Maryland Community College Academic Deans and Department Chair Perceptions of Higher-Order Skill Proficiencies for Associate Degree Completers

By

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(Abstract)

The SCANS report issued in 1990 brought national attention to concerns about lagging competencies of US workers and their lack of preparedness for the high-performance workplace. Since the SCANS report, several national and statewide efforts have attempted to identify skill sets appropriate for success in the changing workplace. Recent discussion has included skill sets appropriate for college graduates. This study was designed to determine perceptions of Maryland community college chief academic officers and department chairs toward one such skill set, the Maryland Skills for Success, and whether they are appropriate learning expectations for associate degree completers. The Maryland Skills for Success (MSS) are comprised of five skill goals: (1) learning skills, (2) thinking skills, (3) communication skills, (4) technology skills, and (5) interpersonal skills. Three to five "learning expectations" elaborate what students should be able to accomplish under each skill goal to be successful in future work and learning.

The study involved a survey of 293 chief academic officers and department chairs at the 18 community colleges across Maryland. A 75 percent response rate was achieved. The survey assessed the extent to which respondents agreed that: (a) the Maryland Skills for Success are appropriate expectations for associate degree completers, (b) students currently achieve MSS expectations, (c) respondent's courses and programs contain specific learning objectives that require students to learn and perform such skills, (d) all Maryland community colleges should

teach and assess a common set of higher-order knowledge application skills.

Respondent ratings indicated that the Maryland Skills for Success represent valid learning expectations for associate degree completers. Deans were more favorable toward the MSS than were department chairs, and were more confident that students were required to learn and perform learning expectations similar to those listed in the MSS. The department chairs were also divided into groups to determine attitudinal differences by disciplines. The department chairs were more likely than the deans to agree that students currently achieve the MSS learning expectations. Most chair groups somewhat disagreed their courses and programs contained specific learning objectives requiring students to learn and perform the skills represented in the MSS. Of the chair groups, the English/fine arts/humanities, and the technologies/health care groups tended to produce significantly higher ratings than other chairs and supported the notion of Maryland community Colleges teaching and assessing a common higher-order knowledge application skill set.

Based on respondent ratings, the communication, thinking and interpersonal skill sets in the MSS have the best chance of gaining acceptance by colleges interested in integration of purposeful teaching and assessment of a higher-order skill set across the curricula. Respondent ratings also indicated that it is unlikely that the colleges would undertake a common initiative to teach and assess a common skill set like the MSS without intervention from the state. Respondents expressed distrust of bureaucratic intervention, were somewhat concerned about the difficulty of teaching and assessing the entire skill set, and felt that the skill sets were too broad to be feasibly taught. Recommendations include the need for extensive faculty development and the provision of incentives from the state educational agencies to provide support for colleges interested in teaching and assessing a common higher-order knowledge application skill set.

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CHAPTER ONE

INTRODUCTION OF THE STUDY

Introduction

The work place has changed over the last several decades. Many businesses are using “high-performance” strategies to produce high-quality goods and services using technology, automation, and innovative production techniques (Appelbaum & Batt, 1994; Bailey, 1993, 1997; Kochan & Osterman, 1994). Companies using these strategies seek highly skilled employees who are able to work more autonomously within data-rich environments, where they use analytical and decision-making strategies, as well as team interaction skills, to get the job done (Carnevale, Gainer & Meltzer, 1988; Secretary's Commission on Achieving Necessary Skills [SCANS], 1991).

Various national groups and blue ribbon commissions have endeavored to identify the skills workers need for a high-performance workplace. They decry the lackluster performance of education in preparing students for such work (Jones, 1996). Studies and reports of this type have been proffered by the Commission on the Skills of the American Workforce (1990), SCANS (1991), National Academy of Sciences (1992), the American Society of Training and Development (ASTD) (Carnevale, Gainer, & Meltzer, 1988) and the National Center for Postsecondary Teaching, Learning, and Assessment (Jones, et al., 1994). The basic tenets of these efforts are that “higher-order knowledge application skills,” a term coined by Dunfee and Keeton (1997, pg. 3), are at least as important as specific content or technical knowledge needed for job performance; and, that education

must purposefully teach such skills and assure that students can perform them (Jones, 1996).

Additionally, in 1990, the Bush administration and nation's governors developed *The National Educational Goals*, a framework of six goals established to provide the basis for educational reform in all states (National Education Goals Panel, 1996). These goals were later revised and expanded to eight by Congress. A National Education Goals Panel was established to monitor and report on progress and the panel quickly pushed for every state to establish clear standards for demonstrating student achievement. Goals three and six have implications for student preparation for the workforce. Goal three states: "All students will leave grades 4, 8, and 12 having demonstrated competency over challenging subject matter including English, mathematics, science foreign languages, civics, and government, economics, arts, history, and geography, and every school in America will ensure that students learn to use their minds well, so that they may be prepared for responsible citizenship, further learning, and productive employment in our Nation's modern Economy." (National Educational Goals Report 1996, p.6) Goal six, states: "By the year 2000, every adult in America will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship."(p. 6) Specifically, objective five under goal six states: "The proportion of college graduates who demonstrate an advanced ability to think critically, communicate effectively, and solve problems will increase substantially." (National Educational Goals Report 1996, on-line: http://www.negp.gov/WEBPG1)

This initiative set up a flurry of activity by state and national coordinating bodies. Many states have responded to the call for reform. In the state of Maryland, a framework

of higher-order knowledge application skills known as the *Maryland Skills for Success* was established and incorporated in the statewide high school performance assessment initiative (Oliver, Russell, Gilli, Hughes, Schuder, Brown, and Towers, 1997). All Maryland high schools are expected to assess student mastery of the Skills for Success within the learning goals established under the disciplines of English, mathematics, science, social studies and the arts. The Maryland Skills for Success (MSS) are comprised of five skill goals: (1) learning skills, (2) thinking skills, (3) communication skills, (4) technology skills, and (5) interpersonal skills. Three to five learning expectations elaborate what students should be able to accomplish under each skill goal (the *Maryland Skills for Success are listed in* Appendix A as part of the survey instrument).

While the Maryland secondary school system has begun to purposefully teach and assess the development of such skills, the Maryland higher education community has not done so (Langenberg, 1997). Indeed, higher education in general has received intense criticism for ignoring these issues (College Placement Council, 1994; Education Commission of the States, 1995, The Wingspread Group on Higher Education, 1993). Evidence that postsecondary institutions are effectively preparing students for the high-performance workplace is conflicting and controversial. Effectiveness indicators for higher education tend to focus on admission and enrollment patterns, cost, retention, financial aid, graduation rates, transfer rates, and transfer success (Roueche, Johnson, & Roueche, 1997). In a recent statement, Donald Langenberg (1997), Chancellor of the University System of Maryland, points to a possible double standard exhibited by higher

education in not vigorously addressing the attainment of necessary skills, while demanding that public schools do so. He stated:

> We must develop an educational system that promotes—and assessment mechanisms that measure, continuously and against well-defined standards—students' knowledge, skills, and personal qualities. We must abandon the notion that age and exposure to some particular quantity of formal instruction are relevant indicators of an individual's progress or ability to function in the classroom or on the job….[I]f we believe that our high school graduates can and must demonstrate through "performance" measures that they meet high standards, we should be able to embrace the same ideas for students of any age. (p. A64)

Until recently, little attempt was made to identify a comprehensive set of higher-order skills that should be an outcome of participation in higher education (Jones, Hoffman, Moore, Ratcliff, Tibbetts, & Click, 1994). Further, evidence that college students are able to perform critical skills necessary for success beyond college points to less than impressive picture (Barton & Lapointe, 1995; O'Banion, 1997; Jones, 1993; Roueche, Johnson & Roueche, 1997). Influential groups from within the ranks of higher education called for colleges to emphasize curricular priorities that focus directly on student learning for the workplace (Wingspread Group on Higher Education, 1993; O'Banion, 1997); and, to develop skill inventories and data sources upon which progress can be measured (Barton and Lapoint, 1995; Ewell, 1994; Jones, 1996).

Three recent discussions at the national level have attempted to identify higher-order skill learning outcomes for higher education. In 1994, responding to goal six of the National Education Goals, the National Center for Education Statistics (NCES)

commissioned several studies conducted mostly by the National Center for Postsecondary Teaching, Learning, and Assessment (NCTLA) to examine college-level expectations for higher-order skills in writing, speech, listening, critical thinking, and problem solving (Jones, 1996). Although the NCTLA skills have been identified, no comprehensive data are available on the extent to which colleges have embraced teaching and assessing such skills, nor about the attitudes of college personnel regarding the integration of these skills into college-level curricula. In 1995, the Education Commission of the States identified outcomes that clearly include higher-order knowledge application skills when they listed the following beneficial learning outcomes for community college students: (a) higher-order, applied problem solving abilities; (b) enthusiasm for continuous learning, (c) interpersonal skills, including communication and collaboration; (d) ability to bridge cultural and linguistic barriers; and (e) a well-developed sense of professionalism (pp. 6-7). Additionally, the National Postsecondary Education Cooperative's Working Group on Student Outcomes (Terenzini, 1997) completed a final report for the National Center for Educational Statistics on a comprehensive outcomes assessment framework for all institutions of higher education. Among their framework of student outcomes were communication and computational skills including reading, writing, oral communication; quantitative/computational, skills; information acquisition skills, technical and otherwise, higher-order cognitive and intellectual development, including critical thinking, problem solving, analytical and evaluative skills, formal and postformal reasoning, conceptual complexity, creativity, and moral reasoning (as a process). (p. 8)

Agreement on the definition of higher-order skills used to guide the curriculum has been difficult to achieve (Jones, 1996). More difficult still is resolving the debate

over whether these skills should be purposefully taught within the context of workplace needs, or whether students develop them as an outgrowth of involvement in liberal or general education (Berryman & Bailey, 1992). In the former case, the focus is on a discrete set of higher-order skills integrated across the curriculum and assessed as student learning outcomes. In the latter case, the approach focuses on students completing credits in specific courses normally categorized as general education. Higher-order skills develop from exposure to the inquiry methods or "ways of knowing" modeled within each discipline. In light of evidence that many students are not developing strong higher-order skills under traditional teaching and curricular structures, many researchers believe the purposeful outcomes-based approach warrants further exploration (Wingspread Group on Higher Education, 1993; Jones, et al. 1994). Additionally, those who have traditionally thought of the general education approach as the primary modality for transmitting higher-order skills are also calling for a more introspective and purposeful approach to the process. George Higginbottom (1995), editor of *Curriculum Models for General Education* summarizes what he call the "general education reformist agenda" (p.89)

> College educators…should define clearly and justify to each other what is essential to a college education, as well as prescribe a common set of learning objectives encompassing knowledge, cognitive and performative capabilities, the capacity for moral judgement, and dispositions of intellect and temperament. Furthermore, these learning goals should have a practical purport, enabling generally educated graduates to cope successfully with the myriad challenges of

> contemporary living and, in particular, with the requirements of competent, participative citizenship. (pp. 89-90)

Problem

In *An American Imperative: Higher Expectations for Higher Education* the Wingspread Group on Higher Education (1993) stated:

> Traditionally, the acquisition of skills essential to life and work has been considered a by-product of study, not something requiring explicit attention on campus. We know of only a handful of the nation's colleges and universities that have developed curricular approaches similar to, for example, the list of critical skills developed by the Secretary's Commission on Achieving Necessary Skills…. These skills can be learned. If they are to be learned, however, they must be taught and practiced, not merely absorbed as a result of unplanned academic experience. We believe the modern world requires both knowledge and such skills and competencies. Neither is adequate without the other. (p.14)

The assertion of the Wingspread Group is that higher-order knowledge application skills should be integrated and assessed across the curriculum; however, the willingness of colleges to do so is not well documented (Jones, 1996; Terenzini , 1997). For example, Ratcliff (1994) studied faculty interest in developing student abilities to think critically, analyze, and synthesize information. He found that while faculty reported an interest in teaching such skills, a review of their syllabi did not reflect this practice. Instead, he found emphasis on acquiring knowledge, comprehending basic concepts and

terms, and applying basic knowledge. Additionally, very little research has been attempted to engage policy makers and employers in the same dialog with college staff responsible for curriculum development to examine important higher-order skills (Jones et. al., 1995).

