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Focus on Industry for Success

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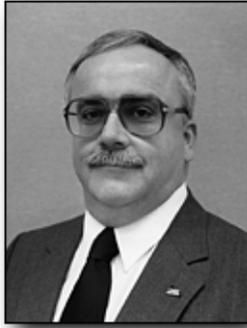
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Introduction

Two common goals of Industrial Technology (IT) programs across the country are to increase enrollments, and to offer a curriculum that is both current and relevant. These two essential outcomes require continuous effort and strong program support from companies that benefit from our graduates. An active working relationship with a variety of manufacturers can provide many of the crucial ingredients needed to successfully achieve these goals.

In addition to program support, manufacturers employ a workforce comprised of individuals who are potential IT students. This existing industrial workforce is a huge, important, and often neglected population. Ironically, these are individuals, armed with customized coursework, who are in the best position to increase a company's efficiency and productivity.

Purpose

The purpose of this article is to identify the advantages for the school, the industry, and the employees that are realized through cooperative interactions. These advantages are numerous and can serve as a catalyst for growth and prosperity. An additional purpose of this article is to identify specific strategies that will help foster this productive working relationship between an IT program and industrial partners.

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Review of Literature

The recruiting emphasis of many IT programs is focused on either high school graduates seeking a college degree, or currently employed individuals seeking a graduate degree. In-between these two populations lie an existing industrial workforce comprised of individuals who have an earned associate degree and several years of industrial experience.

This working population is considerably different from the traditional fresh recruit out of high school. In addition to having an earned GED or an associate's degree from a technical school, many years have passed since they were "students". They have spent anywhere from two to twenty years working hard in the manufacturing environment, initially earning their wage from the sweat of their brow. Over time, many have advanced to a front line supervisory position, but lacking a four-year degree, they cannot progress further. A trend exists among fortune 500 companies to require a bachelor's degree for advancement into the management ranks. IT programs can assist in the advancement of these individuals. In fact, "one mission of an IT program is to develop middle-management and technically-competent individuals" (Journal of Technology Education, 1999, p. 8).

Several well designed courses offered in their facility and paid for by their employer can be the start to a successful off-campus degree program. According to The Institute for Professional Development "...the development of an off-campus degree program for working adults is a realistic choice to increase both enrollments and revenues" (1999, p. 1). In these days of retrenching enrollments, off-campus programs offer a viable method of increasing FTEs and recruiting new majors.

Typically, the demographics and skill levels of these participants vary greatly, as do their motivation for taking the courses. One needs to recognize "that educational systems designed for *traditional* students are not well suited for meeting the learning needs of working adults" (Institute for Professional Development, 1999, p. 1). While some participants may require remedial measures, especially in the math and technical writing areas, others are academically well prepared and are striving to advance. In either scenario, it is important to recognize "...the distinction between the younger college student who is still deciding on a career and the adult student who has established personal and professional goals and has experience in achieving those goals" (Industrial Collaboration and Technology Transfer Program, 1999, p. 1).

In addition to learning needs, time demands are also taxing for these individuals. To make "efficient use of the working adults' time, courses should be scheduled so they are convenient for working adults" (Institute for Professional Development, 1999, p. 2). This frequently translates into offering the course at the most opportune time for the participants, which is usually just prior to, or just after a shift change. Timing is crucial "for working adults and it must harmonize with their personal and professional lives. This harmony is important because it ensures the working adult's educational experience will be of lasting benefit as a source for personal growth, professional renewal, and career advancement" (Industrial Collaboration and Technology Transfer Program, 1999, p. 1).

The initial step of establishing a foothold with an industry can be difficult and sometimes awkward.

Several strategies are presented in the next section that have been successfully implemented in a variety of programs across the nation. Consider adopting and modifying these approaches to meet your specific program curriculum.

Methodology and Rational

Four methods that have been proven successful in nurturing greater involvement between IT programs and manufacturing industries are presented in this section. Table One provides a consolidated list of these strategies.

Proactive Industrial Technology advisory boards can provide important leadership “in the development of educational structures and programs capable of meeting 21st century needs” (Industrial Collaboration and Technology Transfer Program, 1999, p. 1). In addition to promoting university courses in their own facilities, advisory board members can suggest other industries that would benefit from IT courses. In many cases they can provide specific contacts within the training or human resource development departments.

A second method of gaining an industry’s attention is through tracking former university students. Identify graduates that work for the larger firms and send them a letter asking for their assistance in “spreading the word” about Industrial Technology. Follow-up with a phone call and arrange a meeting with the training manager. Discuss the specifics of offering a course “in-house”. Letters from other industries are excellent “testimonials” of the quality and the relevance of IT courses. These “references” are reassuring to training managers who are ultimately responsible for the quality of instruction that takes place within the facility.

