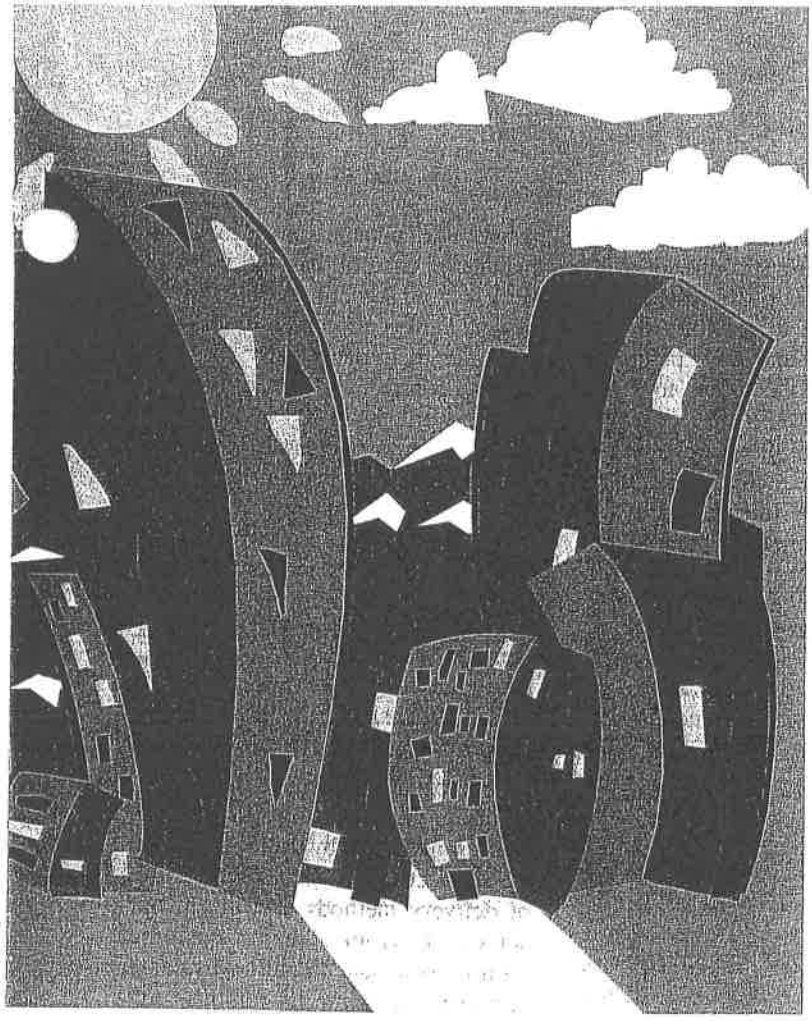
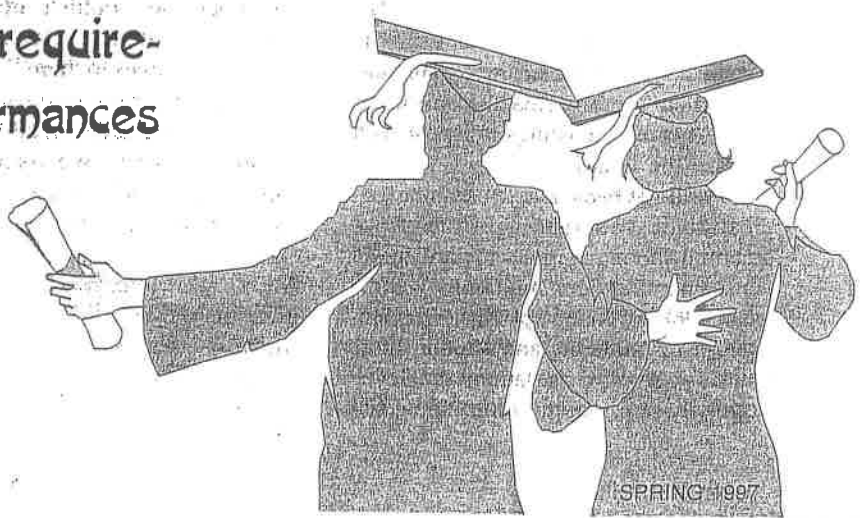


Prepared to Perform?

