

Environmental Scan Report

June 2011

Institutional Research



Environmental Scanning is a necessary tool for planning the long-term strategic direction of Moraine Park Technical College. This process can help proactively define the opportunities, potential threats, or areas of change that will impact the college from internal and external environmental factors. This trend information can help the college overall, as well as individual teams, develop and implement goals and strategies.



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FACTS, TRENDS, AND FORECASTS

Key assumptions for the 2011-2012 fiscal year quantify the emerging trends identified through environmental scanning. Specific trends are established based upon the most current available information and help to build the strategic plan necessary to carry out the mission of the college.

POPULATION/DEMOGRAPHICS/SOCIETAL TRENDS

◆ **The world's elderly population is growing dramatically**

The first baby boomers turn 65 in 2011. Thereafter, 10,000 Americans will turn 65 every day. Only half will maintain their standard of living in retirement. One in four will be dependent on government programs.

Throughout the developed world, population growth is fastest among the elderly. In the United States, there are 4.2 million people age 85 and up. By 2050, there will be 19.3 million. Suburban populations are aging faster than those in the cities.

Assessment and Implications:

Not counting immigration, the ratio of working-age people to retirees needing their support will drop dramatically in the United States. This represents a burden on national economies that will be difficult to sustain under current medical and social-security systems.

In the next two to three decades, barring dramatic advances in geriatric medicine, shortages of health workers will loom large in "aging vulnerable" countries. The United States in particular will need at least twice as many physicians specializing in geriatrics as its current 9,000, as well as half a million more nurses by 2020.

Suburban communities are likely to face a growing demand for social services such as senior day care, public transportation, and other programs for the elderly. This will place a growing strain on local government budgets.

(Trends Shaping Tomorrow's World, M. Cetron, O Davies, The Futurist, May-June, 2010.)

◆ **Wellness takes the stage**

Good health is becoming more of a status symbol than ever before. Those who continue to be sloths (even great performers) will lose "value" internally at corporations, while healthy looking individuals who appear to have greater stamina will move ahead more quickly. Organizations that market health or wellness products that can fix ailments or prevent misery will grow faster as consumers seek to be seen as healthy and wise. Outdoor activity will become more "status-y." *(Tech Republic, Five Mega-trends that will affect you in 2011. John McKee, January 6, 2011)*

◆ **Skewed diversity**

In April 2010, the unemployment rate was 6.8 percent for Asian workers, 9 percent for white, 12.5 percent for Hispanics and 16.5 for blacks. For the first time in history, a minority group has surpassed white workers in employment and earnings. Asian unemployment rates fell below white unemployment rates in the wake of the last recession and have largely remained below white rates since then. In addition, Asian workers now earn more on average than white workers, and the gap

is growing. In 2000, Asian and white wages were near parity, but by 2009, Asians older than 25 out-earned their white counterparts by 13.5 percent.

Part of the explanation for Asian progress in employment and earnings can be found in educational achievement and occupational and industry distribution. Among Asian males, 29.1 percent hold a bachelor's degree, compared with 20.8 percent of non-Hispanic white males; 24.7 percent hold an advanced degree, compared with 12.2 percent of non-Hispanic whites. Asians are more likely than whites to hold relatively secure managerial, professional and technical jobs in less cyclical industries such as health care, science, engineering and information technology. (*Workforce Management, June, 2010.*)

◆ Trends in higher education

Our students are graduating without jobs and with debt. They enrolled in record numbers with the promise that a college degree would bring better employment. That's not the case. (*The New York Times, July 6, 2010.*)

A new research report indicates that 37% of 18-24 year olds are unemployed, the largest percentage in 50 years. (*The Christian Science Monitor, April 23, 2010.*)

Even when they have a job, 64% are unhappy in it. (*Herman Trend Alert, January 23, 2010.*)

Contributions to colleges dropped 11.9% in 2009, the steepest decline since 1969 when recording began. Alumni giving rates were only 10%, the lowest level ever. (*Inside Higher Ed, February 3, 2010.*)

Catching a failing student early is key as the student's odds of finishing a degree drop if she or he fails even one course in the first semester. (*The Chronicle of Higher Education, June 2, 2010.*)

Low-income students who received help in filling out financial aid forms were 29% more likely to attend college than families who received only a pamphlet explaining how to apply. (*National Bureau of Economic Research, www.nber.org/digest/feb10/w15361.html.*) (*Planning for Higher Education, Oct-Dec, 2010.*)

MPTC DISTRICT/COMPETITION/MARKETPLACE

Academic Programs offered at other WTCS districts that had the highest enrollments by Moraine Park residents are listed below. Among these programs, the College will be offering three beginning in 2011-12: Liberal Arts-Associate of Arts, Liberal Arts-Associate of Science and Automotive Technology.

<u>Program Number</u>	<u>Program Name</u>	<u>Headcount</u>	<u>FTE</u>
10-152-1	IT-Programmer/Analyst	23	12.93
10-154-3	IT-Computer Support Specialist	17	9.93
10-201-1	Graphic Design	24	13.60
10-304-1	Interior Design	27	18.60
10-412-1	Diesel Equipment Technology	15	13.23

<u>Program Number</u>	<u>Program Name</u>	<u>Headcount</u>	<u>FTE</u>
10-503-2	Fire Protection Technician	38	25.13
	Criminal Justice - Law		
10-504-1	Enforcement	166	103.37
10-508-1	Dental Hygienist	50	21.17
10-602-3	Automotive Technology	18	15.00
10-614-1	Architectural Technology	13	13.13
10-825-1	Individualized Technical Studies	11	10.53
20-800-1	Liberal Arts - Associate of Arts	57	32.33
	Liberal Arts - Associate of		
20-800-2	Science	77	42.50

◆ **Plant closing and mass layoff notices 2010**

This list summarizes major layoffs that occurred in 2010 in Moraine Park's district and areas surrounding the district. Some of the layoffs represent temporary job losses while others reflect permanent business closings, jobs that will not be replaced.

Layoffs by Industry

Motor & Generator Mfg & All Other Motor Vehicle Parts Mfg = 357

Nursing Care Facilities = 192

Commercial Screen Printing = 165

Rubber Product Mfg for Mechanical Use = 142

Real Estate Credit & Real Estate Investments = 126

Discount Department Stores = 71

Other Concrete Product Mfg = 61

Orthopedic Rehabilitation Equipment = 56

Leather Tanning = 50

Home Center = 37

Mattress Mfg = 28

Stationery & Related Product Mfg = 5

Layoffs by City

Jefferson = 369

Waukesha = 282

Sheboygan = 167

Germantown = 142

Mequon = 100

West Bend = 71

Hartford = 50

Jackson = 37

Neenah = 28

Menomonee Falls = 26

Watertown = 13

Appleton = 5

A total of 1290 layoffs were reported in 2010, the majority reason due to plant closings. (*Wisconsin's Worknet, December 12, 2010.*)

ECONOMIC/BUSINESS/WORKPLACE TRENDS

◆ **Services are growing faster than any other sector of the global economy**

Service jobs have replaced many of the well-paid positions lost in manufacturing, transportation, and agriculture. These new jobs, often part time, pay half the wages of manufacturing jobs. On the other hand, computer-related service jobs pay much more than the minimum for workers with sound education and training. Medicine, the law, and many other well-paid occupations also fall into the service sector.

