The Role and Function of Work-based Learning in Aviation Management Programs

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ABSTRACT

Work-based learning (WBL) encompasses various and diverse components of experiential learning. Cooperative education and internship comprise two elements of experiential learning constituting WBL in this study. The importance of WBL is amplified by an aviation industry that identifies "job skill and knowledge" as "highly regarded" characteristics of new hires (Phillips, Ruiz, & Mehta, 2006, p. 126). The study sets out to define the roles and functions of WBL and determine their overall importance from the perspective of those that are engaged in administrating and managing WBL activities in Aviation Management (AVM) programs.

INTRODUCTION

An Aviation Management (AVM) program should, among other things, prepare graduates for a wide array of management positions within the aviation industry. The purpose of Work-based learning (WBL) is to complement AVM programs and take advantage of the college and university system by developing additional resources and improving the quality of entry-level employees (Spencer, 1988).

WBL typically "bridges the gap" between the classroom and the world of work. WBL has become increasingly valuable to students and participating institutions and industries (Phillips, 1996). WBL activities have expanded from student participation in various and sundry administrative tasks to becoming familiar with flight crew training, customer relations, maintenance operations, and dispatch. WBL is commonly conducted by the airlines, more recently however, aerospace manufacturers, airport authorities, education/training facilities, and fixed base operators have gotten involved (Schukert, 1993). A coincidental benefit from WBL is the opportunity for the work-site partner and the student to concurrently review the promise of each other for future employment opportunities.

Students regularly take advantage of WBL opportunities that include, but are not limited to:

1. Aerospace manufacturing companies
2. Aircraft maintenance companies
3. Airport administrators
4. Aviation consultants
5. Federal Aviation Administration
6. General aviation companies
7. State Department's of Transportation
8. National Transportation Safety Board
9. Professional aviation organizations

The purpose of this study was to describe and analyze the perceptions of the roles and functions of WBL in post-secondary AVM programs by those actively engaged in the management and administration thereof. It was determined that the University Aviation Association (UAA) member organizations represent a wide and diverse population from which assumptions can be readily generalized to the larger aviation academe. Therefore, the study was delimited to: community colleges, colleges, and universities affiliated with the UAA that are actively engaged in WBL activities. In the context of this paper roles and functions of WBL are the deliberate use of the work-place as a site for student learning; formal, structured, and strategically organized by instructional staff and employers.

REVIEW OF LITERATURE

Evolution of WBL in AVM programs

Many U.S. organizations allocate substantial financial resources and jeopardize workplace productivity to provide employees management training in a variety of classroom settings. Much of this knowledge is on a broad range of conceptual knowledge and skill as they pertain to the discipline of management. Beyond the classroom, the predominant mode of

developing managers and administrators is through experience (Raelin, 1997). According to Raelin, "…mastery of an interdisciplinary, inter-functional field like management is best achieved by exposure to diverse challenges in corporate life normally through the judicious mapping of assignments. As we have seen, WBL deliberately merges theory with practice and acknowledges the intersection of explicit and tacit forms of knowing" (p. 574). Academic institutions, however, cannot provide the projected need for these qualified aviation professionals without the assistance of the industry that it supports. Mitchell (n.d.) recommended that the aviation industry "…provide sufficient support to grow a long-term manpower base using a variety of cooperative agreement tools such as scholarship, internships, fellowships and just plain regular and ongoing communication" (p. 2). Work-based learning partnerships between industry and academic institutions can help provide the training and experience needed by the civil aviation industry. According to Phillips et al. (2006), "…externships, internships, cooperatives, play a significant role in bridging the 'real world' experience gap" (p. 126). Aviation-related WBL activities evolved from business and education maintenance apprenticeships. Gradually, they evolved to include WBL activities in flight and management.

In 1971, LaGuardia Community College established the first mandatory WBL requirement in aviation at a community college in the US. Enrollment in 1971 was 500 students. By 1998, it was recognized as a leader in WBL with one of the largest programs in the country (Bailey, Hughes, & Barr, 1998).

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. Here again it is recognized that participation in WBL provides opportunity to bridge the gap between the classroom and work environment; to earn credit hours toward an undergraduate/graduate degree.

The Northrop/California State University,

Fullerton Invitational Program in Operations Management was established in 1983. This program allowed students to work within Northrop's Operations Department in a variety of areas during the summer. Northrop also maintained an active WBL program with other universities allowing students to alternate between work and study (McCarthy, 1984).

Southern Illinois University Carbondale's Department of Aviation Management and Flight recognized the significance of WBL opportunities and administered its first airline flight operations internship in 1987. That single WBL opportunity has grown into numerous agreements with major and regional carriers that allow the student to apply in the workplace the knowledge they have gained in the classroom (Ruiz, 2004).

The applied research partnership program developed at Purdue University exemplifies the role WBL plays in 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).

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.

