

Winter 2000

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Scholarly Commons Citation

Leasure, M., & Stanley, D. (2000). Aviation Students in Industry: Strategies that Enhance Learning. *Journal of Aviation/Aerospace Education & Research*, 9(2). Retrieved from <http://commons.erau.edu/jaaer/vol9/iss2/5>

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FORUM***AVIATION STUDENTS IN INDUSTRY:
STRATEGIES THAT ENHANCE LEARNING***

Michael Leasure and David Stanley

It is important that the graduates of aviation training schools possess both academic training and practical experience. Academic training is often the most convenient to provide in that a classroom, a lab facility, an instructor, and samples of the parts and equipment related to the learning objectives are all that is required. It is a structured and accepted process that continues under the watchful eye of the Federal Aviation Administration and the mandates of federal law.

The practical experience portion of the complete learning package is more difficult for many schools to provide. Some options include performing work on "live" aircraft that are privately owned, or possibly allowing students the opportunity to participate in the maintenance of airworthy school aircraft. Both of these options are better than a pure academic presentation but are lacking in the complete exposure of the student to the aviation industry and the workplace environment. The industry has supervisory structure, time constraints, and financial considerations that are just not possible to accurately duplicate in the school environment. The solution to providing students with real world work experience may lie in other opportunities that require somewhat more coordination than an in-school solution but provide a realistic and infinitely more valuable work experience for the student.

Internships

Internships have been a proven method of providing work experience for students for as long as there has been a need for trained employees. The classic internship will find the student employed within the industry during the summer months, or less often, over the Christmas break from classes. What that student does during their stay with the organization is the key to a quality learning experience. Placement within a maintenance and overhaul facility is a wonderful opportunity for the student to practice utilizing their academic training. Problem solving, time management, team dynamics, as well as computer and technical skills may all be used to assist the organization with an identified problem. Ideally, the student will work closely with a team that may include quality control personnel, supervisors, consultants, and technicians to solve a problem.

As an example, Purdue has an ongoing commitment for two interns at a large airline overhaul facility that specializes in landing gear and turbine engine overhaul for their fleet of 757's, 727's, and 767's. The internship is of three months duration. It starts and ends within the confines of the summer break. One assignment given to the interns was to develop a method of tracking repair and reject parts within the facility and to make recommendations to reduce the occurrences and cost of rejected parts. This was a tall order for the time allotted. The students were asked to join a team that included airline personnel familiar with the specific processes involved. The students were required to develop a plan of action and to execute that plan to completion, culminating in a final presentation and report due at the end of the employment period. The students used their technical knowledge, communication skills, and problem solving abilities to complete the project to the delight of their summer employers. Many of the recommendations that were an integral part of the report were adopted by the organization. The students felt a real sense of pride and accomplishment for a job well done. It was a positive experience for the employer as they gained valuable information with minimal investment and the students gained priceless experience. Internships of the type promoted by this program have a specific project as the objective, rather than the performance of mundane jobs often associated with student employment. In the relatively short span of time involved, interns must overcome inexperience, quickly gather information, and expedite the required processes. Frequently, though, the unique position interns have in the operation enable them to uncover facts and develop solutions not always readily apparent or popular for employees and management of the company in question.

Co-ops

The co-op (cooperative education) process is more rigidly defined and therefore is often less adaptable to innovation. Much like the internship, the companies may identify a need for student employees and contact the school for prospects. The students are selected for the co-op based upon defined criteria such as grade point average and previous experiences. A resume is submitted to the school and the company for evaluation. Much like the other methods of providing work experience, it is important that the work the student is assigned during the co-op supports and builds upon their academic training.

As an example, a large airline package delivery service has accepted interns for positions in engineering and technical support. These positions draw upon the students aviation technical training as well as their communications and problem solving abilities. These co-op students are receiving pay for their efforts and have the expectation of continued employment for the duration of their contracts. They will receive recognition for their work experience as well as their academic degree at the end of the process. Some course credits will be earned as well as part of the co-op.

Field Visitations/Research

Internships provide experience during breaks from the school year, but what can be done during the semester? The classic "field trip" to an industry facility is acceptable; however, much more can be learned if the methods include more than a simple walking tour. As an example, a couple of forward-looking professors decided to require students to make recorded observations of specific topics during the visitation. They chose Chicago, O'Hare airport as the visitation site. The students underwent training in the process of observation in the weeks leading up to the trip. As a result, the students were not just walking and nodding their heads affirmatively but had specific observations to make concerning shift turnover and aircraft pushback procedures. Their observations were compiled and used to support reports that were submitted to airline management. This type of managed research took no more out-of-class time than a simple walking tour but demanded student participation and allowed them to gain much more experience and insight.