Employers Rate Work Force Readiness of New Grads

by Philip D. Gardner and Wen-Ying Liu

Are new graduates really prepared for entry-level positions in the work force? A new survey of employers compares entry-level job requirements to the on-the-job performances of new hires.



Employers say college students are poorly prepared for the new and changing workplace. Educators and career counselors agree there is a problem. However, these three groups fail to agree on the level of skills, competencies, knowledge, and behaviors college students need to achieve success in today's constantly changing technological and demanding workplace.

Recently, a study was designed at the Collegiate Employment Research Institute at Michigan State University to measure the skills and performance of college graduates in their first jobs. Employers agreed to observe their new college hires at work and compare the requirements of the jobs to their employees' work performance. A group of employers participated in a pretest of the survey to ensure that the survey could be used in the workplace. This article presents the results of the pretest.

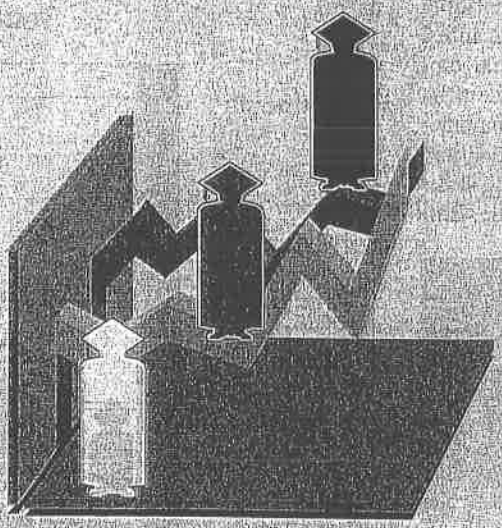
Employers Define the Job Requirements

The survey showed employers required the average entry-level performance to be at Bloom's "analysis" level (see "Survey Methodology"). That is, in general, employers expected entry-level hires to be able to "break down information into its appropriate parts, discern the relationships between these parts, and organize information to support conclusions and generalizations." As Figure 1 illustrates, performance expectations differed for technical and nontechnical graduates.

Each of the nine major competency groups was divided into sets of specific tasks to be rated. Reading preparedness, for instance, was rated on nine tasks, mathematics on seven.

Rating the desired skills of new hires within those major competencies, employers of technical graduates said that they expected high levels of performance in the areas of manipulating and retrieving information, analyzing and synthesizing data, reasoning and problem-solving, and performing various mathematical procedures. Employers placed slightly less emphasis on the need for such skills as reading, goal

Survey Methodology



One hundred and fifty employers, members of Midwest ACE, were asked to participate in a survey designed by the Collegiate Employment Research Institute at Michigan State University; 92 agreed. Employers agreed to observe their new college hires in their initial work settings and compare positions' performance requirements with employees' work preparation.

Employers completed evaluations according to the type of graduates that were typically hired by their companies. Separate evaluations were conducted for technical hires (engineering, computer science, accounting, for example) and nontechnical hires (general business, social sciences, communications, etc.). In a few cases, an employer completed both types of evaluations. The employer's task was to evaluate new college hires on two scales: (1) their performance levels in the specific skills/competencies required by an entry-level job in their organization; and (2) their level of educational and social preparation.

This study tried to avoid some of the common faults of traditional studies of students' abilities. Most studies are conducted using broad definitions of required competencies or skills. Survey instruments tend to use such global and nonspecific terms as "communication skills" or "critical thinking." Even when researchers use the words "reading," "writing," or "listening" instead of "communication," researchers often fail to recognize the various components of a particular competency.

This study drew on work by Willard Daggett, president of the International Center for Leadership in Education and a proponent of rigorous and relevant academic skills, and Elizabeth Jones, research associate at the Center for the Study of Higher Education at Pennsylvania State University. Each expanded the definitions for selected skill components: Daggett in the areas of reading and writing, for example, and Jones with recent work on critical thinking. (Jones' study used focus groups and ethnographic methods rather than a survey. She identified components of critical thinking that can be used in future research.) Daggett's study of high school graduates was particularly noteworthy as it (1) defined the skills typically

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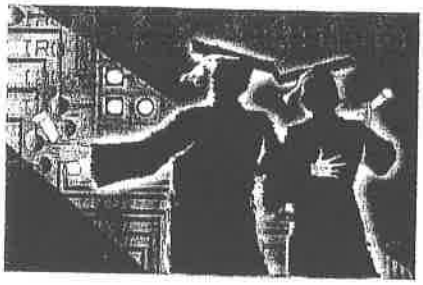
setting, coping with deadlines, and personal and organizational competencies. Performance levels for information systems, writing, and mathematics were rated lowest for nontechnical graduates.

