Partners in Recruitment and Retention

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Abstract

In the past, recruitment was often left to admissions offices and attrition was an accepted aspect of technical curricula. However, due to the dwindling or perhaps stable but low enrollment in technical fields nationwide, new attitudes towards these issues are necessary. In the Mid-Hudson Valley of New York State, the Technology Career Paths – Hudson Valley partnership was created for the recruitment and retention of students in the community college programs that lead to jobs in high technology industries. These industries, both in the Hudson Valley of New York State and around the world, are realizing the importance of their technical workforce to their success while recognizing the dwindling population graduating from high schools and colleges with the necessary preparation for succeeding in these technical careers. The academic credential local industries are looking for is a two-year applied science degree in an appropriate Engineering Technology field. This article describes the development of the industry/education partnership and the benefits attained in terms of recruitment and retention.

I.   Introduction and Background Information

The Technology Career Paths (TCP) region encompasses Dutchess, Orange, and Ulster Counties of New York State. The TCP partnership represents key education, economic development, and business participants that together form a cohesive and sustainable approach to addressing technology education and training in the region. The three contiguous counties comprise a region containing 60 towns, 6 cities, and 30 Villages with a combined population of 770,664 (2000). The combined civilian labor force is 366,470. Each county has a year 2000 unemployment rate of 3.4% or less, lower than both the New York State and U.S. unemployment rates of 4.6% and 4.0% respectively.

In 1997, we began to identify a local shortage of skilled "high tech" workers after recognizing several signposts: an increase in corporate-funded incumbent worker training programs, decreased enrollment in community college technology programs, visits by Department of Labor (DOL) personnel underscoring the need for high tech workers, and increased difficulty in filling any technical position in the region. Recent evidence of the Mid-Hudson Valley's growing skill shortage was revealed in 1999-2000 surveys conducted by DOL and local economic development corporations which showed that in Dutchess County alone, 88% of survey respondents reported great difficulty in filling technical positions compared to 64% indicating difficulty in filling any position.

This local trend is mirrored nationally as evidenced by a variety of sources. Enrollment in engineering and technology programs has been decreasing, bottoming out during 1994-1996, while the demand for employees with the technical skills is increasing. "Employers are trying

every approach to reach students – both in the virtual world of the internet and in face-to-face encounters."[1] Enrollment data published by the Engineering Workforce Commission clearly shows "a smaller proportion of college students choosing engineering during the late 1980s and 1990s." [1] Furthermore, the latest employment projections from the U.S. Bureau of Labor Statistics "call for the number of engineering jobs to continue rapid growth, far outpacing job growth for the labor force overall."[2]

Of further interest in this discussion is the trend in engineering technology (ET) education and specifically for the associate degree programs. From the numbers provided in the *Engineering & Technology Enrollments, Fall 1999* report[3], enrollments for engineering technology programs are relatively stable though still 4-5% less than they were in 1990. These programs are either losing an increasing number of students between the first and second year or the two-year degree is taking longer than two years for a growing population of students (see figure 1).
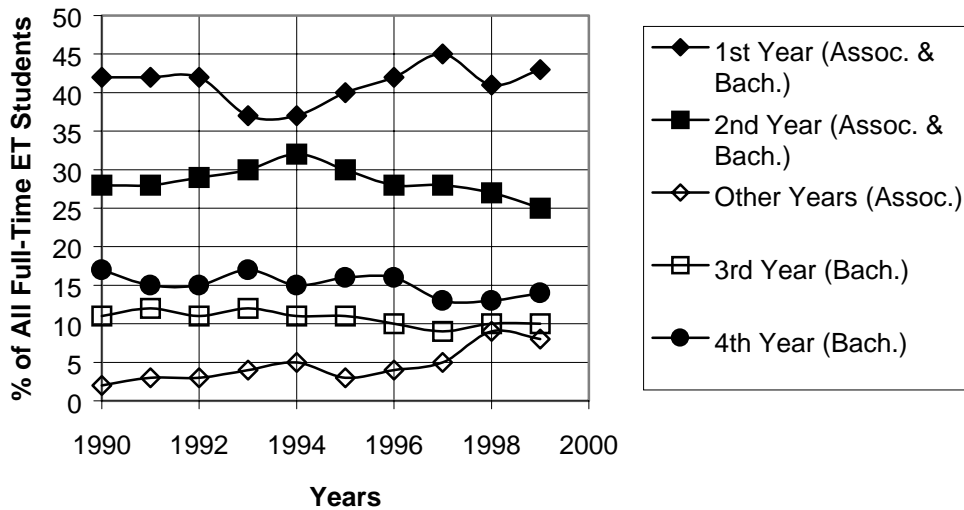

