
- Karp, M. R. (2000). University aviation education: An integrated model. *Collegiate Aviation Review*, 18(1), 1-11.
- Lindseth, P. D. (1996). Identifying indicators of program quality in United States baccalaureate aviation programs. *Dissertation Abstracts International*, 57(03), 1046A. (UMI No. 9624672)
- McGinnis, L. F. (2006). Internships and mentoring in high performance computing environments [Abstract]. *Proceedings of the 2006 ACM/IEEE Conference on Super Computing, Tampa, FL*, Article 42. Retrieved from <http://portal.acm.org/citation.cfm?id=1188498>
- Mitchell, F. G. (n.d.). *Clipping the aviation industry's wings: The growing manpower shortage* (UAA 145). Auburn, AL: University Aviation Association.
- Mitchell, F. G. (2000). *College survey report on internships*. Auburn, AL: University Aviation Association.

- Morton, B., Eiff, G., & Lopp, D. (2001). Applied research partnerships: A success story. *Aviation Management Education and Research Conference, Proceedings* [CD-ROM]. Montreal, Canada: Concordia University.
- Phillips, W. (1996, November). Internships & Co-ops: Collegiate programs that can make your aviation career take off. *Flight Training*, 8, 43-47.
- Schukert, M. A. (1992). *Post-secondary aviation & space education reference guide* (Department of Transportation, Federal Aviation Administration Publication). Washington, DC: U.S. Government Printing Office.
- Thiesse, J. L., NewMyer, D. A., & Widick, L. (1992). FBO and airport internships for university aviation students: Benefits for students, universities, and the aviation industry. *Journal of Studies in Technical Careers*, 14, 253-264.
- Undergraduate curricula and faculty. (2006, September). In *Southern Illinois University Carbondale, undergraduate catalog, 2006-2007*, 47(2), pp. 109-541.
- Waldman, A. (2008, June 25). Why internships in journalism are bad for young people, and bad for the industry. *The New Republic*. Retrieved August 5, 2008, from <http://tnr.com/politics/story.html?id=32c1f37c-587d-44c6-937c-fc392cdab6ff>
- Williamson, C. (Ed.). (2003). *Collegiate aviation guide: Reference of college aviation programs*. Auburn, AL: University Aviation Association.
- Worrells, D. S. (2006). The nature and status of work-based learning within aviation management programs: A programmatic perspective. *Dissertation Abstracts International*. (UMI No. 3215014)
- Zinman, M. (2007, January 11). Managers gain 225 days of productivity by having an intern. Retrieved August 5, 2008, from http://www.collegerecruiter.com/internships/2007/01/managers_gain_225_days_of_prod.php