Employer expected a high level of performance in reasoning and problem-solving and organizational skills among new nontechnical hires. Employers wanted nontechnical employees to excel in teamwork, conflict resolution, goal setting, time management, and critical thinking. Reading, personal, speaking, and listening skills ranked in the middle of the scale. Em-



ployers expected their nontechnical hires to be least proficient in analyzing data and mathematics.

It is important to note that the survey did not rate the importance of each skill or ability to the employer. For example, respondents said they expect all new hires to be able to write memos, reports, and proposals clearly and concisely. For some positions, however, writing may be the most desired skill; for others, writing may not be necessary to do the job.

Similarly, employers required technical and nontechnical new hires to be competent in mathematics; however, technical graduates (typically expected to perform a variety of sophisticated

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Figure 1

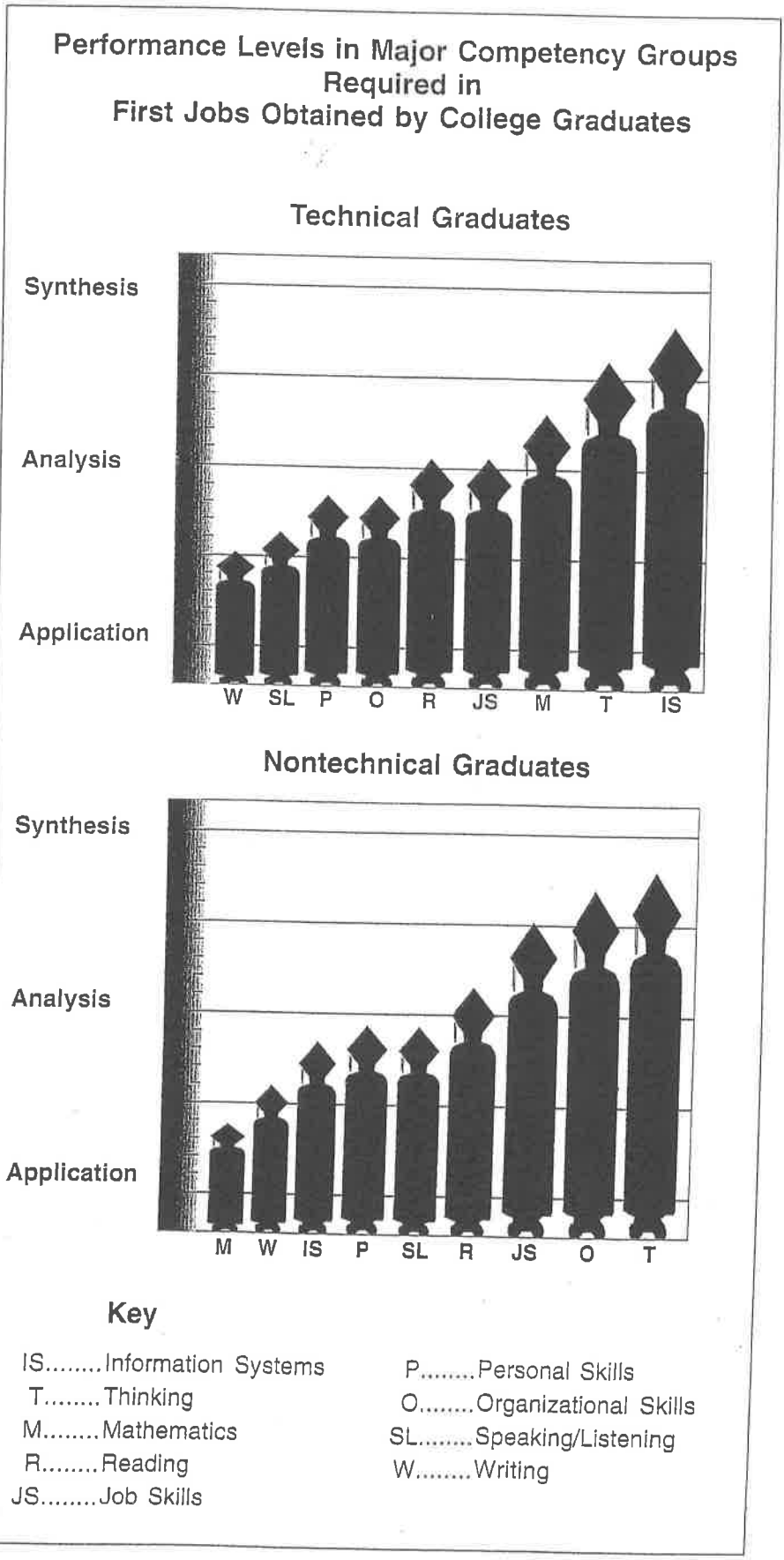

Figure 2

Skills/Competencies Receiving the Highest and Lowest Performance Ratings

Top Technical	Top Nontechnical
Add, Subtract, Multiply, Divide	Interpersonal Skills
Problem Solving	Problem Solving
Reasoning	Working As a Team Member
Analyze and Synthesize Data	Initiative
Understand Technical/Abstract Data	Decision Making
Working As a Team Member	Following Directions
Commitment to Learning	Setting Priorities
Differentiate Fact From Inference	Working Cooperatively/Competently
Enter, Manipulate, Retrieve Data	Self-Esteem
Interpret Information in Charts/Tables	Workplace Values/Ethics
Bottom Technical	**Bottom Nontechnical**
Locate Source of Information	Organize Information Into Logical Paragraph
Handling Conflict and Criticism	Write Legibly
Apply Rules of Grammar/Spelling	Take Notes and Develop Outline
Draft a Project Proposal	Reference Sources Correctly
Organize Information Into Logical Paragraph	Solve Ratio, Proportion, and Multiple Step Problems
Personal and Civic Responsibility	Create and Use Simple Statistics
Reference Sources Correctly	Proofread and Edit Material
Take Notes and Develop Outlines	Measure Using Standard/Metric Systems
Proofread and Edit Material	Draft a Project Proposal
Write Legibly	Apply Principles of Algebra/Geometry

mathematical procedures) were required to have a higher level of abilities than nontechnical majors, who are generally expected to perform only basic math skills at a high level.