Within the State of Maryland, the Maryland Higher Education Commission's (MHEC) *Maryland Plan for Postsecondary Education*, (MHEC, 1998) called for colleges and universities to "work vigorously toward assisting students to gain skills necessary for success, for continued employment, and lifelong learning" (p.16). Very little data is available on the extent to which Maryland community colleges engage in teaching and assessing student learning of higher-order knowledge application skills, which would allow for the achievement of the MHEC goal cited above. Additionally, very little is known about the attitudes of those responsible for guiding curriculum development and leading assessment initiatives toward teaching and assessing higher-order knowledge application skills. Baseline data regarding such attitudes are needed to inform those who have a stake in guiding education reform and in promoting the teaching and assessment of higher-order skills within Maryland.

Purpose and Research Questions

This study was designed to determine the perceptions of Maryland community college academic deans and department chairs regarding the extent to which the skill expectations listed in the Maryland Skills for Success are valid for associate degree completers. It also explores the degree to which this population believes associate degree

completers currently achieve the MSS, and the degree to which they believe that MSS should be purposefully taught and assessed for all associate degree completers.

The Maryland Skills for Success provided the framework for this inquiry. The Skills for Success represented a well-examined, cooperative effort between secondary and higher educators, policy makers, and business representatives to define essential higher-order learning expectations needed for the workplace. The skill set was written in terms of learning goals and expectations, and as such, have application in all disciplines (Oliver, et al, 1997). Since community college academic deans and department chairs are responsible for oversight of academic policy formation and curriculum development, they were selected as the most likely candidates for providing information on the extent to which colleges teach and assess higher-order knowledge application skills and their attitudes toward doing so.

The purpose of gathering this information was to establish baseline data on the teaching and assessment of higher-order knowledge application skills within associate degree programs in Maryland. Toward that end, the following research questions were posed:

1) What are the perceptions of the Maryland community college academic deans and department chairs (hereafter referred to as "respondents") regarding the validity[*] of the skill expectations listed in the Maryland Skills for Success for associate degree completers?
    a) What are the differences in perceptions between the deans and department chairs?

[*] The term "validity" used here is not applied in standard measurement sense, but is used to denote appropriateness of the expectations for associate degree completers.

b) What are the differences in perceptions among department chair groups by discipline?

2) What are the perceptions of the respondents regarding the extent to which associate degree completers currently achieve these skills?
   a) What are the differences in perceptions between the deans and department chairs?
   b) What are the differences in perceptions among department chair groups by discipline?
3) What are the perceptions of respondents regarding agreement that the courses and programs they administer include specific written learning objectives requiring students to learn and perform skill expectations listed in the Skills for Success?
   a) What are the differences in perceptions between the deans and department chairs?
   b) What are the differences in perceptions among department chair groups by discipline?
4) To what extent do respondents agree that all Maryland community colleges should teach a common skill set similar to the Skills for Success in all associate degree programs?
   a) What are the differences in perceptions between the deans and department chairs?
   b) What are the differences in perceptions among department chair groups by discipline?
5) To what extent do respondents agree that all Maryland community colleges should assess student learning of a common skill set similar to the Skills for Success in all associate degree programs?
   a) What are the differences in perceptions between the deans and department chairs?

b) What are the differences in perceptions among department chair groups by discipline?

6) What skills do respondents believe should be added to the Skills for Success to make them more appropriate for community college associate degree completers?
7) What effect did prior knowledge of the Maryland Skills for Success have on respondent ratings?

Significance of the Study

This study provides data on the extent to which Maryland community colleges teach and assess higher-order knowledge application skills, as well as the degree to which the Maryland Skills for Success are seen as valid learning expectations for associate degree completers. As such, these data provide benchmark information that contribute to the line of inquiry regarding higher-order skills assessment established by the National Center for Teaching and Learning Assessment, the Educational Commission of the States, and the academic outcomes identified by the National Postsecondary Education Cooperative Working Group on Student Outcomes.

Additionally, the Maryland Higher Education Commission (MHEC, 1998) plan for postsecondary education presented several goals to strengthen and improve Maryland's higher education system. Goal four of the plan addressed economic development impact of higher education and called for a stronger response from higher education to meet the needs of the employment community. Specifically, the commission called for the development of a business/education council that would take on initiatives

to better respond to the interests of the business sector. In addition, goal five calls for stronger action from the K-16 Partnership which was established to improvement of academic preparation of students and to provide a more coherent and streamlined learning process for students. The MHEC plan also established a goal to develop a performance based funding system which would provide incentives to institutions that demonstrate achievement on effectiveness indicators and assessment of student outcomes. This study, therefore, provides information useful in promoting a common platform and language to examine and document student learning among Maryland community colleges and to better position the community colleges to respond to the MHEC goals mentioned above. This study also provides: a) information useful to the K-16 partnership to shape initiatives aimed at ensuring the smooth succession of skill development for students matriculating from secondary schools to community colleges, b) data useful to the work of the business/education council, and c) information useful to state education agencies for establishing projects for improving student learning.

Definitions

Higher-Order Knowledge Application Skills: A term for skills that involve metacognitive processes through which an individual applies specific and broad knowledge to evaluate, create, plan, organize, communicate, interrelate, solve problems, and effectively perform tasks.

High Performance Workplace: Work environments using three or more innovations to increase productivity. Innovations can include automation, use of high

technology to provide process improvement data, process improvement strategies, ISO 9000 certification, cross-functional work teams and other innovations.

Maryland Skills for Success: A set of higher-order knowledge application skill goals and learning expectations students are required to demonstrate under the Maryland high school performance assessment program.

Maryland Skills for Success Skill Goals: Goals for performing five higher-order knowledge application skills including learning skills, thinking skills, communication skills, interpersonal skills and skills in the use of technology.

Maryland Skills for Success Learning Expectations: Learning outcomes expected of students under each of the five skill goals in the Maryland Skills for Success.

Learning Skills: Skills associated with effectively learning and mastering new knowledge and skills.

Thinking Skills: Mental processes involved in reasoning, creating and critically evaluating which assist individuals to communicate, make decisions, solve problems and perform tasks.

Communication Skills: Processes involved in encoding and decoding both written and oral messages between individuals and groups in a clear, concise, meaningful and imaginable ways.

Interpersonal Skills: The ability to relate to others individually or in groups, and to work effectively with others in pairs and teams to accomplish common goals.

Technology Skills: Skills that enable an individual to comprehend, use, and apply various technologies to more efficiently and effectively perform tasks.

Assessment: A term broadly applied to a process for determining the outcomes of students engaging in various learning activities.

Academic Dean: A demographic category of respondents comprised of the chief academic officer of a community college or an individual who has oversight of responsibility for several academic departments and the faculty and programs therein. Titles in this category include Academic Vice President, Dean, or Associate Dean.

Department Chair: A demographic category of respondents comprised of community college academic administrators who report to an academic dean or associate dean and who oversee a credit bearing academic department or program and assigned faculty. Titles for individuals in this category include department chair, division chair, and program coordinator.

Limitations

Several limitations of this study relate to method and generalizability of the study:

1) The major purposes of higher education include teaching/learning, research, and public or community service at the two-year, four-year and graduate levels. This study focuses on the role of teaching and assessing learning expectations for associate degree completers among Maryland community colleges and will not generalize to other colleges and universities within Maryland, or to other states.
2) The population for this study is comprised of chief academic officers or associate deans, and department chairs or division heads. They were chosen as the staff who most typically have influence over the development and direction of the courses and programs under their charge. The results of this study are generalizable only to the

extent to which these individuals are fully aware of the requirements of the courses under their purview. Other individuals exert influence on student learning and curricular design. Legislators, trustee members, chief executive officers, faculty, and business leaders often influence the development and design of curriculum; however, the influence of such individuals is not examined in this study.

3) Of the items on the questionnaire, the question relating to research question three asked at the end of the each of the five skill goals was the most subjective and therefore least reliable (Fowler, 1988). It required respondents to consider two concepts in combination in order to answer the question (see survey instrument in Appendix A). The wording was intentionally broad because of the differences in the scope of duties among the respondents, and the desire to limit the number of questions on the instrument; however, the combination of concepts and the generalized nature of the question provide a greater opportunity for divergent answers. Responses to this question should be understood within this context.

Organization of the Study

The study will consist of five chapters. Chapter 1 provides an introduction, problem statement, purpose, research questions, limitations, and definitions. Chapter 2 presents a review of relevant literature and theory relating to higher-order knowledge application skills. Chapter 3 details the design and methodology for the study. Consideration is given to the survey instrument, the population, data collection, and analysis procedures. Chapter 4 presents findings and results. Chapter 5 presents results summary, conclusions, and recommendations.

CHAPTER TWO

REVIEW OF THE LITERATURE

Workplace Changes and Need for Higher-Level Skills

College graduates leave school to enter a workplace that is far different from the one their parents entered (Maryland State Department of Education, 1996). Workplace organization and human resource practices of 25 years ago stemmed from the Taylor model of mass production (Commission on the Skills of the American Workforce [CSAW], 1990). The U.S. dominated world markets using this model, which was designed to drive down unit costs, reduce needs for high-skilled or well-educated labor, and insulate the production line from the effects of absenteeism (Law, Knuth, & Bergman, 1992). Complex work processes were segmented into low-skilled, repetitive tasks and production characteristics included minimal worker control and discretion. A few select managers were responsible for doing the thinking, planning, and problem solving for the organization, and monitored the productivity of low-wage workers (Berryman & Bailey 1992). The Taylor model was effective during a time when cost for raw materials, labor, and energy were inexpensive and international competition was not the looming threat it is today.

