MICHIGAN STATE UNIVERSITY

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Collegiate Employment Research Institute

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Under the Economic Turmoil a Skills Gap Simmers

What you will learn!

Sourcing and retirements are profoundly changing the entry level skills and abilities new college graduates need to gain meaningful employment.

Internships and co-ops are replacing the traditional starting job that most new college graduates entered just five years ago.

Competency expectations have increased significantly across all sectors of the economy; skill enhancement is no longer confined to the manufacturing and finance sectors but is being pushed by firms from agriculture, professional and scientific services, health, education, entertainment, and non-profit organizations.

A young professional's ability to build and sustain a professional network has emerged as one of the most critical skills a new graduate must possess for success in their first assignment.

Employers expect new hires to be STAR performers before they even start their first job.

Introduction

Prior to the disruption within the U.S. economy, a result of the combined collapse of the housing and financial sectors in the fall of 2008, demand pressures were building within the college labor market in response to companies desperately seeking talent to replace their aging Boomer workforce. The loss of organizational and technical knowledge that companies may encounter over the next decade could be extensive, according to DeLong (2006). One strategy in knowledge management is to recruit young professionals, directly from college campuses, to help partially alleviate the problem. These young adults must come prepared to demonstrate higher levels of proficiencies and abilities than those who graduated five years ago.

But knowledge loss is only part of the picture. The knowledge-based economy requires a different type of professional then one prepared for the more routine, task specific work of a production oriented economy. Delong asserts that "knowledge-intensive work is much more interdisciplinary, requiring the integration of expertise across a wide range of subjects" (pg. 16). IDEO, a California product design company, refers to today's professionals as T-shaped, possessing both depth and breadth (Estrin, 2009). This shift in the type of work being undertaken requires a young college graduate not only to command knowledge of their academic major but demonstrate a set of abilities that allow them to cross boundaries, including communications, cultural, social, knowledge, and urban systems.

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Given the ramifications of these economic pressures and shifts, it is surprising that there has not been a much louder alarm raised about this abilities gap, especially among the college community. ABET (Accreditation Board for Engineering and Technology) accreditation guidelines for engineering and technical programs anticipated skill and ability shifts. The guidelines challenge faculty to look ahead to anticipate emerging skills or a change in the emphasis on certain skills that could impact the preparedness of engineers and technology graduates for employability in the knowledge-intensive workplace. Unfortunately, little effort has been expended on looking ahead; it has been hard enough bringing students up to current levels of skill preparedness, expected by employers under Criterion 3 of ABET. Yet, we have noticed a profound change occurring, not just in the type of skills being requested by employers, but, also in the level of importance employers were placing on certain skills and competencies for entry level positions.

This research brief presents the results of our investigation into the changing expectations of employers on the competencies that they expect new college graduates to possess upon entry into their companies. We did not limit our focus to engineering and technical majors but cast our net to include all academic majors and employers from across the economy. Throughout this report we have made a concerted effort to be consistent in our language attributed to specific skills and competencies. We consider these skills and competencies to transcend job specific abilities and should be considered meta-competencies. Meta-competencies transcend a specific situation and can be applied across different situations depending on the context of the assignment or task. When the U.S.'s economy begins hiring again, the gap in abilities required for access to meaningful employment will become clear and no longer ignored.

Why the acceleration in skill acquisition?

The skill/competency/ability transformation that grabbed the attention of the nation in the early 1990's culminated in the Secretary's Commission on Achieving Necessary Skills (SCANS) report and the Accreditation Board for Engineering and Technology (ABET) Criterion 3 ability-based outcome set. Both efforts were a result of companies repositioning themselves from nationally focused to global-interconnected enterprises. This transition required a dramatic shift in skill and competency acquisition for much of the nation's workforce. First, the types of jobs shifted. Entire categories of jobs were eliminated and the new job descriptions required more advanced skills, competencies and abilities; and these jobs placed more reliance on "soft" or "people" skills. Second, companies pared costs by reducing training programs which would allow workers to develop competencies on the job, and, thus pushed skill development back into the K-12 and higher education systems. As a result candidates for employment were expected to demonstrate abilities in key skill areas even before they started their employment. While much of the early attention was on older workers who lacked technical skills and the repositioning of blue collared workers, the ABET standards made it clear that, for the college educated workforce, employer expectations were for expanded and enhanced skills at the entry level. Some twenty years later colleges and universities can exchange high fives knowing that they met this challenge. The only problem is that new demands in the workplace have shifted skill requirements again!

Today, the abilities employers expect new college graduates to demonstrate the first day on the job have been ratcheted up to an "*über* level". With only one or two exceptions no new skills are being demanded. Rather the same core essential skills are being elevated to a higher level of competency across nearly every sector of the economy. Several possible factors may be driving this acceleration in skill acquisition. First, the availability of highly educated labor expanded significantly when China, India, South Korea, and Eastern Europe became major players in the global economy. This vast pool of workers allowed companies to reposition assignments where they could capture the best return on investment. Second, the looming retirement from the front wave of Boomers (55 to 63 in 2009) has many companies desperate to fill enormous holes in their workforce. Both sourcing and workforce succession have driven the current escalation in skill and competency demands as we will illustrate.

Sourcing. Relocating jobs, currently referred to as sourcing, has been around for a long time. Sourcing was often dependent on the relationship between the cost of labor (wages, skills, and productivity) and the costs of the other factors (land, capital, finances, and technology) important in production. Technology is now the major contributor to repositioning labor. The convergence of a global computer network with the opening of large economies that could supply vast quantities of manpower to the world's economic enterprise has allowed employers to tap into a highly educated and skilled labor pool that can effectively sustain operations 24/7. By identifying common work assignments that can be replicated anywhere, employers quickly saw the advantages of opening offices in other countries and shifting positions from the U.S. to China, India, Russia, Poland, or Brazil.

To illustrate this shift the normal distribution curve depicted in Figure 1 represents the job knowledge, skills, competencies and abilities required from workers across a job function(s). The job knowledge, skills, competencies and abilities around the mean are very similar. In other words they are homogenous or common. Employers have two choices (among many). One option would be to convert these common functions into technology, either incorporating task specific software or technology enhanced machinery or instruments. A good example of software development would be in accounting where Quicken has not only become sophisticated but has also become very easy to use by non-accountants. This software has allowed tax preparation to be done by individuals at home or shifted preparation to low-cost centers in India, for example. Advancement in laboratory equipment for clinical tests has transformed the job functions of medical laboratory technologists who are no longer burdened by conducting repetitive tests; these tests are now handled by technicians with two year degrees or skills obtained through certification. The second option is to export certain job functions to location in areas with high quality labor that is available at lower wages than in the U.S. This aspect of sourcing has taken advantage of the access to highly trained labor in emerging economies in Asia, Eastern Europe, and South America.