In other words, specific positions required different levels of competency for each skill.

Figure 2 illustrates the specific skills employers required for both technical and nontechnical graduates. The top 10 required skills for technical positions included technical/content and applied thinking skills. Employers said they expected an entry-level employee to perform these skills at a 4.25 level on the Bloom scale, or with skills that place between "analysis" and "synthesis" in ability. In other words, technical graduates were expected to be able to apply their technical/content knowledge in abstract situations, compute mathematical calculations, structure and analyze data sets, and interpret findings at sophisticated levels. Skills falling at the bottom of the rankings were primarily writing related, and they included resolving conflicts, locating information, and involvement in civic activities.

Employers placed a high value on interpersonal skills and personal management among their nontechnical employees. The most important skills for a nontechnical employee included self-esteem, workplace values, time management, and taking initiative. The mean rating employers gave these top skills exceeded 4.22. Nontechnical entrants were expected to work both in teams and competitively (on their own); to bring strong interpersonal skills and initiative to the workplace; and to be able to think abstractly in problem-solving/critical thinking situations. Similar to technical graduates, writing skills were ranked among the group of skills (6 out of 10) with the lowest performance requirements. The remaining four skills involved mathematical procedures or measurement.

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Preparation for the Job

Employers said technical graduates were prepared best in mathematics and information systems (Figure 3); however, new hires were less than "adequately prepared" in writing, speaking/listening, and organizational skills. Nontechnical graduates were prepared best in speaking and listening; less so in mathematics. Employers believed that both groups were prepared to handle data/information, including its analysis and interpretation. In all other areas the ratings were about the same.

Employers believe new graduates were "slightly more than adequately prepared" to "highly prepared" in 10 specific skills (see Figure 4). Employers also named the 10 skills graduates were least prepared in, calling graduates "slightly below adequately prepared" according to the Likert scale.