Figure 1. Percentage of All Full-Time ET Students by year enrolled in program.[3]

In 1997, concurrent with the growing suspicion of a local technical workforce shortage, Governor Pataki announced the "Semiconductor Manufacturing Initiative – New York" or "Semi-NY". The Semi-NY initiative set out to attract the chip fab industry to New York by providing pre-permitted sites to potential semiconductor manufacturers[4]. Finally, further indications for action came when local industry identified an increasing difficulty in recruiting and retaining two-year technology graduates from outside the region. This further supported the need for a regional effort to boost local enrollments in the two-year associate degree programs.

In response to the regional and national shortage of technicians and the Semi-NY initiative, four community colleges (Dutchess, Orange, Sullivan, and Ulster), three economic development corporations, and twenty manufacturers came together in May 1998 to form a dynamic partnership; Technology Career Paths (TCP) – Hudson Valley Consortium. The consortium was first formed to increase the supply of skilled engineering technicians. The challenge was how to attract students to the appropriate technology program and assure that the program served the

needs of regional industries. In order to respond to this challenge, we found it critical to work as partners. A partnership enables greater accomplishments in a shorter period than any constituent part could accomplish given the same time!

II.   Mission, Goals, and Expected Outcomes

Formation of the Technology Career Paths – Hudson Valley Consortium required support and involvement of all stakeholders. A simple, and perhaps obvious, first step was to draft a straightforward mission statement justifying the need for the partnership. In order to take this first step, a small subset of industry and educational stakeholders were identified with the aid of the community college presidents. This small group established leadership roles in the consortium. TCP's mission became: ***Increase the supply of skilled engineering technicians!***

The next step in the process was to seek out partners who would benefit from accomplishing the stated mission. It was critical to have industry leaders actively involved in contacting prospective partners and soliciting their involvement in the regional initiative. Initial contact from a peer in industry may have been received better than if that initial contact had been from the colleges. Local economic development corporations were extremely useful in developing a solid industry connection.

Upon making contact with a critical mass of stakeholders, an organizational meeting for the group was required. TCP held its first organizational meeting in May 1998 led by Jim Levite, an advisory engineer for IBM – East Fishkill, NY. Cathleen Barton of the Semiconductor Industry Association provided guidance in the organization of such partnerships. The established framework involved coordinating our efforts in to teams that would focus on various aspects of our overall mission: curriculum development, student focus and marketing, and funding. Team leaders for each of these mission aspects were appointed from the partnering community colleges and introduced at the first organizational meeting.

A critical outcome for any initial organizational meeting must be clear goals for the teams and the consortium as a whole. In order to obtain true "buy-in" from the stakeholders, meeting participants must take an active role in setting those goals. Therefore, at this meeting, we established consortium goals by brainstorming as a large group and then separated into the teams to define specific team mission statements and goals. In reality, and with 20/20 hindsight, it became clear that success for the consortium hinged on the goals and outcomes of the curriculum team (see Table 1). The defining of these goals early on and in a collaborative forum has been of paramount importance to TCP's continuing success.

	TCP – Hudson Valley Consortium	Curriculum Development Team
Mission	***Increase the supply of skilled engineering technicians.***	***Develop and coordinate a comprehensive regional education package with <u>shared resources and benefits</u>.***
Goals	Promote Electrical (Engineering) Technology as a career.	Provide curriculum uniformity between colleges.
	Develop regional continuing education for engineering technicians.	Develop flexible and adaptable programs aligned to the needs of regional and national high technology industries, key suppliers and support businesses.
	Develop cooperative work experience programs and scholarships.	Effective use of the industrial and educational resources available.

Table 1 – Missions and Goals of TCP and Curriculum Development Team

In the initial planning and working meetings, several specific issues arose that seemed to be at the core of the recruitment and retention problem. These issues were:

- Many prospective students (and their parents) assumed that jobs in high tech manufacturing were low-skilled, poorly paid, repetitive, and were likely to be in a hazardous work environment.
- The general population did not see technician positions to be part of a career path.
- The perception of parents and guidance counselors was that the two-year technology degree was a dead end and that if a student was college bound, then they should embark on a four-year college path.
- High tech manufacturing industries articulated a variety of training needs that were not being met by technology programs at either community colleges or tech schools.