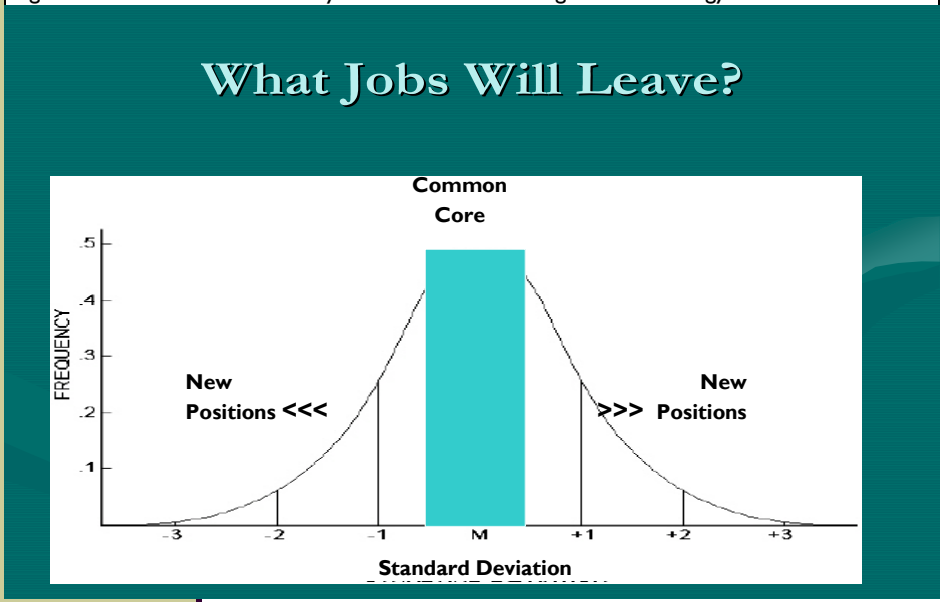
What has happened? The core skills have been removed and redistributed. Employers who are seeking potential employees for U.S. positions want candidates who possess skills and abilities that can handle assignments located several standard deviations from the mean; not the repetitive, routine tasks that have been source. As one moves away from the mean the likelihood of encountering unique, one-of-a-kind events increases.

An obvious implication is that candidates who can demonstrate abilities that allow them to cross boundaries (knowledge, cultural, social systems, for example) will be more valued by employers as potential employees.

Ponder this! Employers speak passionately about the shortage of qualified candidates for a variety of positions, especially among engineering and technical candidates. Yet we know that some graduates from these majors are quickly passed over in the selection process, even though demographics (supply and demand) may suggest a shortage in talent. What may be transpiring is a selection shift. Employers are seeking bachelor's candidates that can work away from the mean but find far fewer candidates than they desire. Too many college students are stuck around the mean, being mired in the standard academic content of their major, rather than pursuing learning opportunities further away from the mean.

Higher education's challenge! In response to this shift in employer expectations, undergraduate education needs to recognize the urgency of pushing more students through the core curriculum into coursework, lab assignments, practicum's, internships, etc. that position students in more challenging, more ambiguous learning environments where they can develop the abilities required to succeed after college. Not an easy task; since curricula are already packed and students' and faculties' expectations are set. Nevertheless, this shift in skills and abilities begs us to respond.

Figure 1. Removal of Core Entry Level Skills to Sourcing and Technology



Workforce succession. In every sector of the economy, companies face a potential tsunami wave of Boomer retirements. The leading half of the Boomer cohort (age 55 to 63) is enormous. Uncertainty abounds as to when this group of workers will actually retire. The turmoil roiling within the economy, circa 2009, has decimated retirement funds and made post-retirement health care coverage nearly unaffordable for many Boomers. Boomers may well stay in their jobs as long as they can to recoup as much of their retirement resources as possible. Plus, Boomers simply like to work! Even though the pipeline is clogged with retirement resistant Boomers, companies are desperate to find the talent to keep their operations running when these retirements finally materialize. Many of these companies have serious workforce problems. Take the aerospace and defense sector as an example. A recent Deloitte Consulting study of manpower needs in this sector revealed that nearly 60% of aerospace and defense companies already felt they were in a manpower crisis or one was immediately eminent. Nearly 25% of the current workforce is retirement eligible with only 10% of the workforce under the age of 30 and 20% in their 30s and early 40's. Approximately 15% are over the age of 69. Managers who are facing workforce demographic shifts need new employees that can effectively perform at higher level positions within the organization than where new college graduates have traditionally started. (See DeLong for additional examples of companies facing serious workplace disruptions as a result of Boomer exodus from the workplace.)

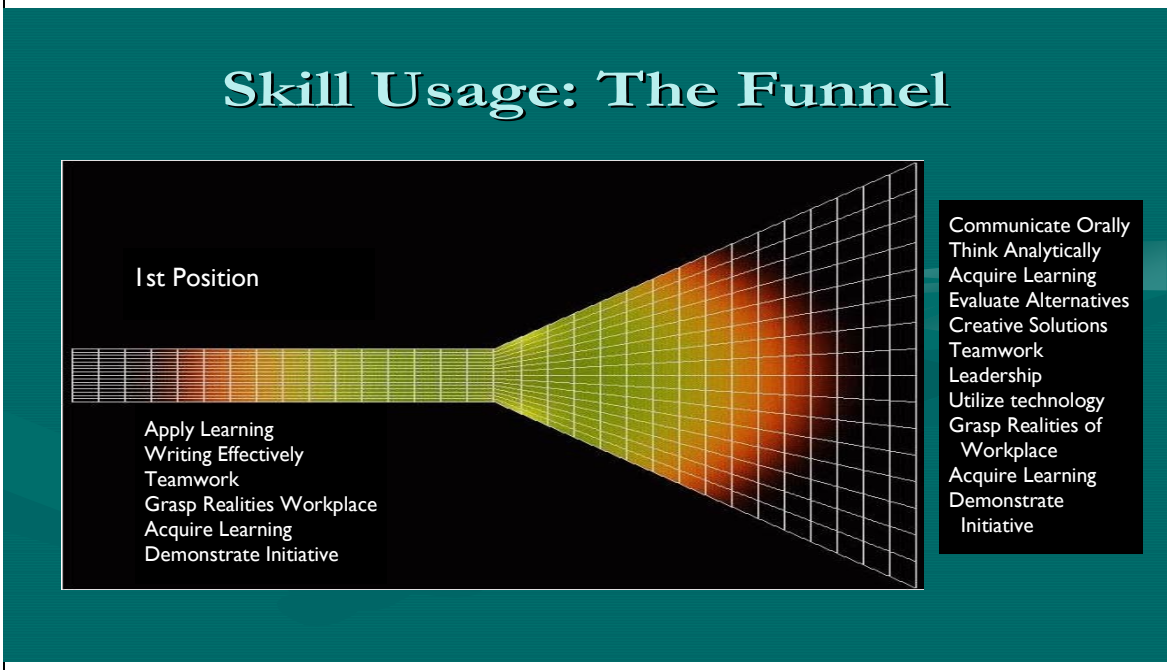
Consider the funnel in Figure 2 as a representation of a graduate's entry (circa mid to late 1990's) into the workplace with their first job post-graduation position being the entry point at the left or the narrow stem of the funnel. Even though the new employee may bring an array of skills into the workplace, our research during this period showed that success in this first position was predicated on a few key skills: quickly converting college acquired learning to the workplace, writing effectively, working effectively in a team, acquiring new knowledge as quickly as possible to carry out job functions, being able to grasp the realities of the workplace (how the organization explicitly and implicitly operates, often referred to as organizational socialization), and demonstrating initiative .