Technical graduates proved to be best prepared in mathematical skills (7 of the top 10), two information system competencies (enter, manipulate, and retrieve data; and analyze/synthesize data), and their commitment to learning. Technical graduates were least prepared in four writing skills; presentation skills; interaction skills (observing verbal and nonverbal questions); and personal and civic responsibility. Overall employers believed technical graduates were poorly prepared to take on leadership responsibilities and to negotiate the business environment.

Interestingly, the mathematics skill of adding, subtracting, multiplying, and dividing was the highest rated skill for nontechnical graduate—as it was for the technical graduate—although nontechnical graduates were least prepared in advanced mathematical skills, according to employers. Nontechnical graduates also scored high on information/relational skills, in particular, working cooperatively, being a member of a team, and understanding and following directions. Nontechnical graduates proved less than adequately prepared in goal setting, handling conflict and criticism, and understanding workplace values and ethics. Similar to their technical counterparts, these students were not well prepared to write project proposals or negotiate

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included in school-to-work research by identifying their specific components; and (2) linked actual performance levels required of high school graduates in their first jobs to how prepared they were to perform those skills. These unique steps captured interesting differences between performance and preparedness.

Evaluations for this study were based on two measurement scales: Bloom and Likert.

Bloom: The performance scale was adapted from Benjamin Bloom's higher order thinking taxonomy, which is described in his landmark book, *The Taxonomy of Educational Objectives*. Bloom's taxonomy defines how learning is used according to six categories of educational objectives. Each category deals "with the recall or recognition of knowledge and the development of intellectual abilities and skills." Learning, Bloom wrote, progresses from the lowest level of basic performance to the highest or most complex level of performance. Bloom defined those stages as:

1. **Awareness (knowledge):** The ability to remember specific ideas, facts, or material. The basic level measures only recall of specific information.
2. **Comprehension:** Through communication, a student or worker is able to understand and use the information/ideas available to him/her. At this step, information may be altered to make it more meaningful/useful.
3. **Application:** The ability to use information in a new situation to solve problems.
4. **Analysis:** The ability to break down information into its appropriate parts, discern the relationships between these parts, and organize information to support conclusions and generalizations.
5. **Synthesis:** The ability to creatively assemble information/learning in a way not previously observed before. This step requires creative behavior although the worker remains bound by organizational protocols and methodological frameworks (engineering principles).
6. **Evaluation:** The ability to make selective judgments about the value of solutions and methods. These judgments may be quantitative or qualitative in nature, but they are made in conjunction with a prescribed criteria (self-selected or imposed), and are often the initial step in acquiring new knowledge or developing a new application, analysis, or synthesis.

Likert: Employers measured the educational or social preparedness of each new employee using a 5-point Likert scale where "1" meant "not at all prepared" and "5" meant "superbly prepared" with "3" (the midpoint) meaning "adequately prepared."

Because the two scales differ in length, a standard scale length, known as a "Z" score, was computed. Z scores allowed for the comparison between required performance and graduates' preparedness. When the two scores were not significantly different, it indicated that the graduates have been prepared to the performance level expected. When the comparison tilted in favor of the performance scale, then employees had not been prepared to the required level. If the preparedness scale was favored, the indication was that new hires were prepared beyond the initial required performance level.

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In all, 52 skills and competencies, grouped into nine categories, were surveyed.

The nine categories used, originally defined in the Daggett study, were 1) speaking and listening, 2) reading, 3) writing, 4) mathematics, 5) thinking and reasoning, 6) organizational, 7) analyzing analytical data, 8) job skills, and 9) personal skills.