By involving all the stakeholders in the process of framing out the problems and issues, they became partners in developing the solutions! Industry involvement and buy-in was critical in reaching meaningful and executable solutions. Some suggestions for maintaining industry involvement include: setting up meetings that address team goals and are at places and times that accommodate industry partners, providing clearly defined agendas in advance of meetings, and

coming to meetings with *specific goals* and leaving with *action items*. Team leaders must facilitate regular (electronic) communications with all team members on summaries, outcomes, and action items.

The expected outcomes from our team efforts included: curriculum modifications at all the partner community colleges to better serve the needs of both the student and the industries, recruitment materials to clarify Technology Career Paths for the various target audiences, and articulation agreements to provide seamless transition from high school to community college to university. Consequently, realization of these goals provided momentum for the student focus, marketing, and funding efforts.

III.   Products for Recruitment and Retention

In the past three years, a number of profound accomplishments have been made by our dynamic partnership. Much of the first year's work came from a solid unifying mission and a lot of "overtime" offered by industry and educational personnel alike. Once we demonstrated that we could set goals and meet deadlines, institutional support and funding began to trickle in providing the necessary fuel to drive further accomplishments.

In curriculum development, we were able to draw industry partners into active participation in the academic curriculum development and revision process. In order for the entire effort to succeed, we needed to offer students a program that could realistically be completed in two years and that suited the needs of the companies that would be hiring graduates. Through active consensus building, we established (i) a core curriculum with flexible technical electives, (ii) a statement of program competencies, and (iii) advisement tracks to serve particularly intense workforce needs. Although the core curriculum did not differ significantly from established EET and ELT programs, there were disparities worth noting. A majority of industry partners indicated that most graduates from these programs did not have sufficient knowledge or experience with electro-mechanical devices, therefore, we made sure that a course serving this need was required in the core curriculum. All industry partners agreed that including statistics and statistical process control in the core was very desirable for technicians and that a compelling need for calculus skills did not exist. Also, we learned that it was more important for the students to learn how to read blueprints and mechanical drawings than to create such drawings.

In order to aid in the offering of specialty courses to serve the advisement tracks, we negotiated several "shared" courses. The need for shared courses was clear when looking at high equipment costs and low student enrollments, somehow we needed to pool the students and better utilize regional resources. With this in mind, we negotiated with the State University of New York (SUNY) at New Paltz, centrally located within the region, to offer a Semiconductor Process Technology course for the community college students utilizing the university's equipment and expertise. We also arranged a Vacuum and RF Technology course at a local industry site providing students with hands-on experience with expensive vacuum equipment. We recruited an adjunct in Statistical Process Control to develop an internet version of the course to be offered on SUNY's Learning Network (sln.suny.edu).

In order to define four-year college paths for students and their parents, we worked with local institutions to provide two paths, one to engineering and one to management. In conjunction with SUNY New Paltz, which offers Electrical and Computer Engineering, we developed a one-year certificate program to define the additional courses the ELT/EET AAS graduate would need in order to enter as a junior electrical engineering student at New Paltz. Marist College was able to put together a bachelor's completion program with a technology management focus by accepting 60 credits from the ELT/EET AAS degree and providing upper level business and management courses. Graduates of this program are desirable employees since they will be educated in both technology and management.

Marketing our efforts began with tremendous fanfare. By securing $15,000 from the Empire State Development Corporation, we were able to hold a large press conference in August 1998 with significant regional news coverage along with a radio and newspaper ad blitz to publicize community college information sessions for Technology Career Paths. This initial boost provided momentum but it was still necessary to develop meaningful recruitment materials that would alter the prevailing perception toward technology education and technician employment opportunities. Recognizing the need to define these jobs to prospective students, the student focus team decided to develop a brochure that profiled all the companies in the consortium. The brochure provides answers to frequently asked questions about technology education and career paths and more importantly, provides interesting information about the high tech companies located in our region. Orange County Tech Prep Consortium funded the printing of this brochure.

In February 2000, Dutchess Community College secured a $250,000 grant from the Dutchess County Economic Development Corporation and the Economic Development Administration in order to provide training opportunities for incumbent workers. A portion of the funds was used to aid in the Technology Career Paths marketing effort. A powerful video was produced providing a glimpse into the desirability of the technology career path. It is an artfully blended combination of interviews with the full spectrum of partners from the Vice Chancellor of Community Colleges for SUNY, industry CEOs, engineers and managers, to technicians and current community college students. A website, www.techcareerpaths.org , was also created to provide the most updated information on the opportunities available for all prospective students interested in technology career paths. The website was launched on August 7, 2000 with a cable TV commercial blitz followed by print ads in the local newspapers.