During the past two to three decades, many businesses have migrated from the Taylor model toward “high-performance” strategies (Appelbaum & Batt, 1994; Bailey 1993, 1997; Kochan & Osterman, 1994). Factors such as global competition, slacking productivity and quality, and a broadening of the economy from a manufacturing base to a service and information base, provided the catalyst for change (CSAW, 1990).

Companies using these techniques strive to produce high-quality goods and services delivered “just in time” at competitive costs. The goals of these organizations are to meet ever-changing consumer needs, to customize production to fill niche market demands, and to reduce cycle time between product development and delivery (Carnevale, Gainer & Meltzer, 1988; Secretary's Commission on Achieving Necessary Skills [SCANS], 1991).

In order to meet these goals, business strategies include maintaining minimal inventories, focusing on consistently high product standards, buying only from suppliers who can produce goods just when needed—with no defects, using technology and automation, employing highly skilled workers able to work within data rich production and service environments, and giving these workers more input into process development and improvement. As Tom Peters (1987) described it, globally competitive businesses and their employees must be able to “thrive on chaos.” Further, to remain employed, workers must continually update and develop new skills as jobs change or disappear and new ones emerge (Zeiss, 1997).

Although the above describes the nature of the changing work environment, the extent of the use of high-performance strategies among America’s businesses has not been precisely determined. Some researchers believe that the popular and educational literature addressing these issues exaggerate the case. Stasz (1996), for example, contended that few employers use high-performance strategies, and descriptions of worker attributes sought by employers have little to do with what they actually need. Darrah (1994) asserted that the literature devoted to describing skill deficiencies of workers was written by high-level managers who had not been close enough to their

workers to know what skills are actually needed. Rather than grappling with organizational inefficiencies, they blamed problems on employee skill deficits.

Thomas Bailey sheds light on these questions. Bailey (1990) conducted studies in four different manufacturing and service industries to document the kinds of workplace adaptations and worker skill patterns emerging in many organizations. Bailey examined changes in work process and technology integration in the textiles and apparel manufacturing industries, as well as in the banking and insurance service industries for their impact on skill requirements. He concluded that workers at all organizational levels need a higher level of skills than in the past, and refuted a decade old debate about the "deskilling" effect technology has on job requirements. He found for both the production and service sectors, the number of tasks required of workers had increased and jobs had become more broad-based. Tasks had also become more complex and interdependent. Responsibilities for decision making and problem solving had been driven downward in the organization to allow for quicker response time and greater flexibility in product development, production, and service delivery. Workers had greater autonomy and responsibility for analyzing, troubleshooting, and solving problems on the fly. Jobs also required complex interactions between groups and teams, cross-functional knowledge, and greater understanding of the overall goals of the organization.

As to the pervasiveness of the use of high-performance work strategies, again, Thomas Bailey (1997) provides data. After a review of available studies and survey data, Bailey concluded that about one-third of American corporations have implemented practices consistent with the high-performance workplace (defined as using several technological and human resource innovations simultaneously). His review also

substantiates that employer who use high-performance methods need workers with what Stasz, McArthur, Lewis, and Ramsey (1990) referred to as "advanced generic skills." Bailey's findings are consistent with national trend data for participation in skill improvement training among currently employed adults. Participation estimates range from 32 and 46 percent of the workforce; figures which have grown steadily over the last five years and reflect changes in the demands of the workplace (Decker, Rice & Moore, 1997; Smith, 1997).

A similar indicator of this shift in workforce strategy stems from the development of joint labor/management training programs, many of which focus on worker skill development. Hensley (1996) reviewed the literature on these programs and found consistent growth in skill update training and tuition assistance programs to provide workers with continued learning due to workplace innovations and changing job requirements. In an article describing the Communications Workers of America (CWA) national worker training and continuous learning initiatives, Nichols (1996) summed up the need for such programs:

> An estimated 15,000 jobs have been lost over the past 10 years in telecommunications. Despite the expanding information revolution, few new jobs have been created which compare to the old jobs that have been lost. Today, the same set of skills no longer guarantees a worker his/her job for an entire career. Union officials recognize that permanent job security is not a likely collective bargaining goal for CWA. Our focus has shifted from job security to employment security, which we define as creating opportunities for our members to develop job skills marketable to any employer. (p. 25)

Migration toward high performance strategies is only part of the story regarding the changing nature of work. The kinds of jobs that are emerging and the level at which they will be performed are projected to change significantly. Hoerner (1995) stated:

> In 1950, 20 percent of the workers were professional, 20 percent were skilled, and 60 percent were unskilled according to the Bureau of Labor statistics. By 2000, 20 percent will be professional, but the ratio of skilled to unskilled workers reverses—only 15 percent of the workforce will be unskilled and 65 percent will be skilled (p. 22).

These figures are consistent with data from the National Alliance of Business (NAB) (1997). The NAB projects that by about 2005, eight out of ten jobs will require at least a high school diploma, while 51 percent will require at least some college, and 24 percent will require a four-year degree. The emergence of high technology jobs will contribute significantly to this trend. The Secretary's Commission on Achieving Necessary Skills (SCANS) (1991) stated that most jobs will grow at an average of 20 percent in the decade of the nineties, while five major technical fields (computer systems, health, engineering, science, and math) will increase by about 33 percent, from 3.5 million jobs to 5 million jobs.

In Maryland, the need for individuals with higher-order knowledge application skills has been projected to be very high (MHEC, 1996). *The Washington Post* (Behr, 1997b), for example, reported that an estimated one in ten local information technology jobs is currently unfilled because employers cannot locate enough workers with the requisite skills. This amounts to about 19,000 jobs in the Washington area alone (Behr, 1997a). The *Baltimore Sun* (Maribella & Atwood, 1997) reported that a survey conducted

by the Maryland Business Roundtable of 1,000 employers in the state found that 80 percent of firms that rely on manufacturing and skilled trades jobs had difficulty finding qualified workers. The survey also found that about 60 percent of employers who seek workers with scientific and technical backgrounds had similar problems.

To be sure, workplace transformation and job preparation issues provide an interesting forum for debate and research, but the direction of the trend seems obvious. Hoerner and Wehrley (1995) stated in *Work Based Learning, the Key to School to Work Transition*:

> [T]he critical point is not so much where we are now, but where we are headed. Without an educated, highly skilled workforce, many companies have little choice except to settle into a low-wage organization. As we approach the 21st century, we still face the problem of having a schooling process that is not providing the education and skills needed by a majority of our students…in the high-performance organization. (p.56)

National Efforts to Define Skills for the High-Performance Workforce

In the aftermath of concerns voiced in *A Nation at Risk* (National Commission on Exscellence in Education, 1983), a great deal of research and comment by national commissions decry America's less than satisfactory preparation of students for their future as learners, workers, and citizens (Campbell, Voelkel, & Donahue, 1997, Carnevale and Porro, 1994). A strand of the discussion emerged to define skill standards by industry. Another strand emerged to define the skills needed for working under rapidly

changing work conditions and adapting to technologies. Charles Jet in the mid-1980s developed one of the first of such skill sets (Meltzer, White & Matheson, 1993). At the request of students in major MBA programs, Jet derived his skill set from 900 position descriptions obtained from the files of national search firms. Jet's distilled list included the following skills needed for successful ongoing career management:

- Communication—the ability to exchange information and ideas with others through writing, speaking, reading or listening;
- Analytical—the ability to derive facts from data, findings from facts; conclusions from findings, and recommendations from conclusions;
- Production—the ability to take a concept from idea and make it real;
- Teamwork—the ability to be an effective member of a productive group;
- Priorities/Time Management—the ability to determine priorities and manage time commitments and deadlines.

Since Jet's attempt, skill lists have been prepared by the Commission on the Skills of the American Workforce (1990), SCANS (1991), National Academy of Sciences (1992), and the American Society of Training and Development (ASTD) (Carnevale, Gainer, & Meltzer, 1988). Statewide efforts include Michigan (Mehrens, 1989), New York (New York State Education Department, 1990), Florida (Florida Department of Education, 1995), and Maryland (Maryland State Department of Education 1996). The most widely cited list is the SCANS Skills; however, the various approaches fall along similar conceptual lines and list many of the same skill sets. They were also developed by representatives from education, government, and business sectors. The premise in each case is that higher-order knowledge application skills provide the means for an individual

to problem solve, communicate, interrelate, learn and apply new knowledge, use new tools, and adapt to new situations in a manner that contributes to the goals of an organization and its employees.

The development of the National Education Goals 2000 by the United States Congress in 1994 sparked an attempt to define higher-order competencies for college graduates (Jones 1996). Goal number Six, Objective Five called for all college graduates to have advanced abilities to think critically, solve problems, and communicate effectively in order to compete in a global economy and exercise the responsibilities of citizenship. To begin work on this goal the National Educational Goals Panel convened a technical planning subgroup to explore the creation of a measure for the goal and the feasibility of developing a national initiative (Barton and Lapointe, 1995*)*. In 1992, the National Center for Education Statistics sponsored the National Adult Literacy Study (described more fully in the next section of this chapter) to begin collection of baseline data on the extent of adult literacy in the United States (Barton and Lapointe, 1995). NCES is scheduled to conduct a similar study sometime after the year 2000.

The NCES also funded a series of studies to determine issues and concerns related to assessment of communication and critical thinking skills, to define what constitutes advanced-level skills, and to develop an effective method of monitoring attainment of the goal (Jones, 1996). One of these studies, authored by Jones, et al. (1994) of the National Center for Teaching, Learning, and Assessment (NCTLA) surveyed groups of employers, college faculty, and policy makers in order to derive a consensus on essential skills in writing, speech and listening, and critical thinking that college students need to be effective in the workplace. To derive the consensus an iterative Delphi survey technique

was used to generate and narrow the skill goals inventory. A statistical process was used to derive the final roster of goals, which was intended to be broad based and useful for faculty in course development (Jones et al., 1994). Table 1 lists goal categories under each skill area.

The NCTLA goals were developed at two levels (basic skills and advanced skills), appropriate for college-level performance. The advanced skills in the NCTLA are not unique to this skill set, but the notion of setting them apart and examining them from faculty, employer, and policy maker perspectives is unique. Basic skills were included because of the need for the list to cover a wide array of need and levels of higher education, and because employers often state that they find college educated-employees to be weak in the basic skill of communication and critical thinking (Jones et al., 1994). Examples of advanced writing skills include (but are not limited to) the ability to: (a) analyze and write to respond to the point of view of the reader, (b) evaluate one's own writing for clarity using examples to remove ambiguities, (c) correct problems and learn from mistakes, (d) select evidence to support a point of view and justify major points and to confirm or disconfirm points of view, (e) use creativity and imagination to engage the audience, and (f) analyze experiences to provide ideas for writing.

