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Higher Education and Economic Development

With the soaring technological advancements in America today, the nation faces the problem of a workforce under qualified to fill the increasing number of technology and computer related jobs. Vermont is no anomaly to the scenario. IDX employs a large share of Chittenden County's workforce and is looking for more people to offer jobs to. According to IDX, there are not enough qualified applicants in the area and they are forced to bring qualified workers in from other states (Associated Press 1998). Part of the blame can be attributed to the lack of qualifications of the students graduating from UVM and other area colleges. IDX claims they are looking for people experienced in both health care and computer technology. Dean Haller, human resources manager at IDX says that Vermont graduates "seem to be deficient in computer science preparation" (Hacker 1998). It is claimed that in order to remedy the problem, the state must collaborate with the schools to generate more qualified people. This report examines three states and the programs they have developed to address this issue.

North Carolina

In North Carolina, a partnership—called the Research Triangle Regional Partnership—has been formed by the surrounding communities of Raleigh, Durham and Chapel Hill. The triangle's purpose is to bring new businesses into the state and enhance the productivity of existing companies. Fundamental to this regional partnership are the three top universities located in the region. Duke, University of North Carolina-Chapel Hill and North Carolina State have been essential in stimulating both population and economic growth in the area by producing well-qualified students. This area has attracted large technological companies like Ericsson, NetEdge and IBM that depend on the area's workforce to function.

The impact of the partnership and the Universities is evident in the economic data for the region, which makes up around 15% of North Carolina's population. When one compares the Research Triangle to Vermont, one finds that the triangle is outperforming Vermont in income, employment and education (Research Triangle Regional Partnership, 1998). The median family income in the region is \$52,000 a year, which is almost \$12,000 more than both the rest of the state of N.C. and all of Vermont. Total employment in the area is 747,390. The unemployment rate of 3.4% compared to Vermont's 4.0%. One in 9 people in the area has a graduate, masters or professional degree; 1 in 5 has a bachelor's degree. More than 45% of North Carolina high tech industry is in the triangle. The regions largest employer is IBM with 13,000 employees. The triangle has maintained the national average in income and percent of the population with a bachelor's degree, approximately 24% (<http://www.census.gov>). The triangle's unemployment rate of 3.4% is considerably lower than the national average of 6.8%.

Minnesota

In 1991 the state of Minnesota created Minnesota Technology, Inc., a semi-public corporation which works with the University of Minnesota. The agency was created to provide timely technology advice to the states manufacturers. Since 1991 the agency has provided technological assistance to over 4,000 manufacturers.

During this period Minnesota has experienced \$420 million in increased sales and manufacturers have lowered their costs and increased their profits. All of this from an annual state appropriation of \$6.1 million (Inskip 1999). Another initiative by Minnesota Technology is to put one of its employees at the University of Minnesota. The employee helps businesses build connections with expertise and research available at the University of Minnesota. The state legislature has strengthened those connections by creating a Technology Partnership Fund. This fund contains \$3.5 million and provides for university research that would assist the business community (Inskip 1999).

The budget for Minnesota Technology, Inc is \$10 million, with \$6.1 million coming from the State Legislature. Two million dollars comes from the US Department of Commerce's National Institute of Standards and Technology through their Manufacturing Extension Program (MEP) (Minnesota Technology, <http://www.minnesotatechnology.org>). The rest of the money comes from fees, activities put on by the agency, and from the sale of a magazine. The agency does not charge for its basic service to manufactures.

Texas

Texas has implemented policy to deal with the growing demand of a technologically literate work force through funding high tech education programs. The Texas Educational Agency, TEA, is responsible for routing Federal, state and local government money towards computer aided learning in the Texas classroom (Nabers 1997). Programs funded by TEA include:

The State technology Allotment is funded with approximately \$30 per student (\$100 million total,) to integrate electronic textbooks into the classroom.

\$32 million is funded to TIE, Technology Integration in Education, aimed at incorporating technology into teaching and learning, aiding students in computer technology.

The Technology literacy Fund, TLF, receives \$16 million to fund the technological training of teachers, purchase of computers and Internet connectivity amongst other goals.

Texas has been and remains a major player in the high tech boom. In a survey of several high tech companies, the number one factor in location decision is access to trained/educated work force. Part of companies' attraction to the state is it's competent technical schools and universities providing programs in engineering and related fields (Petersen & Burchfiel 1997.)

Going high tech pays off in the long run for the economic benefit of its inhabitants. Money pooled into technology training creates the skilled work force, which in return propels big businesses to expand and create more high paying salaries. According to the American Electronics Association (AEA), high tech industry employs approximately 313,000 people in TX, more than that in agriculture, oil and gas industries combined (*Houston Business Journal* 1997.) Also according to the AEA, the average salary for high tech jobs in 1995 was 47,019, compared with average private sector salaries of 27,147. The net change in non-farm jobs created between 1990-1998 in Texas was 1,992,900 (Net Nonfarm Jobs Created in the 1990s.) The net change over the same period in Vermont was 22,700. Not surprisingly, Vermont experienced a .8% decline in median household income, where Texas enjoyed a 2% increase (U.S. Census Bureau 1997.)

Finally, the effects of going high tech are manifested in the growth of emerging technology manufacturers. CorpTech—a technology company information service—obtained employment projections from 80 of the 142 emerging echnology manufacturers in Vermont with under 1000 employees listed in the Corp Tech Directory. (Approximately .4% of America's 34,186 small and mid sized high tech manufacturers are based in Vermont employing 7,478 people. Vermont comprises .2% of the U.S. population.) Over 45% of the surveyed Vermont companies plan to expand their work force in the approaching year by an average of 20.7%, which would creat 268 new jobs (CorpTech 1999). In Texas, over 45% of the companies surveyed plan to expand their work foce by 22.7%, creating 1,768 new jobs (CorpTech 1999.)

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Completed by Stacey Kupperman, Anthony Turi and Chad Ryan on March 2, 1999