The journey through the narrow neck of the funnel varies across different types of positions, sectors of the economy, and size of organization. Throughout the 1980's new college hires remained in their first position approximately 48 to 60 months (4 to 5 years); by the early 1990's tenure in first positions was halved to 24 to 30 months. During the dot.com period many new hires remained less than a year in their first position; today, the poor economy may be trumping the erosion of loyalty toward companies by encouraging longer tenure in one's position (16 to 24 months). Still, young adults have an urge to surf jobs for experiences and determine where they fit (see Chao and Gardner) which may reignite once the economy recovers enough to generate new employment opportunities.

Moving quickly through their first experience, whether they change companies or are repositioned in their organizations, young adults entering the wide opening at the funnel mouth must dramatically expand and shift their skill sets and competencies to be successful in their next position. First, they will be called upon to utilize higher order thinking skills (the upper levels of the Bloom taxonomy, for example, and certainly beyond disciplinary problem solving) including analyzing, synthesizing, evaluating, and creating information and knowledge. The ability to communicate ideas, both justifying their positions, and persuading organizational coworkers and clients to adopt their recommendations with a willingness to negotiate modifications, has become essential. Supporting advanced critical thinking and

communication, are effective team performance, leadership that supports and advances the team and organization, utilization of available technologies to maximize production and service practices (reducing costs) and remaining vigilant to the dynamics of the organization.

Figure 2. Skill Funnel Depicting the Skills Used in Starting Job Compared to Skills Required for Second or Third Position Post Graduation



Ponder this! As employers scramble to acquire young talent to replace their retiring workers, managers are literally dealing with Swiss cheese. Their workforce, demographically, has major holes left unfilled during previous economic downturns or a bottom-line mentality of cost containment by minimal staffing even during periods of high profitability. The managers in waiting (those in their 30's and early 40's) comprise a relatively small proportion of the workforce; thus when the Boomer's solid portion of the cheese is removed companies face significant manpower shortages that can severely disrupt their organizations. In order to sustain the tacit knowledge of the organization as well as the level of talent necessary to sustain the organization, companies' succession plans (if they have one) call for accelerating the hiring of young talent and quickly infusing them into mid-level positions to back-up those moving up to fill exiting Boomers (Some companies even lack the personnel to move into Boomer slots and will have to position relatively new hires without a lot of experience into key positions). How have their requirements affected the funnel? ***Essentially the left portion, the stem, has been eliminated. The starting job of 5 or 10 years ago no longer exists. Employers want new college graduates to be able to function in positions associated with the right side of the funnel.***

Campus Challenge! The program orientation of career services and the mentality of faculty in general have been on the traditional first job. All the gears mesh in pushing upper class students into starting jobs that reflect the resumes built on a limited number of co-curricular experiences and a college program often lacking expectations that match the level being established beyond campus. The challenge is to engage undergraduates so they can excel at higher levels of performance (being able to demonstrate key competencies at advanced levels) not only in their academic majors but through the co-curricular programs and activities common on campus. How does elevating expectations change how we work with students and when?

Studies to Understand Skill Escalation for New College Hires

We wanted to gain a better understanding of the skill shift, which is brought up in nearly every discussion we have with employers, in a more systematic way. An archive of starting positions, dating from 2003 through 2009, offered an opportunity to examine the type of skills and competencies organizations were requesting, the change in frequency across time which may signal a new alignment in skill demands, and the emergence of new skills. This examination was followed with a series of questions in a survey to employers that explored the importance of selected skills and competencies in the hiring of newly graduated college age young adults and the growth in their importance over the past five years.

Part I: Comparison of Position Announcements

The Iowa State University's career management system contains an active archive of job postings for both full-time hires and internships and co-ops that spans the period between 2003 and 2009. The archive contains nearly 21,000 individual position descriptions. The system is searchable using key words. Based on initial conversations with key employers and our own observations of the recruiting process we established a list of key terms that could be counted by their occurrence in employer-created position descriptions over the time period.

We identified eleven skill or competency clusters to be tracked over time. Position descriptions are not consistent in the wording used when requesting specific skills, competencies or abilities as organizations differ in their definitions and practices. We tried to address this variation by grouping key words as tightly around a general definition as possible. The following table provides the key words that were grouped within each skill category.

Table 1. Key Words Associated with Skill Categories That Served as Basis for Position Comparisons between 2003 and 2009

Skill Category	Key Words
Analytical Abilities	analy*
Communication Skills	communication
Creativity	creative*
Innovation	innovate*
Customer Service	customer
Diversity	divers*
Global Understanding	global* + internat*
Plan a Project	plan*+ project*
Manage a Project	manage*
Team Contribution	team*

Full-time positions. The positions descriptions were filtered in two ways. First, we filtered and clustered majors/disciplines based on their alignment within the six Iowa State University colleges: College of Agriculture and Life Sciences, College of Business, College of Design, College of Engineering, College of Human Sciences, and College of Liberal Arts and Sciences. Engineering graduates have encountered some of these competencies, skills, and abilities as part of their curricula as a result of ABET accreditation standards established with the roll out of ABET Criteria 2000; and, they expect to see these skills and competencies reflected in the position descriptions, interviews, and selection processes for the jobs that they are seeking. A comparison between groups would allow us to determine if there was a difference between academic programs with strong external ability/competency-based accreditation requirements and programs that may not accentuate to the same degree, the skills and competency development requested in the workplace.

A second filtering was based on the active posting date by academic year for the following periods: 2003-2004, 2004-2005, 2005-2006, 2006-2007, 2007-2008 and 2008-2009. We have no *a-priori* reason that a specific event or series of events triggered the escalation of skill requirements; but rather a steady shift over the past five to ten years. By creating time intervals we can observe the progress of the shift and compare the time changes by academic group.

The following two tables show the shift over time in the emphasis employers place on these skill sets in their position descriptions. Data are included for those colleges and time periods with sufficient responses to make the interpretation of results meaningful.

A quick perusal of Table 2 for full-time engineering entry level position descriptions indicates that employers are addressing these competencies with increasing frequency in their posted positions. The frequency of appearance of terms related to analytical skills and to team skills has increased approximately 50% in the past five years. Interestingly, the frequency of appearance of "communication" and "customer" has remained relatively unchanged to, perhaps, showing a slight downward trend. "Plan*" and "project*", however, have increased steadily 25-40% over this time period. "Plan*" and "project*" are of particular interest to the engineering disciplines because they now appear at a higher frequency than the competencies of analysis, communication, teamwork and customer focus. It is also important to recognize that these two competency areas do not even appear in the ABET Criteria for Accrediting Engineering Programs developed approximately ten to fifteen years ago. Throughout Criterion3 focus is placed on ability demonstration at the "system, component, process, experiment, or problem level". The word "project" does not appear.