- Service industries account for about 77% of private nonfarm employment in the United States, up from 70% in 1990 and provide 79% of the GDP. Services accounted for the entire net gain in U.S. private employment in the decade ending 2010.
- In contrast, services in China provide only 40.5% of GDP and 33% of employment. In India, they account for 63% of GDP and perhaps 35% of jobs. (Sector employment data for India are extremely dated.)
- In the decade ending in 2016, service industries will provide 15.7 million new jobs, according to the U.S. Bureau of Labor Statistics (BLS).
- Education and health services will add 5.5 million jobs, more than 30% of all new jobs expected for the period. Employment in professional, scientific, and technical services will grow by 28.8% and add 2.1 million new jobs by 2016.
- Production and less-skilled jobs, in contrast, are disappearing. By 2014, the United States is expected to have more chief executives than machine tool operators, more lawyers than farm workers.

Assessment and Implications:

This trend is helping to deplete the middle class, as well-paid jobs in manufacturing are replaced by illpaid service positions, leaving a country of “have lots” and “have nots,” but relatively few “have enoughts.” Services are now beginning to compete globally, just as manufacturing industries have done over the last 20 years. By creating competitive pressure on wages in the industrialized lands, this trend will help to keep inflation in check.

The growth of international business will act as a stabilizing force in world affairs, as most countries find that conflict is unacceptably hard on the bottom line. (*The Futurist. Volume: 44. Issue: 3. Publication Date: May-June, 2010.*)

◆ **Job creation is ceasing to provide employment for all who need it**

According to official estimates, it takes 100,000 jobs per month to absorb young people and others just entering the labor force. Between January 1999 and October 2009, the U.S. economy generated an average of only 26,000 jobs per month. Most economists believe it will take five years—that is, to 2015—just to replace the 8.4 million jobs lost to date in the post-2007 recession.

The economic turmoil of recent years is only partly responsible for this trend. It has been accelerated by the continuing replacement of human labor by computers and automation. In the United States, worker productivity rose by 6.9% (annualized) in the second quarter of 2009, 9.5% in the third, and 6.4% in the fourth. For more than a decade, most productivity gains have come in industries that have been reworking business processes to incorporate computers and automation.

The other side of growing productivity is a declining need for human workers. If you raise productivity by 2.5%, you need 2.5% fewer workers to deliver the same amount of goods or services. Employment growth slows. And when productivity grows faster than the market, employment declines.

Implication: One of the most important functions of a society is to distribute wealth so that the majority of people have at least the opportunity to provide a secure life for themselves and their families. The jobs-for-wages model adopted during the Industrial Revolution is losing the ability to fulfill this mission. (*The Futurist. Volume: 44. Issue: 3. Publication Date: May-June, 2010.*)

◆ **The global recovery is for real**

Although threats remain, and some regions will take longer to return to “normal,” we’re past the worst of it. Expect organizations to start acquiring and increase hiring (although that will be more part timers than in the past). The stock market, after two great growth years, will continue to pay off for smart investors.

(*Tech Republic, Five Mega-trends that will affect you in 2011. John McKee, January 6, 2011.*)

◆ **Skilled trades workers are most in demand, manpower survey shows**

Fourteen percent of U.S. employers are having difficulty filling key positions within their organization, down from 19% the year before, according to a Manpower Talent Shortage survey. "Skilled trades" position top the list of U.S. jobs most in demand for 2010. Skilled trades include jobs like plumbers, electricians and construction workers.

"Unemployment levels, remain high in the United States, yet employers continue to have difficulty filling select position." "The issue is not a lack of candidates, but rather a talent mismatch. There are not enough sufficiently skilled people in the right places at the right times. (*Journal Interactive, May, 2010.*)

◆ **Appealing to workers' civic side**

Firms find that participating in service events not only burnishes their image in the cities where they do business, but also helps improve employee morale, recruitment and retention. Civic engagement is becoming especially important as companies recruit members of the Millennial Generation, who are more likely than older employees to factor a company's social responsibility and community outreach into their career decisions. (*Workforce Management, August, 2010.*)

◆ **Pew survey finds re-employed workers feel they're overqualified for new jobs**

Workers who lost their jobs during the recession but then found another position are likely to consider themselves overqualified for their new jobs. Some 60% of re-employed workers said they had changed careers or thought about doing so while they were unemployed, and 39% said they had moved to a new location or seriously considered doing so. Another 36% said they had entered job training programs or had gone back to school, pew said. (*BNAs HR Report, September, 2010, Pew Research Center.*)

◆ **Stagnation continues: cumulative losses are high**

Wisconsin's job outlook continued a pattern of almost zero growth between July and August 2010, with 700 jobs lost in the state. Both the state's manufacturing and construction sectors posted weak gains, but the unemployment rate remained unchanged at 7.9%, much higher than its pre-recession level (4.5%).

Wisconsin Job Watch also reports on the cumulative effect of monthly changes on the Wisconsin economy. As Wisconsin has lost jobs, the working age population has continued to grow. If we assume that job growth from now on will be same as the monthly job increase after the 1991 recession, it will take until February of 2012 to get back to 2007 unemployment levels and not until June of 2014 will the number of jobs catch up to growth in the labor force. Furthermore, if we continue a "jobless recovery," the state may never again be able to accommodate the growth of its labor force.