IV.   Measurable Outcomes and Future Plans

Technology Career Paths – Hudson Valley Consortium, whose partners include a wide variety of the region's advanced technology industries, educational institutions, and economic development corporations, has a lot to show for its efforts. The recruitment efforts are conveyed by a multimedia package, which includes an informational video, an appealing brochure, and a web site, to promote technology career paths. The retention efforts are focussed on creating and sustaining a dynamic curriculum in which students gain relevant hands-on experiences that keeps them engaged with the technical world outside the classroom. These efforts led to innovative articulation agreements, path programs, and shared courses and resources.

Our partnership has been rewarded in a variety of measurable ways. The enrollment data from Dutchess Community College clearly show a successful recruitment effort of both full and part time students. In figure 2 it is noted that although the ELT enrollment trend is similar to that for total college enrollment, there is a much more dramatic increase in ELT enrollment between 1998 and 1999 then was experienced by the college as a whole.
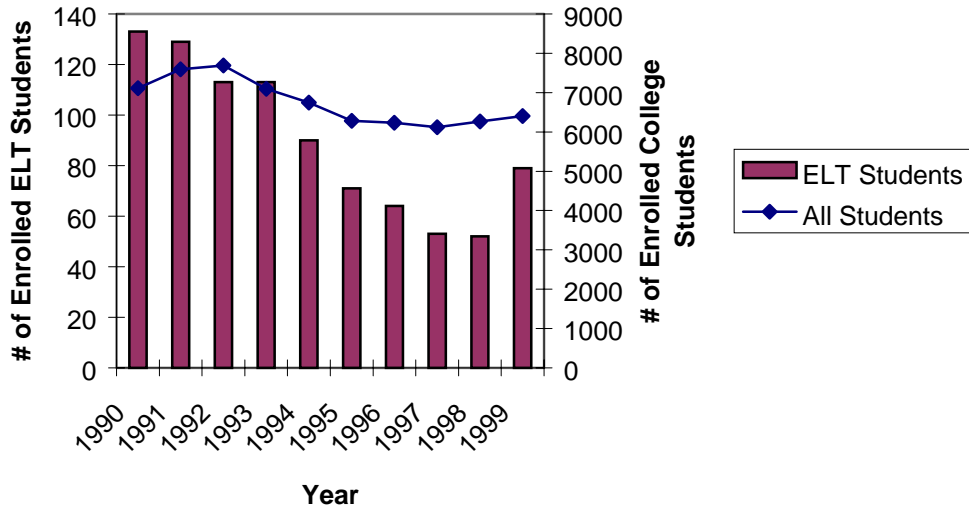

Figure 2. Dutchess Community College enrollment in ELT program and all college programs.