A third approach that works well is to organize a creative design/problem solving competition. Develop several teams, with each comprised of high school students, college students, and industrial representatives. In addition to establishing “partnerships to produce and transfer knowledge” (Higher & Adult Education Series, 1999, p. 1), this is a great method of involving

industrial employees who would otherwise have great apprehension regarding college level courses. Select an interesting challenge, something like a mini-robot competition or a small-scale compressed air vehicle. Convince industry of the opportunity to support the community and the public schools in this very visible manner. Several local industries could each “sponsor” a team. Put a three hundred or four hundred-dollar limit on each team’s expenditures, and attract student participants with incentives such as recognition or prizes. This competition can evolve into T-shirts, media coverage and larger scale challenges with many teams. The resulting camaraderie offers many opportunities for professional bonding, handshaking, student recruitment, and is an excellent experience for everyone involved.

A fourth approach that succeeds in making the IT program more visible to industries is to assign each faculty member three or four major industrial employers and let them become the department’s primary contact person for those industries. Colleagues should establish a good relationship with the appropriate industrial representative, usually a former graduate in management, a strong supporter of education, or the training manager. Have them visit the company at least twice each semester. Plan the first visit a few weeks prior to the start of classes. Bring a list of courses being offered by your department. The list should be very clear and easy to understand. Also, the print should be large enough so it can be posted on bulletin boards. Request that interested individuals either contact the training manager or call the IT department directly.

Communicate regularly with the industrial contact and ask them to develop a list of employees who are interested in specific courses. If several employees express an interest in one course in particular, it is important to take the initiative and have a second “course offering” posted. List the course topics, the potential meeting time, and underscore the fact that if enough individuals are interested, the

course will be held very conveniently at their industrial facility.

This strategy has led to the “on-site” delivery of six courses and the enrollment of a dozen new IT majors in the department. Word-of-mouth advertising from the participants of the first course generated so much interest, that an enrollment “cap” was needed on the subsequent courses that have been offered “on-site”. The industrial case study highlighted below provides insight into a successful working relationship between an IT program and a major manufacturer.

Industrial Case Study

The focus of this case study is a manufacturer who has produced fluid pumps for sixty years. Their pumps are used in a variety of applications. Automotive applications include oil pumps, fuel pumps and several types of pumps for automatic transmissions. They also manufacture a series of high-pressure hydraulic pumps and hydraulic motors.

The majority of the equipment in this manufacturing facility focused on powdered metal technologies, metal cutting processes, dedicated CNC machinery, and a complete heat treating line. Agile manufacturing enables them to profitably produce a single custom fluid pump, a small lot quantity, or millions of precision units.

This company was an ideal site for instituting IT coursework for several reasons. First of all employees are funded, up to \$500 per year, to further their education and a significant company emphasis is productivity improvement through employee empowerment. Employees at all levels are encouraged to “stay current” and to improve their skill sets. This continuing education is further encouraged by a “hire-from-within” company philosophy and the increasing need for quality employees in a region with extremely low unemployment.

The course that drew the most initial interest was fluid power. Their product was a fluid power device and either hydraulics or pneumatics powered the majority of their production equipment. The course was

formatted to meet once a week, for two hours in the plant's conference room. The class started at a shift change (4:30 PM). Three additional "laboratory days" were scheduled when the employee/students traveled to campus for "hands-on" activities with fluid power components.

The demographics of the participants were incredibly diverse. Their age ranged from 18 to 60 years old. Their educational background ranged from GED to graduate degrees. Job titles varied from material handler to maintenance supervisor to electrical engineer to purchasing agent. Most participants were male (18) with two females. Only two characteristics were common throughout the group. First, they all had the same employer who produced fluid power components. And secondly, they all had an interest in learning more about fluid power.

The first session was very different than a traditional class of students. Many had apprehensions about being in a classroom environment again. Several had a high anxiety level and feared being embarrassed in front of their subordinates, peers, and superiors. By the second class, however, everyone realized the tone was to be a friendly, learning place and that no one was going to be publicly humiliated. Everyone started to open-up and most contributed on a regular basis.

As the semester progressed, many individuals actually looked forward to coming to class. At times the atmosphere was festive and jovial. The instructor quickly learned that just because the clock said it was 6:30 didn't mean the class was over. Each week, when "formal" class ended, a different group of employees would lead a tour of their part of the plant and proudly discuss an improvement implemented as a result of their newfound knowledge and understanding.