- Wisconsin has lost 157,400 jobs since the recession started in December 2007.
- Wisconsin's manufacturing sector gained 300 jobs between July and August, and the construction sector gained 500 jobs. However, both of these important sectors have been hard hit this recession and have a long way to climb to reach pre-recession levels.
- Wisconsin has lost 5.5% of its pre-recession job base, a substantially larger deficit than has been seen in generations. (*Wisconsin Job Watch, 2010.*)

◆ **Employers shift insurance costs to workers**

An annual survey finds that workers are paying more for job-based family health insurance this year as companies force employees to shoulder more of the burden of health care costs. With health coverage costs growing faster than wages and inflation, consumers can't seem to catch a break. Even as they pay more, workers are getting fewer benefits. The survey found that 30% of employers reduced benefits or increased out-of-pocket costs, while 23% raised premiums. Employers also are raising annual deductibles. (*West Bend Reporter, 2010*)

◆ **Urban farm in Racine is no fish tale**

An old IJ Case building once used to manufacture plows for farm fields is being transformed into a dirt-less vertical farm where fish and lettuce are grown in a symbiotic system. This cutting-edge venture could turn an obsolete industrial building into a local model for a new industry that creates jobs and produces fresh food close to the people who would eat it. The owners say they could produce 4 million heads of lettuce and 1 million pounds of fish a year. (*Milwaukee Journal Sentinel, July, 2010.*)

◆ **State lags in creation of new firms "Rate hinders job growth, study says."**

Wisconsin spawns start-up companies at a slower rate than all but eight states, which keeps the state's job-creation engine stuck in low gear, according to an exhaustive new study by the Wisconsin Taxpayers Alliance. Since 1992, only 4.5% of all private firms in the state were new in any quarter, a rate well below the U.S. average of 5.4%. That ranks Wisconsin 42nd among the 50 states.

Tepid entrepreneurialism helps explain why the state has struggled to rebuild its employment base since the recession began in December 2007. Wisconsin's job growth was worse than the nation's and worse than all but 15 states during the June 2007 through December 2009 period. Factors that undermine entrepreneurs aren't new. If anything, they are "deeply baked into the structure of the economy." From 1995 through 2008, venture capital for start-ups averaged \$13 per capita, or 36th among the 50 states, compared with nearly \$110 nationally.

The state's mix of industries skew more toward heavy industry and less to technology, science and professional services sectors that are known to spawn a greater share of new employment. Wages have been losing ground. Since 1981, inflation-adjusted wages in Wisconsin rose 18.5% compared

with 27.0% nationally. "Lagging wages cut across industries," "Wisconsin trailed the nation in 70 of 81 industries studied." Lagging productivity, or output per worker, was a major reason why Wisconsin's wages fell so far below the national average. In 1969, state productivity was 5% under the U.S. By 2008, it trailed the nation by almost 15%, a deficiency found across most industries. (*The Wall Street Journal Sunday, October 31, 2010.*)

◆ **E-Learning still trending up**

Companies continue to adopt technology-based training for employees as expenditures in training and development decreased overall last year. At the same time, the expenditure per employee actually remained stable, because the workforce was smaller. More than one-third of all job training in 2009 was done electronically, according to training and development experts. 37% of training hours involved electronic technology in 2009; 28% of training was done online, up from 23% in 2008. By comparison, in 2002, only 15% of the 304 companies surveyed used electronic technology to deliver formal training. Meanwhile, live face-to-face interaction is down to 59%. "There is a lot of blended electronic and classroom.

The biggest cuts in training have been in IT, technology and general professional training. On the other hand, companies rarely touch their leadership-training and sales-training budgets. Companies cut costs by instituting "train-a-trainer" programs. On-site training programs is preferred since virtual learning does not create a culture. There is a certain cultural aspect to job training." (*Human Resources Executive Online, December 2, 2010.*)

◆ **Employers' expectations of employees are growing**

The percentage of employees who agree with each statement:

- 91% - Our company is asking employees to take on more responsibilities and to use a broader set of skills than in the past.
- 90% - Employees are expected to work harder to coordinate with other departments than in the past.
- 88% - The challenges employees face within our company are more complex today than they were in the past.
- 88% - To succeed in our company, employees need higher levels of learning and knowledge today than they did in the past.

Source: "Raising the Bar: Employers' Views on College Learning in the Wake of the Economic Downturn" Hart Research Associates for Association of American colleges and Universities. (*universitybusiness.com, March, 2010.*)

◆ **Forecasters expect employment growth to continue at moderate pace over 2011**

Nonfarm payroll employment will grow at a moderate pace in the first half of 2011 before picking up slightly in the second half, but the nation's unemployment rate will remain elevated throughout the year, as the slow economic recovery that began in 2009 continues in earnest.

Employers in health care are suddenly facing hiring freezes, potentially putting a damper on one of the sectors that has continued to add jobs over the course of the recession. However, once more and more changes required by the recent health care overhaul are put into place, demand for health care services will grow again.

Much of the employment growth in recent months has been in temporary help positions, which he said was "not a good sign," since it indicates a reluctance on the part of employers to hire

permanent workers. "Government employment is now likely to have a steady drip of small declines."

The construction industry will "turn positive" in terms of job growth in both the residential and nonresidential sectors. But some 1.5 million construction workers still "will either be idle, retired or working on other industries." Many construction workers "have been out of work so long that it will be hard for the industry to find skilled workers" in 2011, but by 2013, the industry may rebound such that there could be "worker shortages." (*BNA Report, January 17, 2011.*)

◆ **Economic trends impacting higher education**

Recessions create drops in higher education funding that often never return to prior levels. (*State Higher Education Executive Officers, www.shceo.org/about/pres_speech.htm.*)

Present projections for the US deficit may well mean that the prestige of US higher education could suffer significantly. To quote Lawrence H. Summers, "How long can the worlds' biggest borrower remain the world's biggest power?" (*The New York Times, February 2, 2010.*)

The US pipeline to higher education is being drastically affected by the recession. Even with Race to the Top and funding for K-12 jobs, the ability of many states and districts to adequately support education is declining rapidly. (*American Association of School Administrators, April 8, 2010.*)

State general fund spending has declined for an unprecedented two fiscal years, as tax revenues from all sources have plunged. (*National Association of State Budget Officers, www.nasbo.org/Publications/FiscalSurvey/tabid/65/Default.aspx.*) (*Planning for Higher Education, Oct-Dec, 2010.*)

◆ **Welders, other skilled workers in high demand - employers expect shortages**

A hiring frenzy at Oshkosh Corp. and Marinette Marine Corp. could put a strain on companies seeking welders and other industrial employees. Hiring of 650 to 750 assemblers, welders, and other skilled-trades positions could begin as early as this month (Feb. 2011).

Oshkosh expects to build more than 23,100 trucks and trailers in the next two years and is gearing up to produce nearly 40 a day. The effort is expected to employ several thousand people.

Marinette Marine is hiring hundreds of people for a US Navy contract to build combat ships. Construction of the ships could result in several thousand jobs at the company and its suppliers in Wisconsin and Michigan.

The starting average hourly wage for a welder ranges from \$18 to \$19.50, according to NEW North Inc., a business development organization for northeast Wisconsin.

