A Perfect Storm?

By Jim Buck

A "Perfect Storm" is IBM's term for the poor condition of Information Technology's (IT) current college enrollment. This fall beings my seventh year teaching IBM i classes at Gateway Technical College and was marked with the college mailing "Voluntary" layoff letters to the entire Information Technology faculty. This was due to steadily declining student enrollment in all of the IT programs since 2002.

As president of the WMCPA (www.wmcpa.org), I interact with many IT professionals both in Wisconsin and Illinois. Often asked how classes are going, I always answer "Great… except for the lack of students." The person asking the question inevitably replies something akin to "What? I figured your classes would be full!" Many times, potential employers ask if I have any outstanding recent graduates I would recommend for an entry level RPG position. My usual reply is that they all have found positions.

The media continues to pound into the public's consciousness that IT jobs are moving offshore. While this is true of some IT positions, companies are finding that many jobs just do not off-shore well and have brought the work back to the United States. Other companies simply do not have the resources to off-shore jobs or prefer to keep their employees in the states.

Add to this the fact that many IT veterans are reaching retirement age. The lack of young people deciding on careers in IT will create a crisis that will rival the void we have had in health care. (Gateway has been expanding its nursing program for a number of years. Today, if you want to enter the nursing program at Gateway there is a three year backlog.) IBM has been aware of this problem for a number of years and, in response, has greatly expanded their Academic Initiative.

With the announcement of the new Power Systems, IBM has combined the System i and System p Academic Initiatives. Colleges have been orientated to Microsoft platforms for a number of years and many colleges IT programs look at the IBM i system as obsolete and aren't aware of the success of the IBM i system. IBM is working to change this through education and by making software and hardware available to colleges. They have also made many of their classes available to college instructors. Additional difficulties for colleges are the lack of conventional textbooks and lack of expertise by college instructors on the IBM i system.
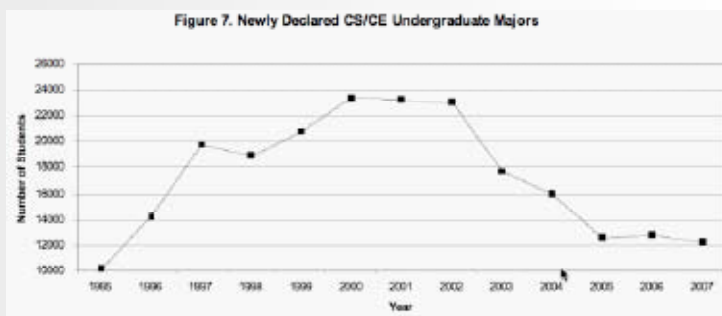
College IT Enrollment Trends

Gateway Technical College is a member of the Wisconsin Technical College System (WTCS); which includes 16 colleges and 47 campuses. Many graduates of this system continue their education and complete four year degrees. The table below displays the Information Technology enrollment and graduation figures for all WTCS colleges. Enrollment in IT programs has decreased 57% in the last 5 years with graduation at only 27% of the rate in 2002.

| Wisconsin Technical College System							
	2002	2003	2004	2005	2006	2007	%
Enrollment	9165	7635	6309	5160	4048	3915	42.72%
Graduation	1089	1088	995	816	640	289	26.54%

This decline in two year college enrollment is not a result of students attending and graduating from four year colleges. According to a Computer Research Association (CRA) (www.cra.org) bulletin published on 02/06/2007, based on a survey by the Higher Education Research Institute at the University of California at Los Angeles (HERI/UCLA) of all incoming freshman, interest in a Computer Science degree has fallen 70 percent between 2000 and 2007.

The CRA conducts the Taulbee Survey every fall of PhD-granting CS/CE departments. This year 186 departments in the US and Canada responded and the results of the 2007 survey are shown in the graphs below. Details of the survey are available at http://www.cra.org/CRN/articles/may08/taulbee.html

Figure 7. Newly Declared CS/CE Undergraduate Majors

The number of new undergraduates fell 4% this year (US enrollment held steady; the decline was in Canada) resulting in a 50% drop in enrollment over the past five years. New female students dropped to less than 10%.