Table 1

Skill Categories in the NCTLA Survey

Writing	Speech Communication	Critical Thinking
Knowledge of Audience Purpose of Writing Prewriting Activities Organizing Drafting Collaborating Revision Features of Written Product Written Products	*Basic Speech Communication Skills*: General Message Devel. & Organization Context & Situational Analysis Message Support Message Type *Interpersonal and Group Communication*: Situational Analysis Relationship Management Information Exchange Conversation Management Group Communication Communication Codes Oral Message Evaluation	*Interpretation Skills*: Categorizing Detecting Indirect Persuasion Clarifying Meaning *Analysis Skills:* Examining Ideas and Purpose Detecting and Analyzing Arguments *Evaluation Skills* *Inference Skills* Collecting and Questioning Evidence Developing Alternatives and Hypotheses Drawing Conclusions *Presenting Argument Skills* *Reflection Skills* *Dispositions*

Jones et al. (1994) reported that respondents did not agree on all goals and found significant differences between the preferences of educators and those of representatives from business sector. For example, in the general writing skills area, there was disagreement with respect to pre-writing activities, such as analyzing experiences to provide ideas for writing, creating ideas and retrieving ideas from memory. Employers did not see these things as important as such items as the quality of a final product, or the use of visual aids, and graphics in communication. Regarding collaboration in the writing process, employers agreed that collaboration was important but reported that collaborative writing would not be a high priority in many work places. Additionally, employers rated writing for someone else's signature as significantly more important than did faculty, who felt such a process was too narrow a specialization and could be taught as a specific skill in a secretarial course.

Jones et al. reported that respondents unanimously agreed on the importance of advanced thinking skills, such as the ability to analyze and evaluate, make judgements, and draw conclusions. They also determined that thinking and communication skills overlapped at advanced levels. The authors found, for example, that college graduates with advanced writing skills should be able to "analyze their reader's needs, values, attitudes, goals, and expectations as they create their text." (p. ix) Based on this analysis, college graduates should also be able to "make reasoned judgements about how to structure, organize and develop their ideas in relation to their audience, themselves, and their subject material as their purpose for writing." (p. ix)

The NCTLA later developed goals inventory for college-level critical reading and problem-solving skills (Jones, Dougherty, Fantaske, 1997). The notion of critical reading

is a relatively new orientation in the discussion of higher-order skills associated with a college education (Carter-Wells, 1996). Critical reading skills are grouped under a similar set of skills associated with critical thinking. Reading skills were grouped into eight categories: (1) reading materials; (2) reading for content; (3) interpretation; (4) analysis; (5) evaluation; (6) inference; (7) reflection, such as monitoring one's comprehension and correcting one's thinking; and (8) reading dispositions.

Problem-solving skills were categorized into the following categories: (1) understanding the problem, (2) background knowledge and information needed, (3) generating possible solutions, (4) choosing a solution, (5) evaluating solution and making recommendations. Emphasis within this skill set for the college student was placed on the ability to solve ill-defined problems as well as defined problems. Emphasis was also placed on the disposition of the problem solver such as stress management skills, patience, persistence, and a willingness to think creatively.

Maryland Skills for Success

The following description of the process used to develop the Skills for Success is summarized from *Skills for Success in Maryland* (Oliver et al., 1997). The Maryland State Department of Education (MSDE) conducts a performance assessment program to measure learning achievement at various points throughout the K-12 continuum. In 1994, the Maryland State Board of Education charged MSDE to develop a program to identify, integrate, and measure student acquisition of "cross disciplinary" or higher-order skills. The skills needed to represent high expectations for students and needed to be benchmarked against national and international performance standards. Maryland has

named this initiative Skills for Success (SFS) “to distinguish them from knowledge-centered core learning goals (also being derived) for English, mathematics, science and social studies” (p.55). Assessment of the SFS will accompany assessment of content standards in English, mathematics, science, and social studies, beginning with the graduating class of 2004.

The Maryland Skills for Success are comprised of five skill goals including: (1) learning skills, (2) thinking skills, (3) communication skills, (4) technology skills, and (5) interpersonal skills. Three to five learning expectations elaborate what students should be able to accomplish under each goal. Indicators of learning identify the critical competencies needed to achieve a learning expectation. In many cases, the indicators provide a learning sequence associated with expectations or goals. Below is an example from <u>one</u> skill goal, <u>one</u> expectation, and the associated indicators for that expectation (Appendix A lists the *Maryland Skills for Success in the Survey Instrument*):

> Goal 1: Learning Skills - The student will plan, monitor, and evaluate his or her own learning.
>
> 1. <u>Expectation</u>: The student will establish and pursue clear and challenging goals and plans for learning by:
>
> *Indicators of Learning*
>
> 1.1 Developing short- and long-range goals for learning.
>
> 1.2 Developing plans to support achievement of learning goals.
>
> 1.3 Implementing learning plans, using appropriate resources, skills, and learning strategies.

In Maryland, five content teams made up of representatives from the Business Roundtable, local school systems, higher education, government, students, and parents

developed the SFS. The teams reviewed several existing skill lists authored by SCANS; National Academy of Sciences; ASTD; Commission on the Skills of the American Workforce; and National Center for Research on Evaluation, Standards, and Student Testing (CRESST). In addition, the teams also examined similar skill lists from states such as New York, Michigan, and Massachusetts. The first draft of the SFS was externally evaluated by representatives from the American Federation of Teachers, National Center for Leadership in Education, Center for Workforce Development, International Center for Leadership in Education, and CRESST, as well as representatives from some of the nation's most successful corporations. Seventeen local jurisdictions involving groups of students, teachers, supervisors, and administrators also evaluated the draft SFS. Evaluators responded to questions regarding the SFS's significance, clarity, coherence, comprehensiveness, the extent to which they represent high expectations, and the degree to which they could be translated into learning activities and assessed. Input was incorporated into a revised draft and sent to every high school in the state for further comment. In 1996, the SFS final document was presented to the State Board of Education, which directed SFS teams to develop performance levels. This is currently in progress.

The SFS compare to other skill sets developed by national groups, but are different in several ways. The SFS represent learning goals not work goals; although, they describe the kinds of knowledge applications employers want students to perform (Oliver et al., 1997). They were designed to accompany academic outcomes that prepare students for life beyond high school. The SCANS skills in contrast, are oriented to the workplace, are not as broad, and do not provide learning expectations or indicators. They

build on foundational skills that include basic skills, but also include personal qualities or attributes that would be exceedingly difficult to teach and assess. The SCANS skills also differ in organization, coherence, and specificity from the SFS. Their specificity will likely cause the need for periodic revalidation (Oliver et al., 1997).

In comparison to the NCTLA skill goals, similarities are found in the construction of the skill set as educational goals or expectations. The NCTLA goals include communication, critical thinking, critical reading, and problem solving, skill sets. However, the SFS present a broader range of skill categories and expectations including learning skills and technology skills. The SFS provide a separate category for interpersonal skills, the NCTLA goals fold them into the communication skill set. The SFS interpersonal skill set is more encompassing than NCTLA's, placing expectations on group interaction and team process skills, as well as interpersonal communication skills. The SFS expectations include a continuum of skills progressing from basic to advanced levels in similar fashion to the NCTLA skills.

Several of the SFS goals represent foundational skills that make possible other competencies. They provide the tools for learning and application of knowledge in any subject area or in work applications. Learning and thinking skills make the performance of other goals possible. Communication and technology skills provide interactional skills linking individuals to institutions or to events that occur within the natural environment. The authors state that the skills are designed to form a "cumulative, interactive relationship…expanding their scope of application from a focus on internal conditions (Learning, Thinking) of individuals to an external state (Technology) or social situations (Interpersonal skills)." (p.65) They represent broad interpretations of skills that can apply

in multiple subject areas; thus, they will not need revalidation. For example, the pattern under the learning goals category of plan, perform, monitor, and evaluate, is a reoccurring pattern in other goals within the SFS, so that they may become easier to implement and assess in multiple disciplines (Oliver et al., 1997).

A comparison of the various skill sets established by national and statewide initiatives reveals an emerging consensus on several skill categories. Commonalties exist for thinking skills, problem solving and quantitative skills, and communication skills (including interpersonal skills). These same skills were identified through similar inquiry conducted in Australia (Sinclair, 1997). Further, Higginbottom (1995) found the following similarities among the goals of eight model general education programs at individual community colleges: (a) to improve critical thinking and judgement, (b) to develop competence in oral and written discourse, (c) to develop the ability to relate to a multi-cultural and global perspective, (d) to gain proficiency in using technologically, (e) to develop competency in mathematics and quantitative skills, (f) to develop citizenship skills including ethics, social responsibility, and valuing education.

It appears that many similarities exist regarding the notion of higher-order knowledge application skills across various levels of education. Although the emphasis may be viewed differently between educators and employers, many of the aims are the same—to purposefully teach and assess the extent to which students are able to perform these skills. The question then becomes—how well do students learn and perform these skills?

Student Preparation for the High-Performance Workforce

Bailey (1997) summed up what education reformers seek in the notion of raising the bar on skill capabilities of the future workers of the nation. Beyond broad skills and a greater ability to solve problems, students need:

> [M]ore abstract or conceptual understanding of what they are doing. This is what allows them to carry out or solve problems that they have not encountered before, or that they have not been shown specifically how to…solve. Thus, more than in the past individuals will need to be able to acquire, organize, and interpret information. Workers will have more direct interaction with their co-workers, and therefore will need more experience in general social skills such as group problem solving and negotiation. These changes clearly involve more than an accumulation of the type of knowledge traditionally learned in schools. (p. 37)

Whether students are prepared for this work environment has been debated since the publication of *A Nation at Risk* (1983). Some researchers argue student performance has actually improved over the last 15 years, pointing to design flaws in comparison studies, particularly those examining performance by country (Bracey, 1994; Freeman, 1995; Jaeger, 1992). In *The Education Reform Decade*, The Educational Testing Service Policy Center (1990) reported stable to modest increases in public school performance during the 1980s; however, mean scores on math and science subtests were not at adequate levels for performing entry-level technical and science-related jobs. Carnevale and Porro (1994) argued that there is much to be proud of, particularly when accounting for the scope and diversity of student issues faced in U.S. classrooms. Although, they

observed that even when adjusting for measurement differences, “American schools do not compare well with their foreign counterparts” (p. 16). Students also appear to have deficits in applying learning to real world applications (Barton, 1992).

As stated in Chapter One, Goal #3 of the National Educational Goals reads: “All students will leave grades 4, 8, and 12 having demonstrated competency over challenging subject matter and all students will know how to use their minds well, so they can be prepared for responsible citizenship, further learning, and productive employment in our Nation’s modern economy” (National Educational Goals Panel, 1996, p. 6). To determine progress on Goal #3, Patrick (1993) examined data from the National Assessment of Educational Progress (NAEP). He concluded “students are NOT developing the intellectual capacities necessary for democratic citizenship, lifelong learning, and productive employment….Most students…lack the ability to perform high-level cognitive operations in core subjects” (p.1).

Patrick reported the following data from the NAEP about the performance of high school 17-year olds:

- seven percent are able to solve multiple step math problems involving variables and linear equations;
- nine percent can use scientific knowledge to infer relationships and draw conclusions;
- five to seven percent can synthesize data from a variety of reading materials and read analytically or critically;
- five percent can interpret information and related ideas from multiple sources to make connections between various events and factors;

- less than 10 percent have developed both an understanding of key ideas in core subjects and the ability to apply these ideas to completion of higher-level cognitive tasks (summarized from pp.1-2).