Another measure of our recruitment effort is in the number of students enrolling in ELT first semester courses, such as DC Circuits. Since part of our marketing strategy was to recruit re-careering adults, it is of further interest to compare enrollment numbers with the percentage of students enrolled in the ELT program that are part-time. From figure 3 below it is clear that there is a marked increase in the number of students taking the introductory course starting in 1998 when TCP efforts were launched. But it is also clear that the initial efforts primarily reached the re-careering adults, evident in the dramatic increased percentage of part-time students. However, we hope that the slight dip in this percentage in Fall 2000 is an indicator that we are also beginning to reach recent high school graduates.
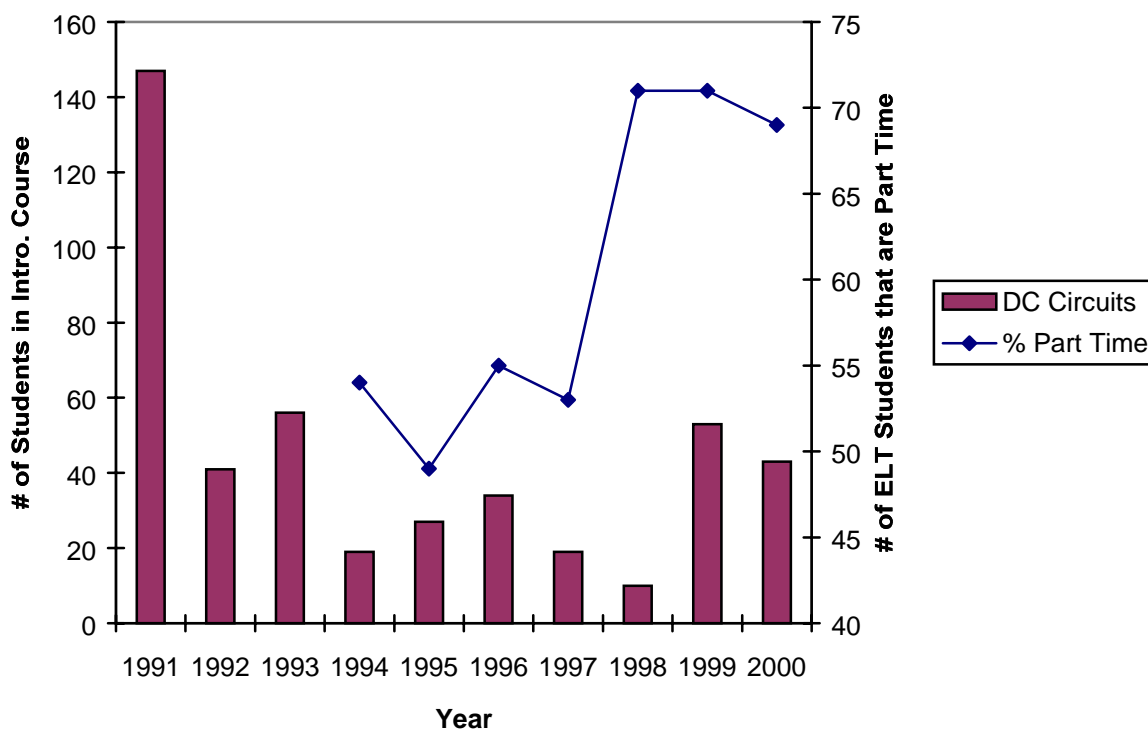
Figure 3. Enrollment data for introductory course in DC Circuits and percentage of ELT students that are enrolled as part-time students.

The most striking evidence of the benefits of our pro-active efforts, along with the efforts of Governor Pataki and local economic development corporations, came in Fall 2000 when IBM announced its plan to invest $2.5 billion in a state-of-the-art chip fab facility in Dutchess County. This is a remarkable announcement, considering that in 1994 IBM had considered moving its headquarters out of New York. The Governor, who had urged IBM to give New York a chance to change, recently said that "by leading the nation in tax cuts, reducing workers' comp rates, slashing job-choking red tape, and making sound investments in education, we turned crisis into comeback".[4]

Naturally, this announcement has increased the pressure to meet our original mission: *Increase the supply of skilled engineering technicians*. As a direct result of IBM's announcement, along with other high tech investments in the region, we expect at least 400-500 job openings for engineering technicians within the region by 2003. This workforce need has not been lost on the local population as reflected by the strong increase in ELT course enrollment for Spring 2001.

The Technology Career Paths partnership hopes to meet those workforce needs by continuing to attain our goals. We expect to offer all ELT students opportunities for cooperative work experiences by May 2001. This program will be coordinated through a password protected gateway within the Technology Career Paths website. We are also actively seeking support for a three year plan, at the cost of $3.2 million, to further enhance the region's education and training enterprise, generate a pipeline of entrants into the region's high-tech work force, update the skills

of incumbent and underemployed technology workers, and meet the current and anticipated needs of high-tech employers for skills and employment. Specifically, if approved, the funding would support the following activities (among others):

- Implement a far-reaching marketing plan (targeting young and older workers) to increase enrollment
- Implement a plan to draw students from outside the region and the country
- Coordinate and evaluate curriculum across the participating colleges
- Coordinate cooperative work experiences
- Provide distance learning opportunities
- Expand TCP website as a hub for students and companies to connect

These efforts seem grand compared to the humble beginnings of the consortium less than three years ago. With minimal financial support and maximum volunteer work, significant milestones were achieved. The key has been to recognize a common goal, a mission that is mutually beneficial to all the partners. And we expect that as time progresses, more partners from the public and private sectors, both locally and nationally, will be drawn to the consortium.

Bibliography
1. Weatherall, Robert K. More Jobs than Graduates. *Engineers*. Vol. 6, No. 2. American Association of Engineering Societies, Summer 2000.
2. Engineering Jobs to Increase. *Engineers*. Vol. 6, No. 1. American Association of Engineering Societies, Spring 2000.
3. *Engineering & Technology Enrollments, Fall 1999*. Engineering Workforce Commission of the American Association of Engineering Societies, Inc., 2000.
4. Governor, IBM Announce World's Most Advanced Chip Plant. *Empire State Developments*. Volume 14, No. 3. Empire State Development, Fall 2000.

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