Roles and Functions of WBL in AVM Programs

Schukert (1993) found that 71.9% of employer participants in WBL were from the public sector: federal government agencies (59.6%), airport authorities (8.8%), and state government agencies (3.5%). The remaining 28.1% of participants were from the private sector: airlines (10.5%), fixed base operations

(7.0%), and various other aviation enterprises (10.6%). Schukert provided five examples of the degree to which WBL has been institutionalized among participants: (a) administrating legal/formal agreements among sponsors, (b) designating a course title and number, (c) granting academic credit and issuing a grade, (d) specifying student participation requirements, and (e) sponsoring industry advisory committees.

Owens (1995) reported on an evaluation of The Boeing Company's WBL program. The purpose of the evaluation was to: (a) describe the operations and outcomes of WBL, (b) provide information for continuous quality improvement of WBL, (c) document the impact of WBL on students and others, and (d) identify promising practices related to WBL that could be adapted by others in business and industry. The evaluation methodology included: (a) a review of documents describing WBL structure, student selection process, and curriculum; (b) a survey of students participants before and after the WBL activity; and (c) a follow-up study of work and educational experiences since high school graduation.

Findings of the study revealed that: (a) 22 participants (91.7%) reported increasing their understanding of manufacturing, (b) 2 participants (8.3%) were influenced to stay in school, (c) 20 participants (83.3%) reported that the experience had enhanced or confirmed their career plans, (d) 24 participants (100%) were motivated to go on to postsecondary education following high school, and (e) 16 participants (66.7%) reported that the experience had improved their workplace and employability skills (Owens, 1995).

Luedtke and Papazafiropoulos (1996) studied retention issues as related to academic programs and the field of aviation in general. Pattie et al. (as cited in Luedtke & Papazafiropoulos, 1996) identified WBL as a key component of student retention.

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 can not be effective without real world experience" (p. 68).

Respondents to a survey by Mitchell (2000) reported the following strengths, weaknesses, and opportunities in WBL activities. Strengths: (a) provides a foot in the door, (b) students and schools keep abreast of the industry, and (c) provides invaluable experience for the intern. Weaknesses: (a) participation is low, (b) most are not paid, and (c) programs are too easy. Opportunities: (a) institutions need to promote them better, (b) institutions need to work out the problems associated with remuneration, (c) more opportunities need to be established, (d) meaningful work experiences are essential, and (e) coordination and implementation of a feedback system, from past participants to future participants, will improve the program.

The preceding studies indicate that WBL activities have become essential components of AVM programs. They have been shown to be an asset to students, industry, and institutional partners as they help to synthesize the concepts revealed in the classroom and how they are practiced in the workplace. Work-based learning activities play a key role in bridging the gap between school and the work-place, in aviation education, and in the students' pursuit of their career goals.

METHODOLOGY

A descriptive research method that employed a self-report research instrument was used to collect data for the current 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)

More specifically, survey research was used to identify and describe the perceptions of aviation management program representatives regarding

the role and function of WBL in AVM programs.

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-eight institutional members met the following definition of aviation management according to the U.S. Department of Education's (2000) *Classification of Instructional Programs* and 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. (para. 6, 49.0104)

The 78 UAA programs meeting selection criteria were designated as the target population. Ten roles and functions of WBL were derived from the review of literature. By the beginning of January 2005, information had been received from all 78 institutions. Four institutions were eliminated because they did not have an AVM program as previously defined. Four others were eliminated because they did not, in fact, have a functioning WBL program. As a result, the accessible population was reduced to 70 institutions having AVM programs which offer WBL.

INSTRUMENTATION

Information to develop the survey came 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 author's personal perceptions as an active administrator of WBL.

Multiple drafts of the research instrument were developed and the final draft of the survey was completed in March 2005. To assess instrument reliability, a pilot test was conducted in April 2005. Comments and suggestions were carefully considered and, when appropriate, incorporated into the final survey. The research instrument was subsequently reviewed and approved for use by the Southern Illinois University Human Subjects Committee.

DATA COLLECTION PROCEDURES

It was determined that the most efficient method of gathering data would 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 was:

> … 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 disseminated to the 70 AVM program representatives via e-mail on May 31, 2005. The first completed instrument was received on May 31, 2005, and the last of 56 responses was received on August 15, 2005, for an 80.0% rate of return.

TREATMENT OF THE DATA

Analysis of raw data began soon after receiving the last survey. One advantage of an on-line survey is that raw data are readily

compiled without having to manually code and enter the data. Conventional descriptive statistics were used to tabulate and analyze the data. Data interpretation was based upon logical and analytical means.

The questionnaire consisted of 10 Likert-type scale items. The data constituted responses that addressed each of the 10 questions. Data was summarized in two tables. 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: very important (5.0 to 4.5), somewhat important (4.4 to 3.5), important (3.4 to 2.5), somewhat unimportant (2.4 to 1.5), and very unimportant (1.4 to 0.0).

THE ROLE AND FUNCTION OF WBL

The statements included in the survey are intended to determine the degree of importance each WBL role or function is perceived to have within the AVM program. Subjects are asked to respond to a five position Likert scale ranging from Very Important (VI) to Very Unimportant (VU). To aid interpretation, numeric values from 5 (VI) to 1 (VU) were assigned to the scales, the results for which are shown in Table 1.