It may be true that overall student achievement has not declined; although, based on the above, only about 10 percent of graduating seniors can perform the higher-level cognitive skills necessary for the high-performance workplace. Since about three-quarters of high school graduates attempt some form of postsecondary education (Berkner & Chavez, 1997), colleges are admitting students with large skill deficits. Much of this skill deficit is not measured by college entrance tests because such tests measure basic academic skills and content knowledge, not the kinds of learning that relate to higher-order knowledge application skills (Carnevale & Porro, 1994). It is evident that colleges, particularly those with open door entrance policies, will have additional ground to cover in helping students build these skills to levels appropriate for college graduates. The extent to which college students are prepared to perform higher-order skills, however, is the subject of debate and will be examined below.

As stated in Chapter One, indicators of effectiveness for higher education have tended to focus on admission and enrollment patterns, cost, retention, financial aid, graduation rates, transfer rates, and transfer success (Roueche, Johnson, & Roueche, 1997). Recent discussion has turned toward determining how well college affects student learning and how well students are prepared for participation in work and society. Indicators are sketchy and diverse, and national data sources are limited (Barton & Lapointe, 1995; O'Banion, 1997; Roueche, Johnson & Roueche, 1997). Further, degree

levels and the diversity of college disciplines make the task even more complex (Barton & Lapointe, 1995).

Two seminal works offer insight into this question. Pascarella and Terenzini (1991), in their work *How College Effects Students*, conducted a massive meta-review of available research on the impact of attending college on cognitive (as well as non-cognitive) development. Regarding cognitive factors, they found positive gains for those attending college over those not attending college on measures of verbal and quantitative skills, communication skills, and reasoning/analytical/critical thinking skills. While their synthesis of available research on non-cognitive factors indicated college produces positive effects, they acknowledged that estimating the magnitude of effect is impractical due to the complex nature of the inquiry, and the lack of concise definitions of skill categories. Their work does not delve into questions of graduate preparation for, or performance in the workplace.

One of the most extensive examinations of this issue to date is reported in an Educational Testing Service Policy report *Learning by Degrees: Indicators of Performance in Higher Education,* (1995) in which authors Paul Barton and Arthur Lapointe discussed performance of a national sample of 26,000 subjects over the age of 16 on the 1992 National Adult Literacy Study (NALS), which tested broad range literacy skills that would enable an individual to apply knowledge to accomplish every day tasks (also see Kirsch, Jungeblut, Jenkins & Kolstad, 1993 for detailed report on NALS). They found that the college-educated subjects did not perform strongly on the NALS. Types of literacy assessed by the NALS included prose literacy, document literacy, and quantitative literacy. Prose literacy involved tasks ranging from locating a single piece of

information within a text containing distracting information, to the ability to make high-level inferences from within dense text containing substantial distracting information in order to compare and contrast information. Prose literacy also involved the ability to present a logical and coherent argument when given specific information and data. Document literacy included such tasks as the ability to interpret, and use information to accomplish every-day activities, such as deciphering a bus schedule, using information contained in a job application, using information found in maps, tables, and newspapers. Quantitative literacy involved tasks ranging from solving simple arithmetic problems to performing multiple operations sequentially. Responses were rated by levels. Level five was the highest score rating, level one was the lowest. While there was no defined college-level equivalency within the range of scores, college-educated subjects scored primarily within levels three and four on the literacy scales of the study. Very few scored at the highest levels. The following are excerpted from Barton and Lapointe's report on college-educated adults in the NALS sample:

- forty-three percent of four-year graduates and 37 percent of two-year graduates score at level three for prose literacy;
- thirty–nine percent of four-year graduates and 26 percent of two-year graduates score at level four for prose literacy–they can perform tasks requiring greater inferences involving more detailed information;
- only eight percent of four-year graduates and four percent of two-year graduates reach level five where they can use complex documents that contain considerable distracting information to make high-level inferences.

The above is the good news; however, the following data reveal alarming weaknesses for many individuals in the sample that had attained college degrees:

- forty-seven percent of four-year graduates and 62 percent of two-year graduates do not reach levels four and five in prose literacy;
- eleven percent of four-year graduates and 21 percent of two-year graduates are at level two or below for prose literacy, where they can locate a single piece of information when there is distracting data, and they can integrate, compare, and contrast information;
- twelve percent of four-year graduates and 21 percent of two-year graduates score at level two or below for quantitative literacy, where they can perform simple arithmetic problems;
- only thirteen percent of four-year graduates and five percent of two-year graduates are at level five for quantitative literacy, where they can perform multiple arithmetic operations sequentially. (summarized from pp. 6-7)

While the levels are not directly correlated to standards to be achieved by college graduates, Barton and Lapointe state the following:

> If you judge level 3 to be below what you would expect for four-year college graduates, then it is important to note that just over half are at level 4 or 5. Only 11 percent are at level 5. Leaving out the effects of aging, 8 percent of four-year graduates under the age of 25 are at Levels 1 and 2 (mostly level two) as are 18 percent of two year graduates (also mostly Level 2). Few would disagree [after reviewing criteria and sample tests] that prose capabilities of people at this level are fairly low." (p. 83)

As stated in Chapter One, of the National Education Goals, Goal Six reads: "Every adult in America will be literate and will posses the knowledge and skills necessary to compete in the global economy and exercise the rights and responsibilities of citizenship" (National Education Goals Panel, 1996, p. 3). The results of the National Adult Literacy Study cited above are not a direct measure of college outcomes or the nation's performance toward Goal Six. However, many influential groups posit that higher education will benefit from focusing on the kinds of skills needed for success in society and the workplace, not just on indicators important for success in school (Barton, 1992: Commission on the Skills for the American Workforce, 1990; Ewell, 1993; O'Banion, 1997; Sheckley, Lamdin, & Keeton, 1993; Wingspread Group on Higher Education, 1993)

Teaching Higher-Order Knowledge Application Skills

Recent discussion on the practice of teaching higher-order knowledge application skills has centered around two main themes: (a) teaching toward specific competencies within the context of general education, and (b) embedding skills in contextual learning approaches. With respect to the former, consensus has not been reached on effective teaching or curricular approaches. This may be due in part to an emphasis in higher education on the idea that students should possess certain basic skills to get in the door; and, that as long as students complete a general education component to their degree program they will master higher-order skills (Roueche, Johnson, and Roueche, 1997).

However, several notable writers, including Boyer and Levine, (1981); Cohen and Brawer, (1987) and Gaff, (1991), have attempted to expand the development of general education competencies in a more connected and purposeful way. Gaff cites an important development with the development of "across-the-curriculum" approaches at many institutions. He reports that writing, critical thinking, appreciation for diversity and global reasoning, ethics, and moral reasoning are examples higher-order skills that can be infused easily across the curriculum. Web, Heiman, and Lesure (1994) describe a unique approach that focuses on learning skills across the curriculum. Their process emphasizes a set of analytical skills that enable students to actively learn and understand the process of acquiring and applying knowledge throughout the curriculum.

One of the only significant integrated approach teaching a comprehensive set of higher-order skills across the curriculum in the country has been established by Alverno College, a small liberal arts women's college in Milwaukee (Stapay, 1998). Alverno has identified the "eight abilities," which were established in order to focus the curriculum on "the abilities students need to be effective in work, family, and civic community while still allowing for mastery of a subject."(p. 2) The eight abilities include communication, analysis, problem solving, valuing in decision making, social interaction, global perspectives, effective citizenship, and aesthetic responsiveness. Student learning is assessed at multiple levels as they demonstrate the abilities by performing both in and out of the classroom. Learning assignments often require projects that involve problem based classroom projects which are applied to life-based projects outside of the classroom. The projects may involve several courses simultaneously.

Gaff (1991) believes the across-the-curriculum approach has several advantages for imparting stronger skills over the traditional general education approach: a) objectives can be developed with wide participation and buy-in among faculty; (b) it can be easily accommodated within a wide variety of courses; (c) it will not require that new or specialized courses be developed resulting in a drain on traditional course enrollments; and (d) that the practice will force changes in pedagogical approach, shifting from a teacher-centered approach, to a learner-centered approach.

In terms of the contextual approach, recent findings from research on learning and cognition indicate that almost all students can learn and perform high-level skills if taught in the context in which the skills are to be performed (Berryman & Bailey, 1992; Law, Knuth & Bregman, 1992), or in ways that most closely relate to a student's experience or frame of reference (Hull & Souders, 1996). This approach has a proven track record in degree programs that enable students to directly apply their learning to work related tasks, such as computer science, engineering, and health care. For most students, developing skills within familiar context enables them to both understand and then apply their learning to the next level of skills task performance (Hull & Souders, 1996). Contextual or applied learning includes activities that engage the student in the "experience" of learning including social, cultural, physical, and psychological contexts that are important to the student. This learning approach can be modeled for students in the classroom, reinforced from subject to subject, and strengthened through exposure to real world problems and work applications (Berryman & Bailey, 1992). This is particularly true if learning skills are developmentally sequenced and linked to the world students actually experience (Caine & Caine, 1991).

In her article, P*reparing a Mathematically Fit Workforce*, Susan Forman (1995-96) supported the notion of applying contextual problems in the mathematics classroom. Forman summarized recent discussions by two national associations for teaching mathematics pertaining to setting new standards for mathematics. She pointed out that the standards promulgated by both national groups did not take into account the kinds of mathematics problems commonly found in the workplace. Such problems often involve relatively elementary math functions, but also require thinking and conceptualizing skills at a "level of sophistication that few students get from current school mathematics: planning and executing a multi-step strategy; considering tolerances and variability; anticipating and estimating relevant factors not immediately evident in the data; and careful checking to assure accuracy" (p. 41). This can push even the best students beyond the requirements found in most traditional math classes and will help them learn hypothesis testing strategies necessary for high-level math. Forman stated that community colleges should ensure that every math course involve "extensive experience solving authentic work-based problems while exposing students to those abstract mathematical concepts essential to the habits of mind all problem solvers need" (p. 45). Dan Hull and Dale Parnell through the work of the Center for Occupational Research and Development have corroborated the effectiveness of teaching work world applications in math and other subjects (Parnell, 1994).

Regardless of the approach to bolster higher-order skill development, the aim is one that requires a different level of discussion and consensus building for the higher education community. Clearly, thoughtful approaches to the problem of teaching and learning higher-order knowledge application skills are being explored.

Assessment of Higher-Order Knowledge Application Skills

To gather information on the extent of assessment practices across the country, Peter Ewell (1996), surveyed higher-education institutions and policy makers. He found that the majority of approaches were institutional-based initiatives. States requiring assessment tended to leave the design and control of the practice up to the individual institutions. Seven states, however, currently had or were developing common measures for undergraduate learning outcomes, many of which involved higher-order cognitive competencies. Ewell reported several issues regarding assessment practice identified by respondents. Among them were a lack of assessment tools for evaluating higher-order skill attainment and a need for agreement among the higher education community on the competencies and domains of higher-order skills to be assessed.