Figure 6. BS Production
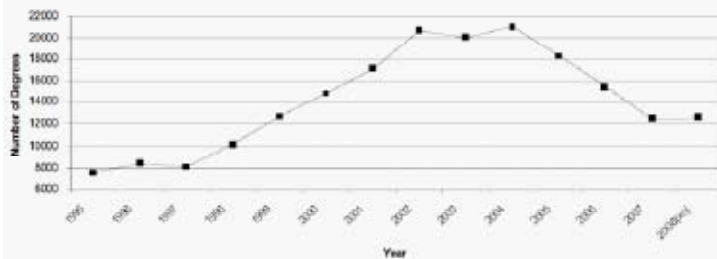
Bachelor degree production was down by 20% this year following the widely reported decline in new Bachelor's students in recent years. Women awarded degrees dropped from 14.2% to 11.8%. Ethnic diversity is also a concern; White, non-Hispanic degrees rose from 59.6% to 66.0% this year.

Employment Prospects

During this period of college enrollment decline, the opportunities for IT graduates continue to rise. In Wisconsin alone the increase in IT jobs for the years 2006 – 2016 is projected to increase by 32,910. The table1 below shows the projections nationally; it should be noted that these numbers do not include sales or other support occupations.

Job Category	SOC Code	2006 Number	2016 Number	Percent change	Numeric change
Computer Software Engineers, Applications	15-1031	507,000	732,510	45.00	225,759
Computer Software Engineers, Systems Software	15-1032	350,000	449,000	28.00	98,631
Computer Systems Analysts	15-1051	504,000	650,000	29.00	146,000
Computer Support Specialists	15-1041	552,000	624,000	13.00	71,000
Network And Computer Systems Administrators	15-1071	309,000	393,000	27.00	83,000
Computer And Information Systems Managers	11-3021	264,000	307,000	16.00	43,000
Computer And Information Scientists, Research	15-1011	25,000	31,000	22.00	5,400
Database Administrators	15-1061	119,000	154,000	29.00	34,000
Network Systems And Data Communications Analysts	15-1081	262,000	402,000	53.00	140,000
Computer Specialists, All Other	15-1099	136,000	157,000	15.00	21,000
			Total Increase		867,790

1. Information from the Bureau of Labor Statistics (www.bls.gov)

As you look at these figures you should realize that educational institutions differ in significant ways from your factory floor. The college president has difficulty calling the deans and telling them to turn up the line rate. Additionally, students need time to assimilate the information they learn in school and, after graduating, time to gain the experience only learned in a production environment.

What can be done?

What can be done to reverse these trends? Companies need to take an active role in describing opportunities to local high school and college students. This can be achieved by offering to speak to students about the opportunities, satisfaction, and salaries a career in IT will give them. A company should consider adopting a college, this could help the college get started teaching IBM i classes. Remember, many colleges only have expertise on the Microsoft platform and will have difficulty getting started. If you have questions on how you can get involved or ideas don't hesitate to email Linda Grigoleit (Program Manager, Power Systems Academic Initiative - lfg@us.ibm.com) or Jeffrey Gibbs (Relationship Manager IBM Academic Initiative - jagibbs@us.ibm.com).

User groups like the WMCPA need to become active in their local colleges by serving on advisory committees, speaking at student assemblies and offering internships. Welcome college students into your monthly meetings and conferences. The WMCPA has been actively involved with students for a number of years. They have become an important part of the conference process and now graduates of Gateway are full and active members. The WMCPA also made a donation to Gateway's Foundation permitting the college to offer a yearly scholarship for students in the IBM i program.

As long as the media continues to report that IT jobs are moving off-shore this situation will be difficult to reverse. Students go to college to prepare themselves for a career that makes good money. Unless the perception of IT jobs going off-shore is reversed there will be a "Perfect Storm." Your company will be negatively affected in a number of ways; difficulty in finding adequately trained employees, forced to move jobs to other geographical areas and, ultimately, with a degradation of service. The United States could even lose its position as the leader of Information Technology. ■

Jim Buck has held a career in IT for more than 25 years, primarily in the manufacturing and healthcare industries. He is an IBM i programmer/analyst instructor at Gateway Technical College in Kenosha, Wisconsin; 2004 - 2008 president of the Wisconsin Midrange Computer Professional Association (WMCPA) and the recipient of the 2007 IBM System i Innovation – Education Excellence Award. Jim has been instrumental in developing evening classes and one-day seminars in IBM's latest programming software, creating an advisory board with recruited local professionals to help design and update the IBM i curriculum at Gateway, and opening networking opportunities for students. Jim can be reached at jbuck1@wi.rr.com.