Graduate Student Partnerships

When looking beyond the four-year Bachelor's degree curriculum, the options are much more diverse. Graduate students may be required to experience their chosen work

environment as a part of their degree requirements. Ideally, the on-the-job requirements could be met while the student receives compensation for their efforts. It is best if the job is within commuting distance of the school, however, creative scheduling and airline travel passes may make this less of a barrier. The graduate student has often been trained in a host of areas including leadership, communication skills, and advanced statistical processes. This makes them a valued member of most industry teams. One innovative situation that Purdue is currently involved with has graduate students employed by a major airline maintenance facility near the main campus. The students work approximately two days a week and attend classes the other three. The work at the airline is related to research projects that the students are completing that will benefit the airline and also serve to fulfill requirements of their advanced degree.

Getting Together

Internships, field visitations, graduate work, and co-ops are mutually beneficial to industry and the schools. So how are the contacts made and how can they be improved?

It is important for companies to realize the potential benefits that these students represent. The students competing for these opportunities are often the best and brightest in their fields. At the sophomore to senior levels, they have had the training necessary to be very valuable and successful team members. What students lack in experience they often make-up for in can-do attitude, up-to-date training, and unique perspectives.

Often the initial contact is made through a standard job posting. A company identifies a need for temporary help and advertises to the schools to fulfill that need. Sometimes the process is not quite as formal. Faculty and administrators at schools often visit with companies throughout the year and managers will express a need for temporary help during these times. Company officials that visit schools also may express interest in providing students with opportunities for experience. It is important that the personnel of both the schools and the industry meet each other in their respective locations and communicate. Of course, the only business discussed will not be providing students temporary employment opportunities but it often follows as a natural result of strong, communicative partnerships.

Logistics of Student Employees

Student needs will vary depending upon the unique situation of the employment. Is it a summer commitment or a position near enough to the school for commuting during the academic

year? Does the student have the time in their class schedules for work? Is their schedule flexible enough to allow blocking out certain times for work responsibilities? As is the case with airlines, can the student conduct research by making a series of observations and work meetings during the semester, with travel passes provided by the airline? These are some of the logistical challenges that must be met with an attitude of creativity and cooperation by the students, schools and the employers.

Continued Employment?

Students in industry are given the opportunity to display their talents, training, and effectiveness in the workplace, and, as a result, the company frequently extends an offer for permanent employment. Students also evaluate if their temporary work is satisfying enough to make a commitment to the employer on a more permanent basis. Either way, it is a time of evaluation for student *and* employer. Many students have no real idea of the work demands of their chosen field of study. Sometimes, the student learns what they do not want to do with their career as much as what they want to do. This will help them immensely when graduation time comes and they must choose a career path. It saves employers wasted time and money in hiring an employee that quickly discovers that their new position is not what they expected and they decide to move on. The employer has experienced the student's work abilities and the student has experienced the work environment. Both parties can make an intelligent and informed judgement whether to continue the relationship.

Faculty Involvement

It is not only the students that will benefit from an industry/school partnership. Faculty that oversee the process and take an active part in the student's work experience also stand to gain important insights into the workings of the aviation industry. Often the faculty are available for consultation throughout the summer as well as during the academic year. This ongoing communication with the students lets them know that they are being supported back at the school. It is comforting just to have someone to contact for advice on anything from housing arrangements to how to solve a particularly difficult problem on the job. Faculty who are involved will have the latest information on industry trends and practices and will be able to provide a more accurate educational experience for all students.

Student Participation in Industry-supported Projects

Opportunities also exist for students to work with industry

personnel on cooperative projects that lead to advanced teaching facilities at the university. Through ongoing solicitation of equipment donations and technical support, aviation programs can achieve growth and development not otherwise possible. To do so, however, requires that faculty be involved and in contact with industry in order to observe opportunities as they arise. As industry upgrades facilities to meet the demands of business, frequently the retired equipment becomes available for donation, a serendipitous scenario for all involved. The donating entity may realize a tax advantage, can expect to positively impact on training of potential future employees, and should experience altruistic benefits from their support of education, in general. The recipient organization obviously has much to gain, as well. Not only does the program gain equipment that leads to improved teaching and research opportunities, the partnership promotes a working relationship with industry which is beneficial to all involved. Advanced facilities of this type also enable the program to engage in research-related and developmental activities supported by a variety of industrial interests. Invariably, endeavors of these types have an educational focus and student involvement is an assumed component in the efforts.

Logistically speaking, donations of this type lead to installation projects requiring considerable effort on the part of industry, faculty, and students. Typically, industry will provide the necessary technical expertise to design, develop, and bring the installation to operational status. Students enrolled in independent study courses work under the supervision of both faculty and industry personnel to accomplish most of the actual work. As a result of this contact and participation, students acquire better communication and project-related skills.

Each of these methods offers opportunities for improved learning, promotes ongoing participation with industry, and allows faculty to remain current with new processes and teaching tools. Advanced equipment and facilities are often available for a technology program only through such cooperative efforts. It is these types of initiatives outside the formal classroom that enable a university and its students to remain abreast of constantly changing technology. □

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