Two out five manufacturers in northeast Wisconsin plan to hire in 2011, based on a survey of 378 companies with at least \$3 million in annual revenue and 25 or more employees, according to the Northeastern Wisconsin Manufacturing Alliance. (*Journal Interactive (Journal Sentinel), February 7, 2011.*)

◆ **News Announcement - ManpowerGroup Annual Survey Shows More than Half of US Employers Cannot Find the Right Talent for Open Positions**

ManpowerGroup today releases the results of its sixth-annual Talent Shortage Survey, revealing that 52% of US employers are experiencing difficulty filling mission-critical positions within their organizations, up from 14% in 2010. US employers are struggling to find available talent more than their global counterparts, one in three of whom are having difficulty filling positions.

According to the more than 1,300 US employers surveyed, the jobs that are most difficult to fill include Skilled Trades, Sales Representatives and Engineers. The survey also highlights the most common reasons employers say they are having trouble filling jobs, including candidates looking for more pay than is offered, lack of technical skills and lack of experience.

"The tremendous spike in US employers that are having difficulty filling positions tell us that we're in the thick of the much-anticipated global talent mismatch." Ultimately, the underlying reason for this gap between available talent and desired talent is simple: jobs have structurally changed over time, and the skills needed to fulfill these roles have too. (*Manpower, Date Unknown.*)

◆ **A Flight Plan for the American Economy**

We are producing the same amount of goods and services as in 2007 with 7 million fewer workers.

Two years into the recovery, growth is about two percent and job creation has reached around 250,000 a month, which might sound high but is actually barely enough to keep pace with all the new workers entering the job market for the first time.

The "new normal" of slower growth and job creation means lower tax revenues and more unemployment and health benefits to be paid out, hence a much larger deficit. Studies show that after a few years of not working, people lose the talents, skills, and work habits that make it possible for them to work productively.

Two powerful drivers have allowed for this new productivity. The first is technology, which is producing massive efficiencies across industries. It has already transformed manufacturing and is now beginning to transform white-collar professions, with computer programs able to do, for example, the basic discovery work performed by expensive lawyers.

The second force is, of course, globalization. There is now a single world market for many goods and services, and over the past 10 to 15 years, about 400 million people - from China, India, South Africa, Indonesia and elsewhere - have entered the global labor force, offering to make the same things Americans make for a tenth the price.

The image we all have in our heads when we think of bringing back good jobs is manufacturing. Focus on technical education, technical institutes and polytechnics, as well as apprenticeship programs.

We need to create retraining programs for an entire generation of workers. It would have to be a program in which government paid a large share of the costs while educational institutions provided the services.

The Kauffman Foundation has found that from 1980 to 2005, nearly all net job creation in the US occurred in firms that were less than five years old.

The American Society of Civil Engineers gave US infrastructure a grade of D and estimated that we need to spend \$2.2 trillion to fix our airports, bridges, highways and trains systems. (*Time - In Partnership with CNN, May 23, 2011.*)

◆ **Top 10 Dying Industries**

The U.S. economy is recovering from a severe recession, but some industries are unlikely to ever fully bounce back.

Wired telecom carriers are among the industries seen on the decline.

A new analysis by research firm IBIS World looks at 10 industries that appear to be dying. The list isn't exactly shocking, but it represents a mix of sectors that are being left behind by technology or have been hurt by cheaper overseas competition.

The biggest industry profiled by IBISWorld is wired telecom carriers, largely being supplanted by cellphones and the Internet. The dominance of the Web and digital media also puts Newspaper publishers, record stores and video-rental companies on the list. Meanwhile, photofinishing also takes its place among the top 10 dying industries thanks to the growing influence of digital photography.

Cheap imports are blamed for a decline in mills and apparel manufacturers. Companies that rent formal wear are also counted among dying industries amid both competition from abroad and lower prices making owning your own formal wear a more attractive option than renting.

The only clear recession casualty that makes the list is manufactured home dealers. The housing boom led to a surge in the industry, but now years after the bubble burst the sector has continued to struggle.

1. Wired Telecommunications Carriers
2. Mills
3. Newspaper Publishing
4. Apparel Manufacturing
5. DVD, Game & Video Rental
6. Manufactured Home Dealers
7. Video Postproduction Services
8. Record Stores
9. Photofinishing
10. Formal Wear & Costume Rental

(*Wall Street Journal, March 28, 2011.*)

EDUCATION TRENDS

Expectations for institutional accountability, including degree completion, continue to rise. To receive funding through grants or other means, colleges must provide evidence for student learning outcomes.

- ◆ For-profit colleges have an increasing presence on the higher education landscape with quadrupled enrollments over the last ten years. Disingenuous recruitment practices, false promises of job placement, high dropout rates and a higher percentage of student loan defaults is heightening the scrutiny of related practices at all colleges. Specifically, the "gainful employment" regulation, yet to be finalized, is likely to increase accountability for program majors to link to verifiable job prospects in a much more cohesive and unprecedented way than most of higher education has experienced to date. (*Gainful Employment Regulation, Department of Education <http://www.ed.gov/news/press-releases/departments-track-implement-gainful-employment-regulations>*).
- ◆ **Heavy and prolonged reliance on the Internet for communication may degrade our ability to think**
Web surfing and "googling" are having neurological impacts that are observable and measurable, according to critic Nicholas Carr. While we may be more adept at finding what we're looking for, we are less able to reflect, synthesize, and analyze the content and its deeper meaning. "The more we use the Web, the more we train our brains to be distracted," he charges. (*Nicholas Carr, author of The Shallows, reviewed by Patrick Tucker, July- Aug, 2010, p. 61.*)
- ◆ **On the college campus of tomorrow, classes won't matter**
The next generation of college students will be living wherever they want and taking many (if not all) of their courses online. They will earn degrees that are accredited by international accrediting agencies. But even in a globalized, educational environment, students will still want to join fellow students in a campus community. (*John Dew, "Global, Mobile, Virtual, and Social: The College Campus of Tomorrow," Mar-Apr, 2010, p. 50.*)
- ◆ **Texting, microblogging, and overuse of online tools will have a negative effect on student writing and academic performance**
When students sit down and compose on a keyboard, they slide into a harried mode of writing. As more kids grow up writing in snatches, and writing poorly, colleges will put more first-year students into remedial courses and businesses will hire more writing coaches for their employees. (*Mark Bauerlein, "Literary Learning in the Hyperdigital Age," Jan-Feb, 2010, p. 25.*)
- ◆ **In 2020, schools will carve out nondigital preserves for students to read and write with books, pens, and paper**
Educators and students will see nondigital space as a crucial part of the curriculum, recognizing that aspects of intelligence are best developed with a mixture of digital and nondigital tools. (*Mark Bauerlein, "Literary Learning in the Hyperdigital Age," Jan-Feb, 2010, p. 24.*)
- ◆ **Social networking could facilitate a more collaborative form of learning**
The Net generation uses technologies both for socializing and for working and learning, so their approach to tasks is less about competing and more about working as teams. Therefore, teachers should abandon the "drill and kill, sage on a stage" model of pedagogy, and managers should encourage greater freedom among employees to self-organize. (*Don Tapscott, cited in "Innovation and Creativity in a Complex World," Nov-Dec, 2009, p. 53.*)

◆ **Sustainability in higher education**

More than 100 new programs in 'green studies' were added by colleges and universities in the US in 2009, compared with the three programs begun in 2005, and students are filling them as fast as they are created. (*USA Today*, December 27, 2009.)