Of the models developed by various groups working on the question of domains to be assessed, one project, sponsored by the National Center for Educational Statistics, stands out as an important synthesis of the work of the leading models. The project was completed by the National Postsecondary Education Cooperative (NPEC) and its Working Group on Student Outcomes from Policy Perspective, headed up by Patrick Terenzini (1997). The NPEC working group was given a charge to develop "a model for examining, from a policy perspective, postsecondary education data priorities in the student outcomes area" (p. 3). The NPEC Working Group on Student Outcomes from a Policy Perspective developed taxonomy of student outcomes for application across higher education. Among their taxonomy of student outcomes was a category for academic

outcomes, including higher-order cognitive and intellectual development, and a category for outcomes regarding preparation and performance in the workplace. The NPEC taxonomy is listed in Table 2. The NPEC working group recommended further exploration of assessment strategies and appropriate data collection methods.

While the level of activity to define skills sets and taxonomies of learning outcomes has increased in recent years, little is known about the perceptions and attitudes of higher educators regarding the teaching and broad assessment of higher-order skills (Jones, 1996). A study by Matlick (1990) has relevance, both in terms of its attempt to study attitudes of higher educators about learning-outcomes assessment, and in terms of the geographic region studied—Maryland. Matlick surveyed Maryland higher educators (including two-year and four-year college chief academic officers, department chairs and faculty) regarding their attitudes toward general practices of outcomes assessment. She found that respondents were somewhat willing to participate in general outcomes assessment activities; although, they expressed skepticism that such activity would yield useable results, and expressed reservations about the feasibility of conducting an adequate program of outcomes assessment. Respondents felt the results of such efforts should be used by individual institutions for instructional improvement and that assessing learning outcomes would have limited applicability for addressing statewide concerns for learning improvement. They also felt the practice of learning-outcomes assessment would do little to improve public confidence in Maryland higher education.

Table 2

NPEC Outcomes Taxonomy Academic Skills*

Communication and Computational Skills	Higher-Order Cognitive and Intellectual Development	Content Learning
Reading, writing, oral communication; quantitative /computational skills, information acquisition skills (technological and otherwise)	Critical Thinking, problem solving, analytical and evaluative skills, formal and postformal reasoning, conceptual complexity, creativity, moral reasoning (as a process)	General breadth and specific depth of knowledge

* The NPEC Taxonomy makes no attempt to define individual competencies or learning expectations under each subheading. They present the taxonomy (along with many other elements of an assessment taxonomy) as components of a good assessment system.

Matlick also found that her respondents were particularly distrustful of competency requirements for secondary graduates and felt distrust toward politicians, state agencies, and college administrators, believing them to be more interested in image-building and finger pointing. Community college respondents expressed higher level of agreement in the value of learning-outcomes assessment than did their university counterparts. Chief academic officers of community colleges were the most favorable of all respondents concerning the value and feasibility of assessing learning outcomes. Chief academic officers of four-year colleges were the least favorable regarding value and feasibility of learning-outcomes assessment. Respondents preferred that assessment be focused on basic skills (reading, writing, and computation), higher-order skills (critical thinking, problem solving and complex applications) and general education. Community college faculty were more interested in assessing basic skills and university respondents were more interested in assessing higher-order skills. As in other studies, concerns were expressed over the methods of assessment and data collection.

New approaches to assessment have begun to appear in the literature ranging from the use of portfolio assessment to computer-based simulations. O'Neill, Allred, and Baker (1997) designed a multi-stage process for assessment of workforce readiness competencies designed for an instructor to complete. Step one involved selecting a work environment for which a student might be prepared, and then conducting a job or task analysis to determine the job requirements. From the task analysis, the instructor would then identify competencies to be measured (communication, interpersonal skills, problem solving skills etc). A cognitive analysis step is then required to delineate subcompetencies. Next, performance indicators are created for the subcompetencies. The

indicators are set on the basis of the prevailing research literature on the given competency to be measured, (i.e. the Maryland Skills for Success learning indicators which represent subelements of larger skill goals, or the learning goals identified by the NCTLA). Then the measure is developed first by constructing a "rapid prototype" based on the cognitive requirements of the competency identified by the job analysis. Then a content specification for the test item is developed using the indicators the instructor knows is related to the performance criterion. Prototypes are then tested and refined into final measures. The next steps involve establishing an experimental design, testing student competencies, validation, and reporting performance. Methods for testing can involve written/oral tests, simulations—both virtual and actual, and portfolio documentation of various items that demonstrate skill mastery. (summarized from pp.177-179)

While these steps are extensive and would require a great deal of time and expertise, the intent is to construct and validate a performance measurement model. The model could be constructed by a team of individuals or a statewide group interested in assessing skills within an occupational category. For example, the model could be used by a nursing department or statewide association interested in developing critical thinking assessment for tasks associated with nursing skill protocols.

Several testing vendors have begun to work on the issues of assessing higher-order skills required for effective performance in the workplace. The American College Testing Corporation (ACT), for example, developed "Work Keys" instruments to "profile" the skills needed for specific jobs, and then to test applicant or employee skill competencies (Miller, 1997). The Work Keys instruments test skill levels in math,

applied technology, reading, information literacy, listening, writing, observation, and teamwork skills. Several community colleges have established “Work Keys” service centers. These centers work with corporate clients to profile jobs, and assist in employee skill development. ACT expects to add skills and competency levels to those currently assessed under the Work Keys system. They have administered over 700,000 assessments, profiled over 2000 jobs, and certified over 350 job profilers nationwide (Miller, 1997).

Summary

To summarize, it is clear that for many reasons, skill levels required for the workplace are changing. Even low-level jobs require higher performance expectations than in years past. A national discussion is taking place on the definition of these skills and a consensus has emerged that, at a minimum, higher-order skill sets in communication, thinking, problem solving, and interpersonal competencies are required for success in the high-performance workplace. Higher education has begun to respond to the concerns expressed by the public, and indeed from within its own ranks, to assure that students meet these expectations (Roueche, Johnson and Roueche, 1997; The Wingspread Group on Higher Education, 1993). Recent research on cognitive development, contextual learning other curricular approaches provide evidence that various higher-education practitioners are purposefully teaching higher-order skills; however, valid concerns exist regarding adequate assessment practices. As long as the need for strong investment in the nation’s human capital continues, heavy pressure will come to bear on education to intensify its role as the primary transmitter of higher-order skills (Jones,

1996). Further work is needed to understand the extent of practice and attitudes of those responsible for the curriculum toward the notion of purposeful teaching and assessment of higher-order knowledge application skills.

CHAPTER THREE

METHODOLOGY

Introduction

This descriptive study used a survey approach as the method of gathering information to answer the research questions. The data were collected from a questionnaire mailed to every Maryland community college academic dean and department chair during the spring, 1998. The purpose of the study was to answer the following questions:

1) What are the perceptions of the Maryland community college academic deans and department chairs (hereafter referred to as "respondents") regarding the validity of the skill expectations listed in the Maryland Skills for Success for associate degree completers?
    a) What are the differences in perceptions between the deans group and the department chairs group?
    b) What are the differences in perceptions among department chairs by discipline category?
2) What are the perceptions of the respondents regarding the extent to which associate degree completers currently achieve these skills?
    a) What are the differences in perceptions between the deans group and the department chairs group?
    b) What are the differences in perceptions among department chairs by discipline category?

3) What are the perceptions of respondents regarding agreement that the courses and programs they administer include specific written learning objectives that require students to learn and perform skill expectations listed in the Skills for Success?
    a) What are the differences in perceptions between the deans group and the department chairs group?
    b) What are the differences in perceptions among department chairs by discipline category?
4) To what extent do respondents agree that all Maryland community colleges should teach a common skill set similar to the Skills for Success in all associate degree programs?
    a) What are the differences in perceptions between the deans group and the department chairs group?
    b) What are the differences in perceptions among department chairs by discipline category?
5) To what extent do respondents agree that all Maryland community colleges should assess student learning of a common skill set similar to the Skills for Success in all associate degree programs?
    a) What are the differences in perceptions between the deans group and the department chairs group?
    b) What are the differences in perceptions among department chairs by discipline category?
6) What skills do respondents believe should be added to the Skills for Success to make them more appropriate for community college associate degree completers?

7) What effect did prior knowledge of the Maryland Skills for Success have on respondent ratings?

Survey Instrument

Format and General Construction

The survey instrument (see Appendix A) was composed of three sections. The first section collected demographic information including respondent's title, and whether the respondent had prior knowledge of the Maryland Skills for Success. In the second section, denoted as The *Maryland Skills for Success,* respondents were asked to read a listing of each of the five skill goals from the Maryland Skills for Success with their accompanying learning expectations and respond to three questions about each of the five skill sets. The three survey questions related to the first three research questions. In addition, respondents were provided room to comment after answering the three questions pertaining to each of the five skill goals. The third section of the instrument, denoted as A*dditional Questions,* focused on research questions four and five. These questions pertained to attitudes about the teaching and assessment of higher–order knowledge applications skills as a whole. The last question on the survey (relating to research question six) asked respondents to suggest additional higher–order knowledge application skills to make the Maryland Skills for Success more appropriate for associate degree completers.

Rating Scale

The survey questions, with the exception of the question asking respondents to list additional skills, provided a six point Likert-like ordinal scale for respondents to rate their level of agreement with the presented questions. The rating scale was constructed to be unidimensional (deal with only one issue) and monotonic (presented in order without inversion) (Fowler, 1988, p. 95). The highest level of agreement was indicated by the number six (6). The lowest level of agreement was rated with the number one (1). No neutral response choice was provided in order to eliminate noncommittal responses.

Validity and Reliability

Important considerations for validity and reliability of this study have to with (a) content validity or the representativeness of the content of a measuring instrument, (b) subjective nature of attitudinal survey questions, and (c) the potential reliability problems associated with the use of rating scales and the use of agree/disagree structure (Fowler, 1988). This section discusses the steps taken to reduce error due to validity and reliability factors.

To assure greater content validity, the choice of survey questions was guided by the research questions. The questions were also guided by two individuals at the Maryland State Department of Education who had worked on the development of the Maryland Skills for Success and provided direction in the conceptualization of the study. The questionnaire was also pretested using 21 individuals from a multi-campus

community college in Florida who responded to questions about their experience in answering the survey instrument.

A factor affecting both validity and reliability was the subjectivity of the survey questions (Fowler, 1988). In the case of subjectivity, the researcher must do everything possible to eliminate vagueness and standardize possible responses. The survey questions asked respondents for judgement generalizations about higher-order knowledge application skills; therefore, the survey questions were subjective by nature. To reduce problems caused by subjectivity, attempts were made to word each question as clearly as possible without causing undue lengthening of the instrument. Results of the pretest were used to clarify the survey question that corresponded to research question three.