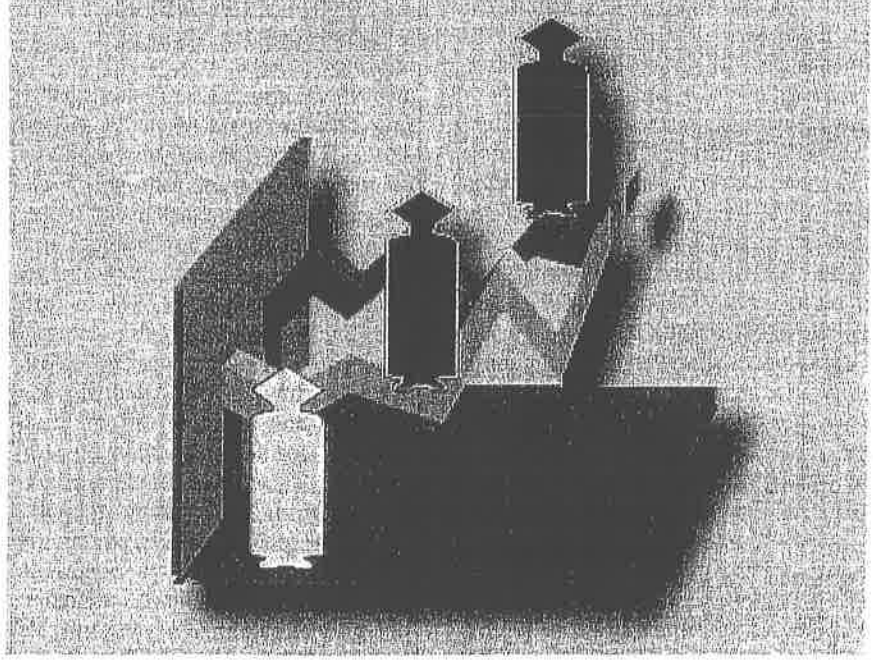
Each category was broken down into specific skills. The category of writing, for example, encompassed 10 skills, including applying rules of grammar and punctuation, composing letters and memoranda, locating sources of information, and drafting a project proposal.

The approach used in this study was unique in that: (1) a delineation of specific skills was made under general skill nomenclature, commonly employed in other studies; and, (2) comparisons with perceived preparedness showed where college graduates fell below or exceeded performance expectations.

It is also important to know what this study did not show. No effort was made to establish a ranking of skill/competency importance in the first job. Thus, a high level of performance in a certain skill doesn't guarantee success in an entry-level position. For example, a new graduate may be expected to perform team skills at Bloom's "application level," yet this skill may not be the most important skill for success in the position.

Second, while this study focused on the entry-level position or first position, traditionally, the educational experience does not target the first job as an outcome. Academics believe, rather, a college education prepares a student for a lifetime.

There are no guarantees that students will seek skills that they are lacking. Also, this study did not probe into the broader role of skill (competency) development across time or through other important life experiences.



construction of work/study portfolios have been advocated as ways to help students position themselves for workplace success. However, two key ingredients are often missing. First, faculty need to be committed to these activities. Thus, career services professionals must find ways to bring faculty into these programs. Second, time is needed for students to reflect on their education and other experiences as it relates to their future plans. Career services professionals need to show students how coursework and co-op and internship experience pieces fit together.

Skill development beyond the classroom is not a new idea. Student affairs professionals, residence hall advisers, and career development specialists are heavily involved in developing the "total student," often in collaboration with employers (i.e. co-op programs and internships). The challenge comes in aligning and meshing academic preparation with student development.

Endnotes

[1]Gardner, P.D. and Motschenbacher, G. "More Alike Than Different: Early Work Experiences of Co-op and Non-Co-op Engineers." Collegiate Employment Research Institute. 1993.

Bibliography

Bickson, T.K. and Law, S.A. "Global Preparedness and Human Resources: College and Corporate Perspectives." RAND Corp., 1994.

Bloom, B.S. (ed.). *Taxonomy of Educational Objectives.* Longman's Green and Co., LTD., 1956.

Business-Higher Education Forum. "Higher Education and Work Readiness: The View From Campus." 1995.

Daggett, W.R. "Preparing Students for the 1990s and Beyond." International Center Leadership in Education. 1992.

Gardner, P.D. and Motschenbacher, G. "More Alike Than Different: Early Work Experiences of Co-op and Non-Co-op Engineers." Collegiate Employment Research Institute. 1993.

Jones, E.A. "Defining Essential Critical Thinking Skills for College Graduates." Paper presented in 1995 at the American Educational Research Association Annual Meeting, San Francisco, CA.

Pascarella, E.T. and Terenzini, P.T. *How College Affects Students.* Jossey-Bass, 1991.

Scheetz, L.P. "Recruiting Trends 1993-94." Career Services and Placement, Michigan State University. 1993.