Realizing the best possible return on investment is an essential part of doing business. In today’s economy, it may make the difference between profitability and financial failure. Since the most valuable resource that a company has is its employees, the amount of time invested in education and training represents a significant investment of company resources.

Because students can receive a two-year, cost-effective, job-specific education at a community college, partnering with community colleges is a sensible investment for industry. Does industry know this? How can educators show industry the return on investment it can realize from hiring graduates with two-year degrees?

At the Center for the Advancement of Process Technology (CAPT), at the College of the Mainland in Texas City, Texas, the value of hiring degreed applicants is continually being measured. CAPT is a national collaboration of process industries, community colleges and universities, businesses and government agencies. Funded by the National Science Foundation’s Advanced Technological Education program (ATE), CAPT focuses on developing a skilled process technician workforce necessary for U.S. industries to remain globally competitive. Process industries include chemical manufacturing, oil and gas exploration and production, petroleum refining, pharmaceuticals, food processing, pulp and paper manufacturing, water treatment and power generation.
In the 1990s, several petrochemical companies conducted studies of the value of hiring graduates with an associate of applied science degree in process technology. For example, a study of Amoco revealed that raising the minimum employment requirement to include an associate degree in process technology or seven years of operating experience streamlined the hiring process. By doing this, Amoco reduced the number of interviews for each position from 12 to three (Payne and Williams-Foster, 1997).

The Amoco study also reported a decrease in basic training costs. Basic training time was reduced from 22 days to seven days by hiring only those with the degree or seven years of operating experience. When multiplied by the average cost per person, per day of training, the average savings were $3,375 per person, with a total savings of $40,500 in actual training time for one new-hire class of 12. Equally important, students with the degree completed their job post certification requirements approximately 60 percent faster than non-degreed individuals with only the basic operations course.

One example showed a process technology degree graduate qualifying for an outside job in 44 days, versus the historical average of 120 days, with a $13,000 savings in overtime costs on the process unit. More impressively, the total savings during the course of the study was $156,000 in reduced overtime expenses and $40,500 in reduced basic training time, a total of $196,500 in cost savings. (Payne and Williams-Foster, 1997).

Finally, the Amoco study found an associate degree in process technology improved safety performance. When comparing degreed employees and those from the general population over a two-year period, degreed employees had a 37 percent better safety record (Payne and Williams-Foster, 1997).

Another Texas City company reported the number of interviews per job opening was reduced from a high of 50 in 1996 to two in 2001 by only considering process technology graduates. CITGO conducted a comparative study between pre-employment test scores of students with an associate degree in process technology and the general population. They found a 28 percent improvement in learning ability and arithmetic reasoning, a 53 percent improvement in mechanical comprehension, and an 81 percent improvement in chemical comprehension for students with the degree (Gulf Coast Process Technology Alliance Newsletter, 2001).

At Williams Alaska Petroleum, Inc., a crude oil refinery at North Pole, Alaska, the initial training program for hiring entry-level people once consisted of 40 hours of on-site health, safety, and environment training. This was followed by 120 hours of short courses in basic, general process knowledge. In the late 1990s, Williams began taking an active role in process technology education by participating in the development and validation of process technology curriculum. New hires with an associate degree in process technology now have broad general and process knowledge, and Williams has reduced the 40-hour class to eight hours, and the 120 hours of short courses to 32 hours, reducing training time and cost by 75 percent. They now require a new hire to have either a process technology degree or five years of refining experience in process operations. (Villa, 2003)

These exciting results showed industry received real value by hiring graduates with an associate degree. However, the number of studies was limited and varied in scope. Realizing the need for a larger study with consistent measurement, CAPT developed a Return on Investment survey to capture industry hiring and training costs and provide a comprehensive overview of the benefits companies achieve by hiring employees with process technology degrees.

The survey was divided into four sections. The first included questions about how each company hired and trained process technicians. The second part captured costs associated with training newly hired technicians. Hiring costs were explored in the third section.

Finally, participants were asked to compare the knowledge, skills, attitudes and behaviors of process technician new hires with an associate degree to those without the degree. In this section, the significant advantages of hiring a degreed graduate were revealed. After the responses were analyzed, the results supported predictions that a significant part of the industry workforce will retire within 10 years—11 percent of the process technician workforce was replaced in 2001.

Regardless of industry sector or company size, the value of hiring well-qualified process technician employees that are immediate contributors to the workforce was a uniform factor. For example, the survey confirmed a growing preference to hire process technology graduates, with 63 percent of the companies requiring an associate degree in process technology or significant experience in the process industry.

Multiple benefits of hiring graduates were also identified. According to survey participants, degreed process technician new hires have an advantage in learning new concepts, general job/task knowledge, and demonstrating safety knowledge through work habits. They tend to be better team players, listening and responding positively to their supervisor and fellow employees, and working to resolve conflict and gain the cooperation of others.

The survey provides a valuable benchmark for participants to evaluate their perceived returns. In the near future, CAPT will again partner with industry to design a survey to capture individual job performance data. CAPT is committed to helping our partners capture relevant data, in a consistent manner, so that industry can continue to track their return on investment for hiring future degreed process technicians.

For more information, contact CAPT at (409) 938-1211, ext. 103 or by e-mail at info@captech.org. Information can also be found at www.captech.org.

References


Fred Villa, phone interview by author, Texas City, Texas to North Pole, Alaska, 3 July 2003.

Joanna Kile is CAPT director at the College of the Mainland, Texas City, Texas.