With respect to standardizing possible responses, as stated above, the rating scale was constructed on the whole to be unidimensional and monotonic in order to minimize problems associated with the respondent's subjective evaluation of the questions. For example, the definitional difference between words like "agree somewhat and agree" can be interchangeable and do not always provide a consistent measure of attitude (Fowler, 1988). To avoid the possibility of number inversion on the rating scale, a six-point continuum was used in which the definition of the ratings was provided at level one-*strongly disagree* and level six-*strongly agree*. Middle ratings on the continuum were not labeled so that the continuum was more obvious. This design was derived based on response patterns derived during the pretest of the instrument. In addition to review by two individuals at the Maryland State Department of Education and results of the pretest, the principles of survey research as proposed by Dillman (1978), and those proposed by Fowler (1988), were incorporated in instrument design.

Pretest

A questionnaire pretest was conducted among 30 academic deans and department chairs from a multi-campus community college in central Florida. The pretest was what Converse and Presser (1986) termed a participating pretest. Respondents were told they were involved in a pilot study and their reactions to the survey instrument would be used to help its development. Respondents completed the survey and then answered an additional questionnaire pertaining to their experience in completing the survey. The goal of the pretest was to determine the best form in terms of reducing possible error stemming from the length of the instrument, the vagueness the questions and the use of the proposed four-point rating scale.

The pretest was a quasi-experimental design in which two forms of the survey were administered. Form A contained a full version of the Maryland Skills for Success and learning expectations. Form B presented a shortened version of the Maryland Skills for Success in which the learning expectations accompanying each skill goal were presented in a much abbreviated form. Respondents receiving both forms were asked to rate their level of agreement on three questions using the respective skill lists as the stimulus for their evaluation and response. The rating scale provided was a four-point Likert-like scale; level four (4) was labeled “strongly agree,” level three (3) was labeled “somewhat agree,” level two (2) was labeled “somewhat disagree,” level one (1) was labeled “strongly disagree.” Form A was sent to 15 department chairs and academic deans. Ten were returned for a response rate of 66 percent. Form B was sent to 15

department chairs. Eleven were returned for a response rate of 72 percent. The pretest test questionnaire is provided in Appendix B.

Respondents for both forms of the pretest were asked questions regarding the length of time it took to complete the survey, the clarity of the skill expectations listed, the degree to which each form provided them adequate information to validly answer the survey questions, their level of comfort in rating the entire skill goal and learning indicators collectively rather than separately, their level of comfort in using the four-point rating scale, and their suggestions for changing the survey questions.

Pretest Results

The average length of time to complete Form A (full-length version) was about 15 minutes. The average response time to complete Form B (short form) was 10 minutes. Differences in response time did not significantly influence return rates. Of the two forms of the pretest survey, Form A (long form) yielded slightly higher differentiation in mean scores for the survey question as well as for the questionnaire. While the means scores were slightly more differentiated under Form A, the four-point scale for both instruments did not provide a range wide enough to provide adequate differentiation between agreement/disagreement responses. Four respondents asked for a “neither agree, nor disagree” measure. This request for a noncommittal response level was not honored in order to force respondents to take a stance toward agreement or disagreement. Because of the relative problem with differentiation on the ratings, the scale for the survey instrument was expanded to six-point continuum. In addition, a few individuals were confused on the rating scale and circled the definitional text provided above the numerals,

rather than circling the numerals as directed. This was another factor in the decision to label only the rating points at the extreme ends of the scale. As stated in the validity/reliability section above, this approach was used to avoiding rating reversion or confusion.

Attempts were also made to keep the questions as simple and clear as possible; although, this is a perceptual issue and responses are not totally predictable. Since the respondents were higher education professionals, it was anticipated that they would adequately discern the questions. Pretest results indicated relative comfort with wording and clarity of the questions. The question relating to research question three however, was very complex and somewhat vague to respondents. The question was changed to reflect an alternative suggested by one of the pretest respondents.

Population

The population for this study was comprised of every academic vice president, dean, and associate dean (denoted the deans group), and every academic department chair, division chair, and program director/coordinator (denoted as department chair) at the 18 community colleges in Maryland. The dean category was comprised of 48 chief academic officers (defined as academic vice presidents, deans or associate deans) who had responsibility for overseeing multiple academic departments and their department chairs. They were responsible for providing leadership for curriculum development and for monitoring the effectiveness of learning programs. The department chair category was comprised of 245 mid-level managers (defined as department chairs, division chairs, and

program directors/coordinators) who are directly responsible for academic departments or programs leading to the associate degree. The department chair is often responsible for translating departmental and course level policies and for assessing student learning outcomes.

To identify the population, each of the 18 academic dean's offices was called and asked to provide an organizational chart or list of the individuals and their position titles for all individuals in the categories described above. In six cases, the information was provided over the telephone. In the remaining cases, if a title or position responsibility was unclear, the dean's office was contacted for clarification.

Data Collection

Data were collected via the survey instrument mailed to 293 respondents. The process used for data collection was modeled after Dillman's (1978) Total Design Method which attempts to maximize survey response by minimizing the "cost" in terms of time, energy, and expense for the respondent. To that end, the questionnaire was designed as a booklet. The Maryland Skills for Success were listed on the left-hand pages of the booklet by goal category, (one goal and accompanying expectations per page). The questions and comment section pertaining to each skill goal were listed on the right hand pages. A small label was posted on the back of each instrument with a code number and a statement indicating that the code was only to be used for the purpose of tracking non-responses.

A cover letter, jointly signed by the researcher and the Associate Superintendent for the Department of Career, Technology, and Adult Learning for the Maryland State Department of Education, was sent with each survey. The cover letter asked respondents to assist in the survey. It stressed the data would be useful for statewide initiatives by the Maryland State Department of Education. It was thought that respondents at the dean and department chair levels were used to receiving requests of this type from the State Department of Education and would be willing to respond to such a request. Respondents were told that their responses would be confidential and that no individual respondent or institution would be identified in the results. The initial mailing was timed to avoid the busy period during the first three weeks of class and to be received at the beginning of the workweek. Each academic dean's office was contacted by phone and asked for assistance with the study. The deans at seven colleges volunteered to distribute the questionnaire during a staff meeting, then collect the instrument and return it to the researcher. The others wanted the instrument mailed directly to each respondent so that they could return it individually. A stamped, addressed, return envelope was provided. A 48 percent response rate was obtained from this first mailing.

A second mailing was distributed to nonrespondents five weeks after the initial mailing. The overall response rate increased to 68.8 percent after the second mailing. A third attempt to collect the survey was conducted by calling nonrespondents and faxing a copy to those contacted. The return rate increased to 75.4 percent after telephone follow-up.

Data Reporting and Analysis

Levels of agreement were used to report perceptions of respondents. Responses were grouped by question, by respondent's position, and by whether respondents were aware of the Maryland Skills for Success before receiving the survey. Data is reported and compared by category of respondent and by skill goal category. Data analysis was performed using SPSS-PC software. Descriptive statistics included frequencies by respondent category, return rates, returns by college and prior awareness demographics. While it is recognized that the population surveyed in this study represented the universe of academic deans, department chairs, and program coordinators at the community colleges in Maryland, inferential statistical analysis was applied in order to provide greater generalizability of results and a stronger delineation of the data for group comparison purposes. Statistical analysis included means, standard deviations, one-way analysis of variance, Tukey post hoc tests, and correlation data regarding response patterns. An alpha level of .05 was used for all statistical tests. Comments were also solicited under each skill goal, and respondents were asked to suggest any additional skills that should be considered to improve the validity of the MSS community college students. Comments are summarized and reported by skill set in chapter four and a complete list of comments is provided in Appendix C.

Returned questionnaires were inspected for completeness. Only one respondent did not identify a position title and had obscured the booklet code number. The results for this respondent were judged unusable, except when the ratings were used in deriving grand mean scores.

Respondents also indicated if they were previously aware of the Maryland Skills for Success. If a respondent did not respond to the question asking if they were previously aware of the Maryland Skills for Success, they were assigned to the "not previously aware" category. A total of 15 (.05 percent) did not complete this question.

In sections two and three of the instrument, completeness of responses to the questions about the skill set were analyzed. Means and other statistics were derived from the total number of responses available for each question.

Chapter Summary

This study is classified as survey research using descriptive techniques. The population surveyed included all academic deans, associate deans, department chairs, and program coordinators at the 18 community colleges in Maryland, a population of 293 individuals. The first mailing resulted in a 48 percent return rate. The follow-up mailing increased the response rate to 69 percent. The third and final contact, a faxed follow-up, increased the return rate to 75.4 percent. Data and an analysis of response patterns are reported in the next chapter.

CHAPTER FOUR

RESULTS

Introduction

This chapter presents results of the survey. Results from section one of the survey include respondent characteristics. Results from section two correspond to the first three research questions. Section two presents an analysis of data received for the three research questions which related to respondent perceptions about the five skill sets in the Maryland Skills for Success (MSS). Comments collected from section two of the questionnaire are presented at the end of the section. Section three reports data corresponding to research questions four through seven.

The seven research questions included sub-questions to examine differences between perceptions of respondent groups. Six groups were established according to the respondent's job title. For convenience in reporting, each group will be referred to using the shortened group title underlined below:

1. Dean: included Academic Vice Presidents, Deans, and Associate Deans;
2. English: including department chairs, division chairs, program director or program coordinator for English, fine arts, and humanities related disciplines;
3. Business: including department chairs, division chairs, program director or program coordinator for business, business technologies, and computer systems related disciplines;

4. Math: including department chairs, division chairs, program director or program coordinator for math, science, and engineering related disciplines;
5. Technologies: including department chairs, division chairs, program director or program coordinator for technology and healthcare related disciplines;
6. Social Science: including department chairs, division chairs, program director or program coordinators for social science, human services, and education related disciplines.

Section I: Respondent Characteristics

Return Rates

Surveys were mailed to 293 subjects at the 18 Maryland community colleges. The overall return rate was 75.4 percent (N=224). One returned survey was found to be unusable since the respondent indicated an unwillingness to fill out the questionnaire, thus data from 223 returned surveys were analyzed and are presented in this chapter. All institutions and groups were represented. Table 3 shows the response rates by institution. Table 4 displays response rates by respondent group.

Prior Awareness Demographics

Table 6 shows the percentage of chairpersons across groups who indicated awareness of the Maryland Skills for Success. About half of the respondents had prior awareness. There was a significant relationship between position and prior awareness (χ^2 24.5, [5], $p < .001$). The deans group had the greatest percentage of respondents who

were previously aware of the MSS. The English and social science chairs had the highest awareness percentage among department chair groups. It is interesting to note that math/science/engineering group had the lowest percentage of awareness (67 percent).

