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## ***The Evolution of Student Internships in Industry***

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One of the strengths of the Industrial Technology Area at California Polytechnic State University, San Luis Obispo, California, is the evolution of the internship or cooperative education experience. Historically, internships in industry for Industrial Technology students were hard to come by. Students typically reported their experiences as being not very valuable due the amount of brainless, grunt work that they were asked to perform. However, in recent times, it appears that we have not only more frequent opportunities for students (and faculty) to work with industry, but we are experiencing a level of depth and application that was rarely seen in the past. While internships obviously are not a new concept to Industrial Technology programs, the end results of what students are able to accomplish in their internships has most certainly evolved.

Well-known companies, such as Boeing and New United Motor Manufacturing (NUMMI), have recognized the value of bringing inspired college students on board to help them with their work demands. For example, Nichole Humfeld is one of many Industrial Technology students at Cal Poly, San Luis Obispo associated with

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the 1999 Boeing-Rocketdyne Summer Internship Program. The program is sponsored by the Boeing Company at the Rocketdyne Propulsion & Power Business in Canoga Park, California. Her success during the time she supported Operations Engineering led to her being the only college summer hire to receive a prestigious award from NASA. The award was for her contribution in making a significant impact to the improvement of Boeing-Rocketdyne manufacturing operations and process control.

The responsibilities of her internship were both challenging and rewarding and included the investigation of two significant fabrication issues on the space shuttle main engine nozzle assemblies. As a member of a team, Nichole was responsible for investigating all items that contacted the engine components during the fabrication process. She assisted in developing a process by which the information could be accessible to everyone responsible for engine fabrication and then developed a web-based system to house data on the materials tested, restrictions, purchasing information, and storage information. The training and in-depth research involved with the support materials, combined with the database implementation, was recognized by NASA as a significant accomplishment. The team responsible for the accomplishment was recognized for their exemplary efforts in support of this crucial activity.

In the summer and fall of 1999, another Cal Poly, San Luis Obispo student, Ray Del Muro, interviewed for and participated in a six-month internship as a Plastics Engineer at NUMMI. He provided support to the Plastics Department that produced bumpers, instrument panels, and quarter trim. He had multiple opportunities for first-hand production experience as well as

furthering his communication and organizational skills. He was able to learn many useful multi-tasking and scheduling skills through various projects. One of the projects included operating and maintaining a 3000-pound injection molding machine. In another project, Ray assisted with the process controls that required learning about auxiliary machines, pneumatics, hydraulics, variances, problem solving, interfacing with suppliers, creating visual aids, and writing procedures.

Students participating in internships not only gain actual work experience related to Industrial Technology, but they also meet people in their area of interest and learn about different kinds of job opportunities. Most importantly, students get the opportunity to apply what they have learned in school to real situations which adds another dimension to the whole notion of internships. With this in mind, university professors have to be vigilant to keep their curriculum current, and it is equally important to keep the equipment in their laboratories current as well.

Internships not only serve multiple purposes, but the internships of today have also become a strong link between industry and academe. Another benefit of student internships in industry serves faculty and Industrial Technology programs as well. It has been my personal experience while serving as an advisor to students participating in internships that I have been able to establish some very useful, long-term contacts for some of the most current information on cutting-edge technologies. An added benefit is that it can also lead to professional development opportunities for faculty.

Donna Bunyard, Human Resources Staff Specialist at NUMMI, commented that they participate with the Cooperative Education Program at Cal

Poly, San Luis Obispo because, “Cal Poly students are a good match based on the hand-on curriculum that they receive. The Co-op Program is a mutual way to retain and develop qualified personnel. We consider Co-op a 6-month interview. Co-op students are able to make a transition from school to work a lot easier. We also give priority to former Co-op students for new hires.”

One last benefit of internships that must be mentioned, and I believe is one of the most rewarding benefits from a faculty perspective, is that students come back to school after their internship experience with a newly found

focus and a greater desire to not just “perform” the normal duties of being a student to get the grade. The compliant behavior that I sometimes see in students to do only what is required is somehow transformed by their experience to an eagerness to really understand and synthesize what they are learning. Because of the glimpse into real-world situations that they experienced, they can now see the relationship between what is going on in the classroom and what they will be facing upon graduation. It inspires them to be more concerned about content rather than just earning points for a grade. Even the questions that they ask reflect

a deeper cognitive domain, from which all of the students in their class end up benefitting by their experience.

In conclusion, it is hoped that the partnership between academics and industry will continue to evolve. Internships in industry can offer the high levels of responsibility as shown in the stories of the two Cal Poly students. It is also hoped that other companies will follow the example set by companies such as Boeing-Rocketdyne and the New United Motor Manufacturing in their internship programs. It is an opportunity for all participants to benefit.