Table 2. Competencies Referenced in Engineering Full-time Positions Descriptions

Engineering	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	Fall 2009
Analy*	31%	34%	35%	35%	39%	42%	46%
Communication	35%	37%	38%	30%	33%	37%	31%
Team*	30%	35%	40%	37%	44%	45%	45%
Customer	27%	27%	26%	20%	21%	23%	25%
Global*/ Internat*	11%	11%	8%	10%	13%	14%	16%
Innovate*	7%	6%	9%	7%	10%	11%	4%
Divers*	9%	6%	6%	5%	8%	11%	12%
Plan*	39%	38%	41%	41%	43%	48%	56%
Project*	45%	48%	52%	50%	55%	54%	56%

Without the spotlight of accreditation such as ABET's upon engineering programs, employers, none the less, have established very similar ability and competency outcome expectations of graduates in non-engineering disciplines, (Table 3). Expectations for team related skills and planning related skills are particularly strong. There are some significant variances observed across the non-engineering disciplines. Analytical skills appear in College of Agriculture & Life Sciences position descriptions at nearly the same frequency as engineering position descriptions; College of Business position descriptions also frequently address analytical competence. Interestingly, College of Agriculture & Life Sciences and College of Business position descriptions address "communication" more frequently than any of the others.

Non-Engineering	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	Fall 2009
Analy*	30%	35%	31%	34%	33%	32%	34%
Communication	34%	40%	44%	37%	38%	39%	34%
Team*	36%	39%	38%	38%	41%	42%	41%
Customer	28%	33%	33%	20%	22%	25%	28%
Global*/ Internat*	13%	9%	7%	14%	14%	16%	16%
Innovate*	9%	7%	7%	6%	8%	9%	11%
Divers*	11%	8%	5%	6%	8%	10%	12%
Plan*	37%	33%	35%	34%	38%	42%	43%
Project*	27%	27%	26%	28%	32%	33%	28%

Table 3. Competencies Referenced in Non-engineering Full-time Position Descriptions

Only the College of Design's and College of Human Sciences' position descriptions address "Team" at less than a 40% frequency: 30% and 29%, respectively. "Plan" related skills are critical to College of Agriculture and Life Sciences graduates; this competency set now appears in well over a 50 % of position descriptions!

Experiential Positions (internships and co-op). A serendipitous question arose while analyzing the information on full-time positions as to what may have occurred over the same time period in the skill demands for experiential education (internship and co-op) positions. The archives also contained information on internships and co-ops which was extracted and categorized in the same manner as for full-time positions. The following two tables present the frequency of skills demanded by employers over the past several years.

Table 4. Skills Requested in Engineering Internship and Co-op Positions

Engineering	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	Fall 2009
Analy*	NA	36%	34%	34%	27%	30%	37%
Communication	NA	33%	32%	27%	29%	26%	23%
Team*	NA	28%	33%	28%	35%	33%	41%
Customer	NA	18%	15%	10%	13%	11%	12%
Global*/ Internat*	NA	6%	6%	9%	9%	12%	12%
Innovate*	NA	7%	4%	5%	8%	10%	5%
Divers*	NA	6%	2%	4%	7%	6%	4%
Plan*	NA	29%	27%	26%	31%	34%	31%
Project*	NA	48%	55%	53%	50%	46%	54%

A review of the experiential education position descriptions for engineers shows similar, but less well defined trends. Clearly employer expectations that engineering students be able to function well in team environments is increasing significantly. Employers expect engineering students to bring analytical skills to these positions. Perhaps surprisingly, employers now speak to the need for sophomores and juniors to demonstrate an ability to work in a "project" setting at a higher frequency than they speak to any of the classical competencies of analysis, communication and teamwork! Only analytical skills and teamwork skills are addressed more frequently than "plan*", albeit, just slightly.

Comparing the data for the Fall 2008, Spring 2009 and Fall 2009 timeframe (last two columns on right) for engineering experiential education position descriptions in Table 4 with those for full-time position descriptions of four or five years ago, (Table 2) one observation is immediately noteworthy: the frequency of appearance of *analy*, team*, global*/internat*, innovate*, divers*, plan*, and project** in today's co -op and intern position descriptions are very near, at, or exceed those frequencies for fulltime positions of just five years ago! Today's employer expectations of coops and interns are comparable to their expectations of entry level employees just five years ago.

Table 5. Skills Requested in Non-engineering Internship and Co-op Positions

Non-Engineering	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	Fall 2009
Analy*	NA	23%	21%	23%	21%	22%	23%
Communica-	NA	38%	36%	31%	38%	34%	34%
Team*	NA	28%	30%	28%	32%	31%	32%
Customer	NA	16%	15%	13%	12%	15%	16%
Global*/	NA	6%	5%	15%	14%	11%	18%
Innovate*	NA	6%	2%	3%	5%	6%	6%
Divers*	NA	4%	3%	4%	6%	4%	5%
Plan*	NA	29%	31%	27%	30%	31%	32%
Project*	NA	37%	34%	33%	40%	38%	32%

For non-engineering students seeking experiential education opportunities, employer expectations for *communication, global*/internat*, and project** skills and competencies are now at or exceeding their expectations of entry level employees of just five years ago! Employer expectations for College of Business students' teamwork skills are increasing steadily. "Global*/Internat* competencies are increasingly important to College of Agriculture and Life Sciences, College of Business and College of Liberal Arts and Sciences students seeking experiential education opportunities. "Plan* skills and competencies are significantly important for intern students in agriculture and design curricula.

In comparing these co-op and intern skill and ability requests to requests for full-time hires, the alignment between full-time positions five years ago and internships and co-ops today might not seem as dramatic as our emphasis contends. An even more noticeable alignment emerges when we separate intern and co-op positions that will involve on-campus interviews or meetings with employer representatives from those simply soliciting resumes from students. For internships and co-ops involving on-campus interviews, the level of skills being requested are noticeably higher than for similar experiences where employers are not visiting campus.

The next step was to determine how broadly these nine competencies and abilities were being viewed as critical to the hiring of seniors and recent college graduates. A set of questions was developed and inserted into Michigan State University's annual college hiring survey .

Ponder this! Where did the starting position, traditionally associated with college graduates, go? Compare the level of skills demanded for current internship and co-op positions (especially those positions targeted for on-campus recruiting) with the skills requested in pre-2005 full-time positions. We see evidence that the internship and co-op (especially the second experience, if a student has more than one) has replaced the full-time starting position of just five years ago.

Michigan State University has identified the following 12 competencies as the essential package that undergraduates need to development during college in order to successfully transition.

- Communicating Effectively
- Solving Problems
- Balancing Work and Life
- Embracing Change
- Working Effectively in a Team
- Working in a Diverse Environment
- Managing Time and Priorities
- Navigating Across Boundaries
- Acquiring Knowledge
- Thinking Critically
- Performing with Integrity
- Developing Professional Competencies

A guide to the 12 Essentials can be found at www.careernetwork.msu.edu under Guides.

Part II: Employer Perceptions of the Skill and Ability Shift

The language used in the job descriptions is often general and may not reflect the level of competency desired by the employer. Communication competencies serve as an example. A requirement of "good communication skills" does not say much about what is being actually requested. The skill could embrace good writing skills (both on paper and through interactive modes), oral presentation abilities, and empathetic listening and understanding for team membership. Where along the spectrum of communication abilities are employers pushing for higher levels of competency?

To gain a better understanding of what employers wanted in new employers and to clarify some of the ambiguity in some of the terms used in our review of position descriptions, we discussed with a small group of employers (about 15) the requirements they were seeking. This discussion allowed us to probe deeper into the exact competencies being sought. We derived from this discussion nine central competencies and abilities that appeared to be resonating with our employers and being emphasized in current recruitment efforts. Some of these are familiar in that they appear on traditional lists of employability skills (see MSU's 12 Essentials in the sidebar). What sets them apart is the higher level of demonstrated ability that employers want to see new hires bring to the table.