Results

The interaction between industry and the IT program provided many beneficial results for both organizations. Table Two identifies specific benefits for the hosting industry, some of which, at the employee level, were

noticed immediately. Employees realized how important their jobs actually were, and gained an appreciation for the value of their products. They truly viewed their jobs, their equipment, and their products with a renewed significance. This new appreciation resulted from gaining an understanding of how the equipment they operated (many hours each shift) actually works, and how important the products are that they individually produce.

The cross-section of demographics in the class served to break down many communication barriers between the "ranks". Managers and material handlers alike develop a more "worldly" and mature outlook and attitude. Employees greatly appreciated the fact that the company actually did something for them. The company cared enough to bring a university professor to the plant every week for their benefit.

Equipment dependability improved as employees gained an understanding as to the importance of preventive maintenance schedules. Everyone understood the relationship between better maintenance, closer tolerances, and less down time. Employees immediately began taking more responsibility for their work cells.

The weekly session, and the progress that went with it, improved the self-image, self-esteem, and the self-concept of the workforce. In class, you could actually watch the light bulbs coming-on throughout the room as each employee "tweaked" the learning process and related the course to their individual jobs. One of the more dramatic instances involved the firm's purchasing agent. She finally understood the product they were producing, and she was ready to take on the world! This same "nirvana" motivated other plant employees to upgrade their skills. As our courses became more popular, we were forced to put an enrollment "cap" on subsequent classes.

The immediate benefits to the IT department (see Table Three) were dramatic. Perhaps most significant was the increase in enrollments. Approxi-

mately 25 % of each industrial-based class formally enrolled into the IT curriculum and pursued the degree. This industrial-site curriculum also provided the department with greater visibility in the community, an increased awareness within the university system, and an excellent selling point as we approach other industries.

This industrial interaction prompted the IT instructors to evaluate and upgrade their course curriculums, ensuring the relevancy of all aspects of their courses. Instructors also gained insight into cutting edge applications of the technology that they were addressing. "These real-life examples can then be taken back to the college classroom and used to supplement textbook exercises. The instructor can be confident that these examples are indicative of what most students will be encountering in the industries where they are most likely to be hired" (Scholarly Communications Projects, 1999, p. 2). The industrial interaction also allowed instructors to gain first-hand exposure to very sophisticated equipment and processes, and eventually opened up the industrial facility for student internships and "visiting professor" summer stipend programs.

An unexpected windfall of this industrial interaction was the clearing of artificial obstacles to a steady stream of donations and financial support. In fact, the additional enrollments and the financial support enabled the upgrading of IT laboratories on campus. The Industrial Automation laboratory recently purchased a new \$30,000 electrohydraulic training bench, splitting the cost with industrial partners.

Industrial field trips and case studies centering on TQM, JIT, ISO 9000, time & motion, ergonomics, facility planning, material handling, and process control have drastically increased. Last, but certainly not least, are the very credible testimonials of a world class manufacturer as to the virtues of IT and our program.

Conclusions

Industrial Technology programs typically focus their recruiting efforts on high schools and on individuals seeking

a graduate degree. Between these two groups is a population of non-traditional individuals who have a GED or an earned associate degree, and years of industrial experience. These experienced individuals are excellent candidates for IT programs and, with specialized skill upgrades, are in the best position to increase a company's efficiency and competitiveness.

Many IT programs would welcome the political and financial support of an industrial partnership in addition to the increase in student enrollments. The non-traditional student is goal oriented and brings experience to the classroom. Interest them first in just one course, then the program. Successfully match

an industry's needs with relevant courses from your existing curriculum and everyone benefits.

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Table 1. Industrial Involvement Techniques

- Proactive IT advisory board
- Tracking and utilizing graduates as contacts
- Creative design/problem solving competitions
- Linking faculty members to manufacturers

Table 2. Benefits to the Industry

- Employees taking responsibility for their work cells and product quality
- Mature channels of communications between all levels of employees
- Employee appreciation of company's investment in their education
- Awareness of the relationship between better maintenance, closer tolerances, and less down time
- Increased employee self-image, self-esteem, and the self-concept

Table 3. Benefits to the Industrial Technology Program

- Increased enrollments
- Greater Department visibility and public relations
- Current and relevant curriculum upgrades
- Access to cutting-edge equipment and processes
- Student internships and instructor sabbaticals
- Field trips and case studies
- Donations and financial support
- Credible testimonials from a world class manufacturer as to the virtues of IT and the program
- Laboratory upgrades