Nine of 10 mean ratings fall within the interval 3.5 to 4.5 indicating that respondents perceive these statements as being *Somewhat Important*. Computing a mean, however, obscures the degree of importance assigned to several statements. Therefore, Table 2 has been developed to reveal the statements rated as *Very Important* by half or more of the respondents. The most important statement is number 5, "The preparation for a career in the aviation industry that WBL provides students" which seems to be a validation of the actual function of WBL". Thirty or more respondents each rate statements 3, 7, and 9 as *Very Important*. The ratings assigned to statements 3 and 9 reinforce the importance of the career preparation role of WBL that was noted regarding statement 5. As reflected by the responses to statement number 7, "student access to WBL opportunity/information," dissemination of WBL opportunities and information is rated as an equally important role and function".

Table 1. *The Role and Function of WBL*

	Statement	VI	SI	I	SU	VU	*M*	*SD*	*N*
1.	The application of WBL in an AVM program is:	27	17	9	2	1	4.20	0.95	56
2.	Making WBL a required component of the AVM program is:	15	9	14	12	5	3.31	1.32	55
3.	The value of WBL as a "bridge" between the AVM program and the aviation industry is:	30	16	7	1	1	4.33	0.90	55
4.	The connection between WBL and AVM course work is:	25	16	11	2	1	4.13	0.97	55
5.	The preparation for a career in the aviation industry that WBL provides students is:	36	13	5	1	1	4.46	0.87	56
6.	Student participation in at least one WBL experience is:	26	11	12	3	4	3.93	1.24	56
7.	Student access to WBL information, opportunity is:	31	13	11	0	1	4.30	0.91	56
8.	Clearly defined objectives of the student's WBL assignment are:	26	19	7	2	2	4.16	1.01	56
9.	The requirement that a WBL assignment provide for a professionally oriented work experience is	30	18	5	2	1	4.32	0.91	56
10.	Evaluation and documentation of WBL by the AVM program is:	26	22	5	1	2	4.23	0.94	56

Note. N = number of respondents.

Table 2. *Functions Rated Very Important by the Majority of Respondents*

	Statement	Very Important		
		f	*%*	*N*
5.	The preparation for a career in the aviation industry that WBL provides students is:	36	64.3	56
7.	Student access to WBL information/opportunity is:	31	55.4	56
3.	The value of WBL as a "bridge" between the AVM program and the aviation industry is:	30	54.5	55
9.	The requirement that a WBL assignment provide for a professionally oriented work experience is:	30	53.6	56

Note. N = number of respondents.

The lowest rated statement is 2, "Making WBL a required component of the AVM program". The lower importance assigned to this statement is probably due to a lack of enthusiasm for making WBL a "requirement" than it is to making WBL a "component of the AVM program."

Ten of 56 respondents (18%) provide additional information. Four of these respondents indicate that the role and function of WBL in their programs is "very beneficial," "extremely important," "certainly important," and "very important." And, although one respondent indicates that WBL is a required component of its program, four others indicate that it is not required. Two respondents made interesting comments indicating that: "there are some students who would not do well in this environment and would not represent the department or university well" and similarly "I have some students that I would not want representing the university at a WBL assignment."

SUMMARY AND CONCLUSION

A self-developed research instrument was used in the study. A pre-survey evaluation was employed to identify 70 AVM programs actively participating in WBL and who agreed to participate in the study. Survey participants were directed to an on-line questionnaire. Respondents to the survey varied from 55 (78.6%) for questions two, three, four, to 56 (80%) for the other seven questions. Although the population for the survey was relatively small (70 institutions) the 78.6% and 80% rates of return are considerable and provided valuable input for analysis of the roles and functions of WBL in AVM programs. Data were analyzed using conventional descriptive statistics.

The role and function of WBL in AVM programs is considered to be significant by a majority of those responding. This indicates a very strong correlation between the findings of past research on this subject as to the value of WBL programs and the perceptions of those targeted by this survey. With the exception of "making WBL a required component of the AVM program" the nine other roles and functions of WBL are considered "Somewhat Important" to "Very Important" by the majority of respondents. Four of these nine are rated "Very Important" by a significant majority of those responding. It is not clear why making WBL a requirement is considered less important than the other roles and functions. However, more respondents rated it "Important," "Somewhat Unimportant," or "Very Unimportant" than any other role or function.

From the data, it is clear that these respondents place significantly high value on the experiential component that comes from WBL to help integrate theory and conceptual knowledge into the practice of managing aviation enterprises. Research opportunities for further related research could explore the ideal ratio of classroom instruction to WBL activities for AVM students within the confines of collegiate curriculum and to examine the perceptions of institutions such as those polled here and their perceptions on making WBL

mandatory in AVM programs. This additional research, combined with the findings herein, could provide further guidance to AVM program administrators in how to strike the appropriate balance between WBL activities and didactic instruction.

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