The next step was to determine how broadly these nine competencies and abilities were being viewed as critical to the hiring of seniors and recent college graduates. A set of questions was developed and inserted into Michigan State University's annual college hiring survey that would be administered in the fall of 2007. For each competency/ability employers were asked to rate its importance to entry level positions at their companies or organizations on a 5-point Likert scale (1 = not at all important to 5 = essential). This question was followed by a query as to the change in the level of importance associated with each competency/ability over the past five years (less important, same level of importance, more important).

The competencies/abilities were presented in a format consistent with the language used in the ABET Criterion 3 Ability-based Outcomes. The nine ability-based statements included in the survey were:

- ***"An ability to plan and manage a project"***
- ***"An ability to build a successful team"***
- ***"An ability to build and sustain working professional relationships"***
- ***"An ability to coach, mentor and develop others"***
- ***"An ability to analyze, evaluate and interpret data from various sources"***
- ***"An ability to create new knowledge"***
- ***"An ability to use oral persuasion and justification in order to provide direction for organization"***
- ***"An ability to engage in continuous learning"***
- ***"An ability to understand impact of company practices in a global (economic, societal, and environmental) setting"***

Survey results. Of the nearly 950 employers that provided responses to the recruiting survey, 897 completed the section which contained the competency/ability questions (the survey for K-12 educators did not include these questions). Building and sustaining professional relationships was rated the most important skill that new college hires would be asked to demonstrate in their initial position. Forty percent (40%) rated this ability as essential. Table 6 provides the average importance rating and the breakdown along the importance continuum for each ability statement.

Table 6. Importance of Selected Abilities in Starting Positions for New College Hires

Ability	Average	Essential (%)	Important to Highly Important (%)	Not at all Imp. to Somewhat Important. (%)
Building Working Relationships	4.11	40	57	3
Analyze, Eval. & Interpret Data	3.93	34	58	8
Engage in Continuous Learning	3.87	30	61	9
Oral Persuasion and Justification	3.46	20	61	19
Plan & Manage a Project	3.22	15	57	29
Create New Knowledge	3.20	12	63	25
Global Understanding	3.03	12	54	35
Build a Successful Team	2.87	12	43	45
Mentor Others	2.84	11	36	52

(5 = Essential to 1 = Not At All Important)

Table 7 shows the growth in importance to the entry level selection over the past five years. Nearly 50% of the respondents indicated that *building and sustaining professional relationships* was more important today than half-decade ago. The other half already considered this competency to be extremely important. Other competencies being considered more important today include *planning and managing a project*, *analyzing, evaluating and interpreting information*, and *engaging in continuous learning*.

Global understanding is emerging as an important competency among employers. Yet, if you compare the weight placed on *global understanding* in this section to the presence of a global competency in actual position descriptions, you can see a big difference. Employers appear to be articulating a stronger need for young professionals to demonstrate global understanding in their early career. However, the same level of importance is not communicated to students when the position announcements and employer representatives reach campus.

Table 7. Growth in Importance Over Past Five Years of Selected Abilities in Starting Positions for New College Hires (3 = More to 1 = Less)

Ability	Average	More (%)	Same (%)	Less (%)
Building Working Relationships	2.48	49	51	0
Analyze, Eval. & Interpret Data	2.42	43	57	0
Engage in Continuous Learning	2.42	43	57	0
Oral Persuasion and Justification	2.30	31	68	1
Plan & Manage a Project	2.44	45	55	0
Create New Knowledge	2.34	35	64	1
Global Understanding	2.33	35	63	2
Build a Successful Team	2.28	29	70	1
Mentor Others	2.24	26	73	2

Comparison by Selected Employer Characteristics. Several comparisons were made based on selected characteristics of the responding organizations: organizational size (fewer than 100, 101 to 500, 501 to 5,000, and over 5,000), economic sector (manufacturing, financial services, professional and scientific services, for example), academic majors being sought, and geographic area of recruiting activities.

Economic Sector: Respondent's organizations were classified according to their primary North American Industrial Classification code (NAIC) which allows us to examine the skills by sector of the economy. While all sectors are represented among the respondents, responses were highest in manufacturing, finance, professional and scientific services, retail, and government. Information will be shared for those sectors with sufficient responses to make the interpretation of results meaningful. One adjustment was made to the agricultural sector as all organizations with a focus on agriculture and food production systems (services to food processing) were collapsed into one category.

A total importance score was computed by totaling the importance rating for each ability statement. The total score provides a sense of the importance given to the entire package of abilities. The highest score would be 45 (where every ability is rated essential) and the midpoint would be 27. The average total score was 30.5, positioning the package between important and highly important for starting positions in the organization. The manufacturing sector is often perceived as the leader in skill/competency enhancement because this sector took the lead, along with financial services, in pushing the 1990's skill revolution. Yet 15 years later, the manufacturing sector lags behind other sectors in requesting higher levels of demonstrated competency and ability. Today it is AGRICULTURE, RETAIL, FOOD & LODGING, INFORMATION SERVICES, FINANCIAL SERVICES, PROFESSIONAL AND SCIENTIFIC SERVICES and NON-PROFIT organizations that are placing a higher importance on these professional development skills and abilities.

The total score was modified by removing two abilities: building a team and coaching, mentoring and developing others because their overall ratings were slightly below important. This modification changed the top cluster of sectors which now include UTILITIES and MANUFACTURING while NON-PROFIT organizations fall out. These removed ability statements were found to be very important to non-profits, as well as health services, food and lodging, and retail organizations. Graduates transitioning into positions in these organizations will be asked to demonstrate their proficiency in these areas quickly.

Sectors did vary on the importance placed on individual abilities. For example, Arts and Entertainment organizations place very high importance on managing a project but much lower importance on oral persuasion and justification while the emphasis is reversed for companies in the Transportation sector. The top five rated abilities for each sector (from highest to lowest rated) can be found at the end of the paper.

Organizational size: Size does make a difference. Small companies create many of this country's new jobs and, as a result, are a significant consumer of college prepared talent. The question is whether small companies feel the same pressures as large companies to escalate the ability level of entry position skills. We are particularly interested in how "fast growth" companies" (those with 10 to 100 employees, annual revenues of $150 million, and a commitment to growth and who have emerged from the entrepreneurial or start-up phase) skill and competency requirements compare to the largest companies. Upon examination of the total importance score, the largest companies had an average score of 32.2, which was significantly higher than the other three size categories. However, the magnitude of the difference was only 2.5 points separating top from the bottom scores. The small separation suggests, however, that companies regardless of size are placing greater emphasis on this package of skills in their entry hiring considerations.

An interesting pattern emerges when the nine abilities are examined separately. In tests of the significance between size groups, no differences were revealed for three: analyzing, evaluating, and interpreting information, engaging in continuous learning, and planning and managing a project. Organizations over 500 employees rated the importance of building social capital higher than smaller companies while mentoring others was more important for the largest and the smallest companies. For the remaining four abilities, global understanding, oral communication, team building and creating new knowledge, higher ratings were reported by large companies. However, the actual difference between highest and lowest was often less than .5 (on a 5 point scale) which suggests, in a meaningful context, that the ratings were very similar. The interesting pattern that emerges is that for most of the nine skills the largest and the smallest (fast growth) organizations rated the importance of these abilities higher than organizations with between 101 and 4,999 employees.