◆ **More students seeking job certificates**

Labor economists and some educators believe career-driven degrees should become an increasingly common choice and are advising students to pursue skills-oriented fields of study they feel offer better job opportunities.

A new report based on Florida state's employment data shows that students who earn certificates or associate of science degrees make more money in their first out of college than four-year graduates of Florida's university system. Nationally, 27% of people with licenses and certificates also earn more than the average bachelor's degree recipient, (*Georgetown University Center on Education and the Workforce*.)

Middle-skills jobs require more than a high school diploma but less than a college degree, along with significant education and training - and they make up roughly half of all US jobs. Such jobs require strong math, communications and science knowledge, in addition to "soft skills" like the ability to solve problems in teams. They do not necessarily require a four-year, or even a two-year college degree. (*Milwaukee Journal Sentinel*, January 24, 2011.)

◆ **College retention rates improving at two-year schools, declining at four-year schools**

The first-to-second-year retention rate at US two-year public colleges has risen to its highest level in 27 years of research, while the retention rate at four-year private college has dropped to its lowest level in that time, according to data from ACT, Inc.

Colleges are increasingly using learning assistance measures such as remedial courses, study groups and tutoring) to help students stay in school. Those measures have moved ahead of academic advising and first-year transition programs to become the top-ranked cluster of retention practices used at four- and two-year colleges. (www.act.org/news/2011/01/20/college-retention/, January 20, 2011.)

◆ **The briefing - report calls for focus on job training, not just college**

According to a report by the Harvard Graduate School of Education, Americans "place far too much emphasis on a single pathway to success; attending and graduating from a four-year college," even though only 30% of young adults attain that goal. The report also notes that of the 47 million jobs expected to be created in the United States by 2018, only 1/3 will require a bachelor's degree. (*The Chronicle of Higher Education*, www.chronicle.com, February 2, 2011.)

◆ **2011 National Freshman Attitudes Report - special focus: attitudes that may limit academic engagement**

More than 44% of incoming freshmen nationally agreed with the statement, "Math has always been a challenge for me," with even higher percentages agreeing among first-generation freshmen (48%) and adult, nontraditional-age freshmen (53%). "I am capable of writing a very clear and well-organized paper," a percentage that was lower among students at two-year public and private institutions (55%) than at four-year public and private institutions (65-67%).

Reflecting the uncertain economy, nearly one-third of incoming freshmen (31%) and even more first-generation freshmen (40%) arrived on campuses last fall indicating they had "very distracting and troublesome" financial problems.

Percent of freshmen students at 2-year institutions public and private in agreement:

- I would like to receive some help in improving my study habits - 56.4%
- I have a hard time understanding and solving complex math problems - 52.4%
- Math has always been a challenge for me - 53.0%
- I have difficulty organizing my ideas in a paper, and I tend to make a lot of punctuation and grammar mistakes - 39.8%
- I would like to receive some instruction in the most effective ways to take college exams - 73.6%
- I would like to receive some help in improving my study habits. - 56.4%
- I would like to receive some individual help in improving my math skills. - 52.2%
- I would like to receive some individual help in improving my writing skills - 42.7%
- I would like to receive tutoring in one or more of my courses. - 39.9%
- I would like to receive some training to improve my reading skills - 28.8%
- I would like some help selecting an educational plan that will prepare me to get a good job- 61.2%
- I would like to talk with someone about the qualifications needed for certain occupations - 6.9%
- I would like to talk with someone about the advantages and disadvantages of various occupations - 40.3%
- I would like to meet an experienced student who can show me around and give me some advice. - 38.3%

(2011 National Freshman Attitudes Report, 2011.)

◆ **Accentuate the positive**

Sixty-three percent of current college students say the availability of technology on a campus weighed heavily in their college selection criteria. And according to our separate CDW-G 2010 21st Century Classroom Report, which surveyed technology use at high schools, 93 percent of today's high school students say campus technology will be an important factor in their selection of a college as well. *(Ed Tech Magazine web-site, Nov-Dec, 2010.)*

◆ **Today's technology, tomorrow's classroom**

Comparing the technological wants of college students with high school students provides perspective on tech needs today and tomorrow. One of the upcoming technologies that 54% of high school students want to use today is interactive whiteboards, but only 47% of colleges are able to provide this opportunity. An upcoming trend is the usage of social networking sites by students. While only 54% of college students connect with classmates to study via social networking, 76% of high school students do. It's tech trends like these that administrators would do well to heed.

Top five technologies identified as extremely important to today's college students:

1. Wireless network 77%
2. Accessing the campus' network from an off-campus location 57%
3. Course management system 47%
4. Digital content 40%
5. Multimedia content streaming 23%

(University Business, September, 2010.)

◆ **Lecture capture moves far beyond a basic class review tool**

About five years ago, the University of Central Florida's engineering department decided it had outgrown its homemade system for distributing lectures over the Internet. "The only solution out there that was all software was Tegrity," said Ducharme, UCF's assistant dean for distance and distributed learning. "It was the absolute most amazing success story for me. Now we typically record 7,500 hours of lectures over the course of the fall and spring semesters. It's an enormous amount of content that we push out, and with a smaller staff."

The Tegrity system was expanded to the rest of the college last summer. Students can instantly access lectures from their courses through a computer browser, iPod or wireless device. Instructors require little training. To get started, they access Tegrity through the course management system, wait a second or two for the system to recognize a webcam or other external video source, enter a lecture title and begin talking to the class. Recording is automatic, and the system creates a database of searchable terms from the professor's remarks.