In examining the change in importance of these skills as a component of entry level competencies over the past five years, another interesting observation emerged. Organizations with 101 to 4,999 employees have witnessed a more rapid rise in importance compared to the smallest and largest organizations. When we rank the skills according to their rise in importance over five years, the same group of skills emerges across all size categories. Planning and managing a project, building social capital, analyzing and interpreting information, and engaging in continuous learning appear across all groups. Global understanding ranks in the top five with organizations with more than 101 employees while fast growth companies are emphasizing increasing the importance of creating new knowledge. The following table lists the six skills that are increasing the fastest by organizational size.

Table 8. Six Abilities/Competencies Which Have Grown the Most in Importance over the Past Five Years (%)

Ability/Competency	< 100 Employees	101-500 Employees	500-4,999 Employees	> 5,000 Employees
Planning and Managing a Project	42	47	47	44
Building Social Capital	40	52	54	54
Analyzing, Eval. and Interp. Information	40	45	43	45
Engaging in Continuous Learning	40	46	50	38
Understanding Global Context	25	36	40	45
Creating Knowledge	35	32	38	36

Geographic Considerations: Respondents could be sorted by where they focused their recruiting of college talent. Employers could either manage an international talent acquisition program, recruit throughout the United States, or focus in one or several of eight geographic sub-regions of the U.S. (Northeast, mid-Atlantic, Southeast, Great Lakes, Upper Plains South-central, Southwest, and Northwest). We were surprised at how consistent the ratings on importance were across these geographic parameters. We found only a few muted differences for planning and managing a project where organizations recruiting in the mid-Atlantic, Southeast, and Northwest tended to rate this competency of lower importance compared to other regions. International and U.S. employers tended to place more importance on building an effective team.

International and U.S. employers indicated that the importance in the recruiting process for all nine abilities had risen noticeably over the past five years. Typically one-third to one-half of these employers placed more importance on these since 2003. The responses were more varied across the geographic sub-regions with some abilities experiencing only modest increases in importance while others were seeing significant emphasis being placed on them. The sub-region employers tended to focus on fewer abilities with attention on planning and managing a project, building and sustaining professional relationships, analyzing, evaluating and interpreting information, and engaging in continuous learning. Close behind these four were global understanding and creating new knowledge.

Academic major: When the skill movement took hold in the early 1990's, initiatives to identify appropriate skill sets and, subsequently, modify college curriculum were pushed by external accreditation authorities for engineering and technical programs found within engineering departments. Attention has remained focused on technical programs, specific competencies and abilities identified in ABET accreditation and continuous curriculum improvement processes for engineers began to seep into other areas of campus (specifically, communication and teamwork) and even other accreditation protocols for programs with external accreditation authorities. We anticipated that employers seeking engineers and technical talent may have already shifted to higher ability levels. However, we were unsure how the possible shift was impacting other academic majors. We sorted employers based on the academic majors they typically accepted in their talent pool. The categories were kept broad except for business which was broken into accounting, marketing and PR, and business (all other majors). What we found proved interesting.

Comparing majors using the total importance scale, we observed very little difference. The lowest total score was reported in Agriculture and Natural Resources at 29.6 while the highest score or 31.5 came from employers who hired All Majors. The spread was just 2 positions on the scale. Where were engineering majors? They are found near the lower end, just below the overall mean of 30.4.

Scanning the ratings for the individual importance ratings for each ability or competency, every major group reported the same three skills with the highest importance scores: building professional relationships, analyzing, evaluating and interpreting information, and engaging in continuous learning. Oral communication skills were also included in the highly important skills for marketing/advertising/PR and All Majors. Engineering scores across seven skills fall towards the lower end in importance compared to other majors. In two areas, analyzing, evaluating and interpreting information and planning and managing a project, the importance for engineers rated near the top. Unlike the 1990's shift in skill requirements which was driven by engineering and technical needs, this upward shift in abilities spans all majors and, in fact, is being lead by employers in the service sector.

The change in importance only illustrates this point with more clarity. Nearly every ability statement has witnessed a noticeable increase in importance over the past five years. No where have the changes been more dramatic than in Agriculture/Natural Resources, Marketing/Advertising/PR, Social Science/Humanities, and Accounting. Across all majors the biggest shifts in importance are associated with managing and planning a project, building professional relationships, analyzing information, and engaging in continuous learning. Creating new knowledge has grown in importance for IT, Marketing/Advertising/PR, and Social Sciences/Humanities. Global understanding has grown exceptionally fast in importance in Accounting, Agriculture/Natural Resources and All Majors. A summary of the growth in importance of all nine abilities for each group of majors can be found in the Appendix.

Star Performers: Revisiting Robert Kelly's Study on Highly Productive Professionals

In the early 1990's Robert Kelly conducted a study at Bell Labs with Janet Caplan (HBR, July-August 1993) on what core skills and competencies separated an organization's star performers from all other employees. His HBR report focused on engineers where his book took a more general approach. What he found was profound and simple. Star performers could not be traced back to high college grade point averages or some of the other traditional benchmarks of collegiate success. Rather, it boiled down to nine key work abilities or as he refers to them work strategies. Here are his components for a star performer as defined in his HBR article:

Organizational Savvy: ***ability to navigate the competing interests in an organization be they individual or group; ability to promote cooperation, address conflicts, and get things done***.

Show-and-tell (persuasion and justification): ***ability to present your ideas persuasively in written and oral form.***

Perspective: ***ability to see your job in its larger context and taking other viewpoints like those of the customer, manager, and work team.***

Followership: ***ability to help the leader accomplish the organization's goals and thinking for yourself rather than relying solely on managerial direction.***

Leadership: ***ability to formulate, state, and build consensus on common goals and working to accomplish them.***

Teamwork effectiveness: ***ability to assume joint responsibility for work activities, coordinating efforts and accomplishing shared goals with coworkers.***

Self-management: ***ability to regulate your own work commitments, time, performance level, and career growth.***

Networking: ***ability to get direction and immediate access to coworkers with technical expertise and to share your won knowledge with those who need it.***

Taking initiative: ***ability to accept responsibility above and beyond your stated job, to volunteer for additional activities, and to promote new ideas.***

Initiative is the critical skill among these nine abilities and is closely associated with the remaining two key components in his model: technical competence in one's field as demonstrated by mastery through theory, application, and practice. A star performer is well grounded in the discipline chosen for study in college and can apply that knowledge to the workplace. The final component is cognitive abilities that process and create knowledge at higher levels (analyzing, synthesizing, evaluating and creating, according to Bloom's taxonomy) and can cross disciplinary boundaries.

Kelly's abilities embrace many of the competencies and abilities found on the right hand side of the funnel in Figure 2 and include many of the abilities we selected and presented to employers in our survey.

Ponder this! Abilities that Kelly found that clearly differentiated star performers from their colleagues in an organization are now the abilities that organizations now seek for new, entry-level hires. College graduates must now come to the organization as STAR PERFORMERS!