"One of the key aspects of Tegrity for UCF is that it's highly-scalable, meaning we can deploy it across our large student population in a cost-effective manner," said Don Merritt, interim director of UCF's Office of Instructional Resources. Professors can track sections that multiple students have bookmarked as confusing, so future lectures can be improved for clarity. Professors can tell exactly which parts of the lecture draw the most interest, and they can also see which students haven't tapped into the lecture at all. (*University Business, October, 2010.*)

◆ **13 Ways to use foursquare in higher ed**

Foursquare, the Smartphone app that encourages people to share their whereabouts by checking in at various locales while earning points and badges, isn't just for fun. The popular geo-networking tool is being used by higher-ed institutions as a community building and recruitment tool. Reprinted from the Accredited Online Colleges blog's "30+ Ways to use Foursquare In Education" post, here are 12 Foursquare uses to consider adopting:

1. Encourage students to visit new parts of campus.
2. Encourage students to socialize more.
3. New student orientation.
4. Recruit students.
5. Teach the history of your school.
6. Reiterate office hours.
7. Push students outside the campus bubble.
8. Keep up with study abroad students.
9. Arrange spontaneous study groups.
10. Connect online students.
11. Add to school's traditions.
12. Share campus news.

(*University Business, October, 2010.*)

◆ **As the web goes mobile, colleges fail to keep up**

Half of all college students used mobile gear to get on the Internet every day last year, compared with 10% of students in 2008, according to Educause (2010), the educational-technology consortium. But many colleges still treat their mobile Web as low-stakes experiments. Colleges often do not realize how far their Web services have fallen behind what students are used to. For

instance, a mobile app could recommend courses based on what students with similar interests have liked taking. Mobile devices, give colleges the chance to bring together all of their key services into one portal that students always have with them. (*The Chronicle of Higher Education, January 23, 2011.*)

◆ **Influx of minorities accounts for largest increase in freshman enrollment in 40 years**

The recession-era boom in the size of freshman classes at four-year colleges, community colleges and trade schools has been driven largely by a sharp increase in minority student enrollment. From 2007 to 2008 (the first year of the recession), the freshman enrollment of Hispanics at post-secondary institutions grew by 15%, of blacks by 8%, of Asians by 6% and of whites by 3%. Minority college students tend to be clustered more at community colleges and trade schools than at four-year colleges. (*The Higher Education Workplace, Fall, 2010.*)

◆ **Factors influencing innovation in education**

The institutional characteristics most frequently identified in a study as necessary for a culture of innovation included: visible support of college leaders for innovation (90%), encouragement of risk taking without reproach for failure (84%), and encouragement of faculty and staff to think creatively and unconventionally (83%).

Sixty percent of colleges indicated the most significant barrier to successful innovation is lack of time.

The majority of innovations examined in the study (85%) were the result of teamwork, and leaders indicated that enthusiasm among team members was key to project success. What's more, 74% of innovators said the team approach would help their respective projects endure, while some 70% said the collaborative process yielded institutional benefits beyond the innovation. (*Community College Journal, April/May, 2010.*)

◆ **Common student extracurricular activities**

Activities Participated In - Students were provided with a list of ten extracurricular activities and asked to identify which of these activities they have participated in since the start of the school year. The three most commonly participated school year activities are "Volunteer group", "Academic group or club" and "Voted in a local election". Participation for each of these activities skews somewhat higher among females than among males. The three most commonly reported activities among Four Year students were also the three most commonly reported activities among Two Year students.

- Four Year students are twice as likely as Two Year students to have participated in "Intramural sports" (20% compared to 11% among Two Year students). Four Year students are far more likely to have participated in a "Service/civic group" than Two Year students (16% compared to 3%).

(*National College Research Bureau Inc., 2009.*)

◆ **Other trends in higher education**

Recent research reports that a variety of skills are enhanced by playing action video games, including better visual selective attention and better focus. (*School News, December 9, 2009.*)

Informal learning through television, video games, and the Internet has increased student's abilities with visual-spatial reasoning. (*Science, January 2, 2009.*)

Four-year institutions are looking to offer bachelor's degrees in three years. (*Indianapolis Star, April 19, 2010.*)

Community colleges are beginning to consider caps on the number of students they'll admit who need remedial course work. (*The Denver Post, February 8, 2010.*)

Some are considering eliminating GED and basic-skills courses altogether. (*The Sacramento Bee, February 9, 2010.*)
(*Planning for Higher Education, Oct-Dec, 2010.*)

◆ **2011 National Freshman Attitudes Report - Special focus: Attitudes that may limit academic engagement**

More than 44% of incoming freshmen nationally agreed with the statement, "Math has always been a challenge for me," with even higher percentages agreeing among first-generation freshmen (48%) and adult, nontraditional-age freshmen (53%).

"I am capable of writing a very clear and well-organized paper," a percentage that was lower among students at two-year public and private institutions (55%) than at four-year public and private institutions (65-67%).

Reflecting the uncertain economy, nearly one-third of incoming freshmen (31%) and even more first-generation freshmen (40%) arrived on campuses last fall indicating they had "very distracting and troublesome" financial problems.

Percent of freshmen in agreement (Fall 2010):

(Students at 2-year institutions public and private):

- I would like to receive some instruction in the most effective ways to take college exams - 73.6%
- I would like some help selecting an educational plan that will prepare me to get a good job - 61.2%
- I would like to talk with someone about the qualifications needed for certain occupations - 56.9%
- I would like to receive some help in improving my study habits - 56.4%
- Math has always been a challenge for me - 53.0%
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- I would like to talk with someone about the advantages and disadvantages of various occupations - 40.3%
- I would like to receive tutoring in one or more of my courses. - 39.9%
- I have difficulty organizing my ideas in a paper, and I tend to make a lot of punctuation and grammar mistakes - 39.8%

- I would like to meet an experienced student who can show me around and give me some advice. - 38.3%
 - I would like to receive some training to improve my reading skills - 28.8%
- (2011 National Freshman Attitudes Report, 2011.)

◆ **More Working Women Than Men Have College Degrees, Census Bureau Reports**

Among the employed population 25 and older, 37 percent of women had attained a bachelor's degree or more as of 2010, compared with 35 percent of men, according to new data from the U.S. Census Bureau. In contrast, among all adults 25 and older, 29.6 percent of women and 30.3 percent of men had at least a bachelor's degree.

The data come from tabulations on Educational Attainment in the United States: 2010 and not only examine gender differences in attainment but also provide the most detailed information on years of school completed ever presented by the Census Bureau, showing for each level of attainment exactly how many years of education adults have.

"The tabulations permit one to see not only the broad levels of educational attainment adults experienced, but also, for instance, if they did not receive a high school diploma, the specific level of schooling they did reach," said Sonia Collazo, a Census Bureau demographer.

In 2010, 36 percent of the nation's population 25 and older left school before obtaining a degree. This includes 15 percent of the population that didn't earn a regular high school diploma — a group sometimes labeled "dropouts." Among this group were about 1 percent of the population who reached the 12th grade, 2 percent who reached the 11th grade but still did not graduate, and 2 percent who earned a GED.

An even greater share of the 25-and-older population — 17 percent — attended some college but left before receiving a degree. At the graduate school level, 4 percent of the population left before obtaining an advanced degree.