Moving to the Tails: Opportunities and Challenges

Without offending those whom argue that a liberal arts education is about preparing the individual's mind and not preparing the individual for a vocation, our challenge is to move beyond this aging contention and recognize the urgency of higher education in positioning students for a very complex and demanding world which will require them to be employed for the majority of their lives after graduation. Higher education must facilitate the growth of its future alumni through a blend of support and challenge – if the evidence we have presented is correct – then we have to raise the level of challenge so that our students can gain mastery of knowledge making and relational/social skills and abilities which facilitates movement toward the tails of the distribution curve in Figure 1. Fortunately, we don't have to make the argument for this shift as Robert Kegan in ***In Over Our Heads: the Mental Demands of Modern Life*** presents a strong case for upgrading the educational experience when he contends that most of us, especially our youth, are "unable to put the world together at the required order of complexity, being in over his (or her sic) head, being inadequately understood" (pg. 41) by adults.

He challenges us to integrate the curriculum to achieve a "cross-categorical consciousness" as he related in the following analogy where we can substitute faculty for the lamp-maker:

"If five lamps are lit in a large living room, how many sources of light are there? We might say that there are five sources of light. Perhaps the maker of each lamp, genuinely committed to bringing us into the light, will be partial to his own and bid us to come to the source. Or at best, some generous spirit of eclectic relativism may obtain, and the lamp-makers may concede that there is a benefit to our being exposed to each of the lamps, each separate source having little to do with the other except that, like food groups of a well-balanced diet, each has a partial contribution to make to a well-rounded, beneficial whole. But quite a different answer to the question of how many sources of light there are in the room is possible – namely, that there is only one source. All five lamps work because they are plugged into sockets drawing power from the home's electrical system. In this view, each lamp is neither a contender for the best source of light nor a mere part of the whole. Each lamp is powered by the whole, expressive of the whole. And if the lamp-maker's mission is not first of all to bring us to the light of his particular lamp but to bring us to the light of this single source, then he can delight equally in the way his particular lamp makes use of this source and in . Each lamp is powered by the whole, expressive of the whole. And if the lamp-maker's mission is not first of all to bring us to the light of his particular lamp but to bring us to the light of this single source, then he can delight equally in the way his particular lamp makes use of this source and in the way other lamps he would never think to create do also. His relationship to the other lamp-makers is neither rivalrous nor laissez-faire, but co-conspiratorial: the lamp-makers breathe together." (pg. 50)

Yet in today's world all undergraduates need to be pushed into, led through, and supported throughout a collegiate experience that challenges them at higher levels of complexity where the skills and abilities presented in this paper are

In his post-modern critique of learning systems he contends that we leave traditional modes of inquiry which are categorically based (concrete, inference, generalizations, hypothesis) and elevate learners at least to modes that deal with complex systems and eventually trans-complex systems (where more than one complex system interacts). To do this requires the learner to be able to cross boundaries, to author their own learning (self-regulation, self-formation, autonomy), to test paradoxes and contradictions, and to explore relationships between different forms of learning (see chapter 9). Kegan lays out this challenge because so very few are asked to experience this level of complexity in their learning; in fact, the advanced or complex levels of learning have been generally reserved for individuals pursuing advanced degrees (PhDs) and a highly select group of undergraduates. Yet in today's world **all undergraduates need to be pushed into, led through, and supported throughout a collegiate experience that challenges them at higher levels of complexity where the skills and abilities presented in this paper are manifest.**

Here are Kegan's recommendations as to what learners need to claim while in school in order to develop the skills, competencies and abilities which will be expected of them in various roles in their adult lives:

* ***Exercise critical thinking:***
* ***Examine ourselves, our culture, and our milieu in order to understand how to separate what we feel from what we should feel, what we values from what we should value, and what we want from what we should want.***
* ***Be a self-directed learner (take initiative; set our own goals and standards; use experts, institutions, and other resources to pursue these goals; take responsibility for our direction and productivity in learning)***
* ***See ourselves as the co-creators of the culture (rather than only shaped by culture)***
* ***Read actively (rather than only receptively) with our own purpose in mind.***
* ***Write to ourselves and bring our faculty (sic) into our self-reflection (rather than write mainly to our faculty (sic) and for our faculty (sic))***
* ***Take charge of the concepts and theories of a course or discipline, marshalling on behalf of our independently chosen topic its internal procedures for formulating and validating knowledge. (pg. 303)***

Final Thoughts

As hard as external forces may be pushing (government, industry, and parents paying college tuition), the attempts to anoint college as the new training grounds for the workforce that will emerge from the ashes of our current economic wreck has met with resistance from faculty who claim as their domain the intellectual development and reason of young adults. Both sides need to step back and re-embrace each other. Faculty must be open to alternative forms of learning. The prevailing positivist didactic approach that sees knowledge as permanent and tangible (Styhre, 2003) can be enhanced by accepting dialectic learning from interactions and reflection on real world experiences (Raelin, 2009). Both learning modalities contribute to preparing students for a successful transition, especially if they can begin to solve problems, and create new information as it applies to the situations they find themselves in after graduation.

The other side has to realize that focusing college education on the development of specific job skills through professional curriculum that is highly structured limits the capacity of students to accommodate to the shifting work environment. This narrow approach is not responsive to the demands of knowledge-intensive work. The skills discussed in this paper are mega-competences and should not be viewed as specific job skills, competencies, or abilities. Meta-competence, as Raelin (2007, 2009) contends, transcends the specific skill context allowing the student to adapt to situations as they arise.

Practitioners who are charged with preparing students for a transition into a highly demanding and constantly changing workplace (the tails bring more uncertainty and unknowns) can not wait for the above debate to be resolved. We can take the initiative to do a few things that can assist students. As Raelin (2009) points out, reflection plays an important role in learning but we always seem to do it after the event or experience. A more effective form of reflection would occur while the student is involved in the event (termed reflection-in-action by Raelin) so they can see how their interaction with their environment brings skills into use, how they are adapted, and how they are learning. We have to be more intentional in inserting ourselves at strategic moments while a student is involved (more than just check up on them) in a work environment (great co-op and internship advisors already do this but it has to become standard for all of us).

Practitioners have to move away from the role of administrator to that of facilitator where as a mentor, coach, or designer of learning experiences they can stimulate student learning. How can you do this? Raelin suggests that we sustain an active dialogue with students so that they can begin to discern the patterns of how a skill or set of skills are developed over a set of experiences (see Unpacking Your Study Abroad Experience).

We have laid out the presence of a significant shift in the meta-competences that will be required by young adults immediately upon entry into the workforce. Right now it is hidden behind the economic wreckage of the 2008-2010 recession. As the country's economic activity picks up in 2011, employers will surge into the labor market looking for highly skilled, adaptable labor – college students that can operate away from the normal, routine entry jobs of yore. We need not be caught by surprise when the skill gap becomes a pressing problem.

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Appendix 1: Top five skills (highest to lowest) in each of nineteen economic sectors

Agriculture: building professional relationships, engaging in continuous learning, analyzing, evaluating information, managing a project and coaching and mentoring others.

Utilities: analyzing, evaluating and interpreting information, building professional relationships, engaging in continuous learning, creating new knowledge, and oral persuasion and justification.

Construction: analyzing, evaluating and interpreting information, engaging in continuous learning, building professional relationships, oral persuasion and justification, and managing a project.