The majority of adults (64 percent), however, finished their schooling with a regular high school diploma or college degree. The most common of these is a high school diploma, which was the highest level attained by 30 percent of those 25 and older. Another 9 percent left school with an associate's degree, and 15 percent finished with a bachelor's degree (not statistically different from those who did not earn a high school diploma). Eleven percent of the population attained an advanced degree in 2010.

Data also include levels of education cross-referenced by a wide range of demographic and socioeconomic characteristics, including age, sex, race, Hispanic origin, marital status, household relationship, citizenship, nativity and year of entry. Historical tables provide data on mean earnings by attainment level, sex, race and Hispanic origin, with data dating back to 1975 and tables on attainment levels dating back to 1940.

- In 2010, 87 percent of adults 25 and older had at least a high school diploma or equivalent, up from 84 percent in 2000.
- Of the 200 million people 25 and older in 2010, 26 million had not completed high school, while 174 million had attained at least a high school education.

- In 2010, 30 percent of adults 25 and older, or 60 million people, had at least a bachelor's degree, compared with 26 percent in 2000.
- More than half (52 percent) of Asians 25 and older had a bachelor's degree or more, higher than the level for non-Hispanic whites (33 percent), blacks (20 percent) and Hispanics (14 percent).
- Women 25 and older were more likely than men 25 and older to have completed at least high school, at 87.6 percent versus 86.6 percent.
- Among the population 25 to 29, 36 percent of women had a bachelor's degree or more, compared with 28 percent of men.
- Thirty percent of foreign-born residents of the U.S. had less than a high school diploma, compared with 10 percent of native-born residents. Nineteen percent of naturalized citizens had less than a high school diploma. At the same time, 29 percent of the foreign-born population had a bachelor's or higher degree, compared with 30 percent of the native-born population. (The percentage of native-born residents with at least a bachelor's degree was not statistically different from the percent of foreign-born residents with less than a high school diploma.) Thirty-five percent of naturalized citizens had a bachelor's or higher degree.

These data come from the Current Population Survey's Annual Social and Economic Supplement, which is conducted in February, March and April at about 100,000 addresses nationwide. (*Census.gov, April 26, 2011.*)

◆ **Students are drowning in debt**

In 2011 American student-loan debt surpassed credit-card debt for the first time. More students are borrowing more money than ever before in order to buy a commodity that is often of dubious value. They are borrowing the money from increasingly dodgy lenders. This 2009 briefing, "Drowning in debt: the emerging student loan crisis", from Kevin Carey and Erin Dillon.

Higher education has never been more expensive. The price of attending a public university doubled, after inflation, over the last two decades, and family income and student financial aid haven't kept pace. As a result, students have no choice but to borrow, and more college students are borrowing more money than ever before.

But a new analysis of federal financial aid records reveals more than just surging debt levels. Students are taking on more of the riskiest debt: unregulated private student loans. Here, students have the least protection and pay the highest rates. For-profit colleges are leading the way in this trend, and minority college students appear to be borrowing a disproportionate share. If this continues, the consequences will be severe: reduced access to higher education, diminished life choices, and increasing rates of catastrophic loan default. (*The Economist, April 15, 2011.*)

◆ **Actually Going to Class, for a Specific Course? How 20th- Century. New learning technologies prompt a rethinking of traditional course structure.**

At Worcester Polytechnic Institute, administrators run seven-week immersion projects with no lecture component, in which students work in teams on projects that benefit nonprofit organizations.

"There is definitely a broader array of options available to students who wish to forgo the commute to class altogether in exchange for online classes altogether in exchange for online classes that essentially provide the same content that professors regurgitate to students in lecture."

That leads to a big question: Why even have a traditional college course? Learning outside of this structure engages students more deeply, recent data indicate. Professors talking for 16 weeks or so, assigning readings, and then testing students often appears to yield a bunch of quickly memorized facts that are soon forgotten. In an era when students can easily grab material online, including lectures by gifted speakers in every field, a learning environment that avoids courses completely - or seriously reshapes them - might produce a very effective new form of college. (Author: Jeffrey R. Young, Date Unknown.)

◆ **Survey Says 80 Percent of Faculty Use Social Media in Their Teaching**

More than 80 percent of college faculty use some form of social media in their teaching, with online video by far the most popular application.

The survey, *Teaching, Learning, and Sharing: How Today's Higher Education Faculty Use Social Media for Work and for Play*, sought to learn exactly how higher education faculty use social media and makes distinctions across personal, in class, and professional (on the job but not while teaching) uses. The survey included questions on Facebook, Twitter, Myspace, LinkedIn, SlideShare, and Flickr, as well as blogs, wikis, video (both on YouTube and elsewhere), and podcasts.

- More than three-quarters of all faculty visited a social media site within the past month for personal use, and nearly one-half posted some content during that period.
- Faculty with more than 20 years of teaching experience are less likely to visit and less likely to post than are faculty with less than five years of teaching experience.
- Just over 90 percent of faculty use social media either for professional purposes or in their classes—or both, although in some cases the frequency is only monthly (20 percent) or rarely (19 percent).
- Nearly two-thirds of faculty have used social media in their courses— either during class or as part of an assignment— and those who teach online are more likely to do so.

However, despite the broad awareness and varied use of social media, many faculty are unconvinced it has a place in the college classroom and have concerns regarding its instructional value, privacy, and the time commitment. (*Faculty Focus*, April 22, 2011.)

◆ **Students Say Tablets Will Transform College, Though Most Don't Own Tablets**

More than two-thirds of a large group of college students say that tablet computers will change the way students learn.

Only 7 percent of the college students and 4 percent of the high school seniors owned one. Still, 69 percent of the college students said that tablets will transform higher education, and 48 percent said tablets will replace textbooks—at least as we currently understand textbooks—within the next five years.

As for the actual tablet owners in the survey, 73 percent said they liked digital formats more than print for reading textbooks. Only 32 percent of non-owners felt the same way.

That attitude may change once they try to study with tablets for an exam. Several pilot projects with tablets have found that students are frustrated with the difficulties in adding notes to digital books. But they still liked the machines. Nearly 20 percent of college students said they intend to buy a tablet in the next six months. (*Chronicle of Higher Education*, May 25, 2011, 12:01 a.m.)

FOOD AND AGRICULTURE INDUSTRY TRENDS

Trends and forecasts in food and agriculture point to opportunities for the U.S. as well as in Moraine Park's district where agriculture plays a vital role in the economy.

◆ **Crops will be genetically modified to be impervious to climate change**

Agricultural scientists believe they have isolated the "thermometer" gene in plants that allows them to sense and adapt to temperature changes. Tweaking the gene could create crops that would grow in any climate condition. (*Future Scope*, May-June 2010, p. 4.)

◆ **Indoor vertical farming will make cities more self-sustaining**

"Living" skyscrapers with entire floors dedicated to growing food could soon appear in city skylines. In an increasingly urbanized future, they will bring food growers and consumers closer together, and also extend "farmland" into a third dimension: skyward. A 30-story skyscraper on one city block could potentially feed 50,000 Manhattanites, using technologies available now. (*Cynthia G. Wagner*, "Vertical Farming: An Idea Whose Time Has Come Back," Mar-Apr 2010, pp. 68-69.)

◆ **The world has entered a new era of food insecurity**

Higher food prices, rapidly growing numbers of hungry people, and intensifying competition for land and water resources mean that nations must better manage their limited resources or face possible food shortages. (*Lester R. Brown*, "How to Feed 8 Billion People," Jan-Feb 2010, p. 28.)

◆ **A potential food collapse may result from aquifer overpumping**

Water tables are now falling in countries that together contain half the world's people. An estimated 400 million people (including 175 million in India and 130 million in China) are currently being fed by farms and processes that rely on overpumping. Saudi Arabia has announced that, because its major aquifer is largely depleted, it will be phasing out wheat production entirely by 2016. (*Lester R. Brown*, "How to Feed 8 Billion People," Jan-Feb 2010, p. 30.)

THE NEW MEGATREND: SUSTAINABILITY

Business megatrends impact how companies compete. Such transformations arise from technological innovation or from new ways of doing business, and many factors can spur the process of change. Business megatrends may emerge from or be accelerated by financial crises, shifts in the social realities that define the marketplace, or the threat of conflict over resources. Examples of past megatrends are globalization, the IT revolution, and the quality movement.

◆ **Sustainability qualifies as an emerging megatrend.** Over the past 10 years, environmental issues have steadily influenced encroached on businesses' capacity to create value for customers and shareholders. The rise of new world powers, notably China and India, has intensified competition for natural resources (especially oil) and added a geopolitical dimension to sustainability. Carbon dioxide emissions and water use are fast becoming central to a firm's perceived performance and stakeholders expect companies to share information about them. These forces are magnified by escalating public and governmental concern about climate change, industrial pollution, food safety, and natural resource depletion. Consumers in many countries are seeking out sustainable products and services. Governments are setting higher levels of pollution regulation. Further fueling this megatrend, thousands of companies are placing strategic bets on innovation in energy efficiency, renewable power, resource productivity, and pollution control. What this all adds up to is that managers can no longer afford to ignore sustainability as a central factor in their companies' long-term competitiveness. Developing new technologies related to energy efficiency and conservation is an important challenge for both research and development. (*The Harvard Business Review - The Sustainability Imperative by David A. Lubin and Daniel C. Esty, May, 2010*).

◆ **The building industry is going through a sweeping transformation to be "green".** The LEED (Leadership in Energy and Environmental Design) program through the US Green Building Council is increasingly being adopted for new construction. Retrofitting existing buildings to be energy efficient is also a significant trend, fueled in part by readily available government grants and rebates.

Sustainable technologies - also called cleantech or greentechy - improve financial performance by using less energy and materials, having less waste and toxins. Cleantech is now an established investment category in the public markets, and Greentech companies reportedly now receive a third of all equity investments. New market sectors include thin-film solar, biofuels, bio-plastics, carbon trading, wetlands banking and water quality trading. (Progressive Investor, Sustainable business.com.) New occupations are being recognized whose purpose is support green economy growth. (<http://www.onetonline.org>)

◆ The National Center for O*NET Development, as part of its efforts to keep up with the changing world of work, investigated the impact of green economy activities and technologies on occupational requirements and the development of New and Emerging (N&E) occupations. Results of the research led to the identification of green economic sectors, green increased demand occupations, green enhanced skills occupations, and green new and emerging (N&E) occupations. These occupations are now reflected in the O*NET-SOC system and range from Greenhouse Gas Emissions Report Verifiers to Chief Sustainability Officer. (*Greening of the World of Work: Implications for O*NET-SOC and New and Emerging Occupations, February, 2009*).

◆ The impact of the green economy has resulted in changes to work and development of unique worker requirements for green new and emerging occupations. There is a need for educational

programs to ensure that academic programs include learning activities that enable students to acquire these skills. The report reflects opportunities for new programs, continuing education topics and updates to current programs. See the O*NET Green Task Development Project report for a listing of task for each occupation.

(November 2010, <http://www.onetcenter.org/reports/GreenTask.html>).

Implication for education: The sustainability trend suggest opportunities for course and program revision and development across the curriculum to prepare students for changing workforce needs, and provide continuous skills development for workers to maintain their workplace effectiveness. (Supplier Sustainability Assessment, Wal-Mart, <http://walmartstores.com/Sustainability/9292.aspx>.)

TECHNOLOGY TRENDS

◆ Trends in higher education

It's clear that moving data storage and some software functions to the cloud saves money for most institutions. (*EDUCAUSE: ECAR Research Bulletin 4, 2010.*)

In an effort to cut costs, state and local governments are expected to adopt cloud computing, virtualization, service-orientated architecture, open-source software, and geospatial technologies at a compound annual growth rate of 22% over the next five years. (*Federal Computer Week, December 23, 2009.*)

The electronic delivery of books, journals, and data continues to be experimented with on campuses as a way to hold down costs for students. The competition in e-readers, in particular, is heating up and higher education is a prime market. (*EDUCAUSE: ECAR Research Bulletin 2, 2010.*)

Electronic publishing may make only a short stop in dedicated readers; the ability of the cloud to store texts and more is likely to overtake other efforts to distribute 'books' in the long run. (*O'Reilly Radar, October 28, 2009.*)

Digital technology now makes it easier for instructors to write their own 'flexbooks', incorporating text, simulations, video, and more. (*Argus Leader, June 7, 2010.*)
(*Planning for Higher Education, Oct-Dec, 2010.*)

◆ Smart grid model standard: smart idea

Homes, commercial and institutional buildings, and industrial facilities are about to get "smarter" when it comes to electrical use. The, ASHRAE/NEMA Standard 201P, Facility Smart Grid Information Model, will control systems in homes, buildings, and industrial facilities to manage electrical loads and generation sources in response to communication with a "smart" electrical grid, as well as to communicate information about those electrical loads to utility and other electrical service providers. The creation of this standard is a strategic element in driving development of a nation-wide smart electrical grid while increasing energy efficiency, occupant productivity, and cost-effectiveness in safe secure buildings." (*Buildings, September, 2010.*)

Dated: June 30, 2011

Moraine Park Technical College 2011 Environmental Scan