Manufacturing: building professional relationships, analyzing, creating and evaluating information, engaging in continuous learning, oral persuasion and justification, and managing a project.

Wholesale: building professional relationships, engaging in continuous learning, analyzing, evaluating and interpreting information, oral persuasion and justification, and creating new knowledge.

Retail: building professional relationships, building a team, oral persuasion and justification, engaging in continuous learning, and analyzing, evaluating and interpreting information.

Transportation: building professional relationships, oral persuasion and justification, analyzing, evaluating and interpreting information, engaging in continuous learning, and global understanding.

Information: building professional relationships, analyzing, evaluating and interpreting information, engaging in continuous learning, creating new knowledge, and oral persuasion and justification.

Finance: building professional relationships, analyzing, evaluating and interpreting information, engaging in continuous learning, oral persuasion and justification, and creating new knowledge.

Real Estate & Leasing: building professional relationships, oral persuasion and justification, analyzing, evaluating and interpreting information, engaging in continuous learning, and building a team.

Professional and Scientific Services: analyzing, evaluating and interpreting information, building professional relationships, engaging in continuous learning, oral persuasion and justification, and managing a project.

Administrative Services: building professional relationships, engaging in continuous learning, analyzing, evaluating and interpreting information, oral persuasion and justification, creating new knowledge and global understanding.

Education Services: building professional relationships, engaging in continuous learning, analyzing, evaluating and interpreting information, oral persuasion and justification, and managing a project.

Health Services: building professional relationships, engaging in continuous learning, analyzing, evaluating and interpreting information,

Arts and Entertainment: building professional relationships, engaging in continuous learning, oral persuasion and justification, managing a project, and creating new knowledge.

Food & Lodging: building professional relationships, engaging in continuous learning, building a team, analyzing, evaluating and interpreting information, and oral persuasion and justification.

Non-profit Organizations: building professional relationships, engaging in continuous learning, analyzing, evaluating and interpreting information, building a team, and managing a project.

Government: building professional relationships, analyzing, evaluating, and interpreting information, engaging in continuous learning, oral persuasion and justification, and creating new knowledge.

Appendix 2: Five Abilities Rated Highest in Importance with Abilities Increasing Faster in Importance in Pareheses, Sorted by Company Size

Less than 100 Employees: build professional relationships, analyze, evaluate and interpret data, oral persuasion and justification, plan and manage a project, engage in continuous learning, and global understanding; (plan and manage a project, build professional relationships, analyze , evaluate, interpret data, engage in continuous learning, and create new knowledge)

101 to 500 Employees: build professional relationships, analyze, evaluate, interpret data, oral persuasion and justification, create new knowledge, and engage in continuous learning; (build professional relationships, plan and manage a project, engage in continuous learning, analyze, evaluate, interpret data, and global understanding)

501 to 4,999 employees: build professional relationships, engage in continuous learning, analyze, evaluate and interpret data, oral persuasion and justification, and create new knowledge; (build professional relationships, engage in continuous learning, plan and manage a project, analyze, evaluate, and interpret data, and global understanding)

Over 5,000 employees: build professional relationships, analyze, evaluate, and interpret data, engage in continuous learning, oral persuasion an d justification, global understanding, and create new knowledge; (build professional relationships, analyze, evaluate, and interpret data, global understanding, and plan and manage a project

Appendix 3: Five Abilities Rated Highest in Importance with Abilities Increasing Faster in Importance in Parentheses, Sorted by Academic Majors

Engineering: analyze, evaluate, interpret data, build professional relationships, engage in continuous learning, oral persuasion and justification, create new knowledge, and plan and manage a project; (plan and manage a project, build professional relationships, analyze, evaluate and interpret data, engage in continuous learning)

Computer Science and IT: build professional relationships, analyze, evaluate, interpret data, engage in continuous learning, oral persuasion and justification, and create new knowledge; (plan and manage a project, build professional relationships, create new knowledge, and engage in continuous learning)

Accounting: build professional relationships, analyze, evaluate, interpret data, oral persuasion and justification, and create new knowledge; (build professional relationships, analyze, evaluate, interpret data, engage in continuous learning, and global understanding)

Marketing/Sales/Advertising/Public Relations: build professional relationships, engage in continuous learning, oral persuasion and justification, analyze, evaluate, interpret data, and plan and manage a project; (building professional relationships, engage in continuous learning, analyze, evaluate, interpret data, create new knowledge, and plan and manage a project)

Business (all others): build professional relationships, engage in continuous learning, analyze, evaluate, interpret data, oral persuasion and justification, and plan and manage a project; (build professional relationships, plan and manage a project, engage in continuous learning, and analyze, evaluate, interpret data)

Sciences: analyze, evaluate, interpret data, build professional relationships, engage in continuous learning, oral persuasion and justification, and plan and manage a project; (build professional relationships, plan and manage a project, analyze a, evaluate, interpret data, and engage in continuous learning)

Health/Social Work: build professional relationships, analyze, evaluate, interpret data, engage in continuous learning, build a successful team, and oral persuasion and justification; (build professional relationships, analyze, evaluate, interpret data, engage in continuous learning, and plan and manage a project)

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Agriculture/Natural Resources: build professional relationships, engage in continuous learning, analyze, evaluate, interpret data, plan and manage a project, oral persuasion and justification; (engage in continuous learning, build professional relationships, plan and manage a project, analyze, evaluate, interpret data, and global understanding)

Social Sciences/Humanities/Liberal Arts: build professional relationships, analyze, evaluate, interpret data, engage in continuous learning, oral persuasion and justification, and plan and manage a project; (build professional relationships, analyze, evaluate, interpret data, engage in continuous learning, and plan and manage a project)

All Majors: build professional relationships, oral persuasion and justification, engage in continuous learning, and global understanding (engage in continuous learning, build professional relationships, plan and manage a project, and global understanding)

About us:

Established in 1985 by an act of the Michigan legislature, the Institute was charged with collecting and analyzing information on the initial employment (upon graduation) for the college educated workforce from all four-year institutions within the state. Later two-year graduates from the State's community college system were included in this responsibility. The Institute's charge rose from concerns of a "brain drain" during and following the economic recession of the early 1980's. Until the legislature rolled the Institute's funding into the University's overall budget in 1990, the destination of graduating seniors was the primary research focus. Without the legislative mandate, statewide reporting collapsed as several institutions no longer felt compelled to provide their information.

In line with this work on graduate destinations, research was started on: the socialization experience of new college graduates in the workplace; learning strategies used to enhance workplace performance; impact of co-op and internships on transition outcomes; and recruiter practices, such as use of resumes and behavioral interviewing. A major project which has stimulated discussions and program initiatives is on the acquisition/development of complementary skills and competencies that are required in the work, in addition to disciplinary mastery. This work has evolved into examination of co-curricular activities that support social learning/community of practice.

The research readily identifiable with the Institute is "Recruiting Trends." Michigan State University, for over 30 years, conducts an annual survey of national employers seeking their intentions for hiring new college graduates. This study provides a snapshot of factors influencing the college labor market, as well as in-depth examination of key issues in college recruiting.

The Institute continues to provide leadership in the support of career development programs, student learning initiatives, and strategic planning around student outcomes.

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