Table 3

Return Rates by Institution

Maryland Community College	Number of Surveys Mailed	Number of Surveys Returned	Percent of Surveys Returned
Allegany	9	5	55.5
Anne Arundle	24	20	83.3
Baltimore City	13	11	84.6
Catonsville	28	22	78.5
Carroll	11	9	81.8
Cecil	7	5	71.4
Charles	14	11	78.5
Dundalk	4	3	75.0
Chesapeake	14	10	71.4
Essex	40	24	60.0
Frederick	9	6	66.6
Garrett	8	7	87.5
Hagerstown	8	8	100.0
Harford	8	5	62.5
Howard	9	9	100.0
Montgomery	54	42	77.7
Prince George's	23	16	69.5
Wor-Wic	10	9	90.0
Total	293	221	75.4

Table 4

Response Rates by Group

Group	Percent of Population	Surveys Mailed	Surveys Returned	Percent Returned
Dean	16.2	48	39	81.2
Chair: English, Fine Arts, Humanities	20.0	56	46	82.1
Chair: Business, Business Technologies, Computer Systems	15.2	45	31	68.8
Chair: Mathematics, Science, Engineering	18.3	54	43	79.6
Chair: Technologies, Health Care	15.5	46	33	71.7
Chair: Social Science, Human Services, Education	15.0	44	29	65.9
TOTALS		293	221	75.4

Table 5

Prior Awareness Response Percentage

Group	Prior Awareness Percentage*		N
	Yes	No	
Deans	80	20	40
Chairs: English, Fine Arts, Humanities	60	40	45
Chairs: Business, Business Technologies, Computer Systems	42	58	31
Chairs: Mathematics, Science, Engineering	33	67	43
Chairs: Technologies, Health Care	38	62	34
Chairs: Social Science, Human Services, Education	59	41	29
Total	52	48	222

* $\chi^2 = 24.5$, [5]. $p < .01$

Section II: Perceptions Regarding the Maryland Skills for Success

Section two of the survey presented the five skill sets and accompanying learning expectations in the Maryland Skills for Success. For each of the five skill goals and expectations, respondents were asked to rate their level of agreement on a six-point scale (1=strongly disagree, 6=strongly agree) with each of three statements:

1) The skills and expectations listed in this skill set are valid for associate degree completers.
2) Most Associate degree completers at your college currently achieve the skill expectations listed in this skill set.
3) In the courses and programs you oversee, there are specific written learning objectives that require students to learn and perform the expectations listed in this skill set.

These survey questions correspond with the first three research questions. Results are discussed for each. The analyses included an examination of overall ratings for each question (all group ratings combined for the entire MSS skills set), dean vs. department chair ratings for the entire skill set, and a comparison of group ratings for the five individual skill sets. The analysis also included an examination of the impact of prior awareness of the MSS on respondent ratings (relating to research question seven).

Respondent Perceptions of Validity of the Maryland Skills for Success

Validity of Overall Skill Set

On the whole, respondents agreed that the MSS were valid expectations for associate degree completers. The combined group mean for the full skill set was 4.9 (on a six-point scale). Each of the five skill sets received a moderate to high level of overall agreement. Ranked in order they were: (1) communication skills, (2) interpersonal skills, (3) learning skills, (4) technology skills, and (5) thinking skills. Mean ratings for the validity of the MSS were the highest ratings received for any of the questions on the survey. Grand means, and respondent group means for the validity of individual skill sets are displayed in Table 6. Ratings for the individual skill sets produced moderate to high correlations, suggesting that respondents who were favorable toward one skill area tended to rate the other favorably, and the reverse is true for those tending to be less favorable. Respondents generally did not differentiate across the skill areas when rating the validity of the skill sets. Correlations ranged from .73 between communication and thinking skills and .52 between technology and interpersonal skills. Pearson correlation data for validity means by skill category are provided in Table 7.

Deans Group Vs. Department Chair Group Ratings for Validity of the MSS

Table 8 provides data comparing the grand means of each respondent group for the overall skill set. The deans group rated the validity of the Maryland Skills for Success significantly higher overall than did the department chairs as a group (t = 3.4, df = 219, p < .01). Broken out by individual department chair groups, mean scores for the combined

skill sets showed greater variability. The technologies department chairs provided the highest level of agreement for the validity of the overall skills, followed by the English group. The lowest grand mean scores among the chair groups were produced by the math chairs and the social science chairs. One-way ANOVA showed significant grand mean differences between the groups for the validity of the overall skill set (F [5, 214] = 11.88, p <.05, MSE = .75). However, Tukey HSD post hoc tests showed that the deans, English, and technologies groups produced significantly higher grand means than did the math and social science groups. Post hoc comparisons for group grand mean ratings are listed in Table 9.

Group Comparisons by Individual Skill Set

Comparing responses of the various groups for their perceptions of the validity of each individual skill set yielded mean scores of 4.0 or higher, with the exception of the thinking skills category (see table 6). Significant differences between group ratings on each individual skill set (F [5, 210] = 6.01 p < .01, or greater for each skill set). Table 10 provides one-way ANOVA data for group ratings by skill set. Tukey's HSD post hoc tests were run to more closely compare group mean differences by skill set. Table 11 displays post hoc data where significant mean differences exist by group for each skill category. The deans, having the highest mean scores of all groups, produced significant mean differences in comparison to the math and the social science groups (groups with the lowest mean scores) on each of the five skill sets. The English group ratings were significantly higher on all five skill sets in comparison to the social science group. The English chairs also produced significantly higher means than the math group on all

categories except learning skills. In contrast, the social science chairs rated all skill sets significantly lower than the other groups, with the exception of the math chairs' rating for communication skills. The social science chairs tended to disagree that the thinking skill set represented valid learning expectations for associate degree completers (mean = 3.68). As mentioned above, this was the only instance that a group indicated disagreement with the validity of a skill set.

Prior Awareness and Validity Means

Prior awareness of the Maryland Skills for Success had no significant relationship with ratings on the question of validity of the skill sets. Validity mean scores for those with prior awareness of the MSS were slightly higher than for those who did not have prior awareness. Table 12 shows a comparison of validity mean score differences for deans vs. department chairs by their level of awareness. Mean scores for both the aware and not aware groups fell in the agreement range when examining the overall validity of the MSS. Deans produced higher means than department chairs in both the aware and not aware categories. Two-way analysis of variance revealed no significant difference when awareness level for the deans and combined department chair groups was examined.

For the most part, those with prior awareness did not produce significantly different ratings for validity of the individual skill sets than did those who did not have prior awareness. Table 13 displays prior awareness and grand mean ratings for the validity of the MSS. Again, those with prior awareness produced higher scores than those who did not. Both groups (aware and not aware) agreed that that the MSS were valid expectations for associate degree completers. One-way ANOVA revealed a significant

difference between those aware and not aware only for the communication skills category. Communication skills received the highest ratings of any skill category by both the aware and not aware groups.

Table 6
Means by Respondent Category for Validity of MSS by Skill Set

Group		Learning	Thinking	Communic.	Technology	Interperson.
1	Mean	5.35	5.41	5.66	5.23	5.41
	SD	.09	.64	.70	1.06	.75
	N	39	39	39	39	39
2	Mean	5.00	5.11	5.45	5.11	5.33
	SD	1.91	.98	.90	1.00	.77
	N	45	45	44	43	45
3	Mean	4.67	4.77	5.00	5.03	4.93
	SD	1.19	1.02	.87	1.02	1.14
	N	31	31	31	31	30
4	Mean	4.63	4.32	4.51	4.44	4.30
	SD	1.20	1.38	1.26	1.24	1.30
	N	41	43	43	43	43
5	Mean	5.27	5.06	5.42	5.15	5.21
	SD	.80	.79	.87	.85	.82
	N	33	33	33	32	33
6	Mean	4.13	3.68	4.57	4.10	4.25
	SD	1.22	1.69	1.45	1.26	1.28
	N	29	29	28	28	27
Total	Grand Mean	4.87	4.76	5.12	4.86	4.93
	SD	1.10	1.24	1.11	1.14	1.12
	N	218	220	218	216	217

Note:
1. Deans
2. Department Chairs, English, Fine Arts, Humanities
3. Department Chairs, Business, Business Technologies, Computer Systems
4. Department Chairs, Math, Science, Engineering
5. Department Chairs, Technologies, Healthcare
6. Department Chairs, Social Science, Human Services, Education

Table 7

Pearson Correlations for Valid Expectations by MSS Category*

MSS Goals	Learning	Thinking	Commun.	Technology	Interperson.
Learning	1.00	.59	.65	.53	.52
Thinking	--	1.00	.73	.64	.64
Communication	--	--	1.00	.52	.70
Technology	--	--	--	1.00	.65
Interpersonal	--	--	--	--	1.00
Skill Set Grand Mean	4.87	4.76	5.12	4.86	4.93
SD	1.10	1.24	1.11	1.14	1.12
N	218	220	218	216	217

*All correlations significant at the 0.01 level (two tailed).

Table 8

Grand Mean Scores for Valid Expectations by Group

Dean vs. Chairs Grand Means	Mean	SD	N
Academic Vice President, Dean, Associate Dean, Assistant Dean	5.41*	.641	39
All Department Chairs Combined	4.79*	.991	181
Total Grand Mean	4.90	.967	221

*(t = 3.7, df = 218, p < .01).

Department Chair Grand Means			
Department Chair, Division Chair, or Program Coordinator: English, Fine Arts, Humanities	5.19	.732	45
Department Chair, Division Chair, or Program Coordinator: Business, Business Technologies, Computer Systems	4.89	.804	31
Department Chair, Division Chair, or Program Coordinator: Math, Science, Engineering	4.44	1.12	43
Department Chair, Division Chair, or Program Coordinator: Technologies, Health Care	5.23	.628	33
Department Chair, Division Chair, or Program Coordinator: Social Science, Human Services, Education	4.12	1.14	29

*(F [5, 214] = 11.88, p < .05, MSE =.75)

Table 9

Tukey HSD Significant Group Differences: Grand Mean Scores for Valid Expectations by Group

Group (I)	Group (J)	Mean Difference (I-J)*	Std. Error
1	4	.97	.19
	6	1.29	.21
2	4	.75	.19
	6	1.07	.21
3	6	.77	.22
4	5	-.79	.20
5	6	1.10	.22

Note:
1. Deans
2. Department Chairs, English, Fine Arts, Humanities
3. Department Chairs, Business, Business Technologies, Computer Systems
4. Department Chairs, Math, Science, Engineering
5. Department Chairs, Technologies, Healthcare
6. Department Chairs, Social Science, Human Services, Education

*Mean difference significant at the .05 level

Table 10

ANOVA of Group Ratings for Valid Expectations by Skill Category*

Skill Set		Sum of Squares	df	Mean Square	F
Learning	Between Groups	34.40	5	6.88	6.41
	Within Groups	227.25	212	1.07	
	Total	261.65	217		
Thinking	Between Groups	66.35	5	13.27	10.56
	Within Groups	268.82	214	1.25	
	Total	335.17	219		
Communication	Between Groups	44.41	5	8.88	8.51
	Within Groups	221.23	212	1.04	
	Total	265.65	217		
Technology	Between Groups	35.29	5	7.05	6.03
	Within Groups	245.81	210	1.17	
	Total	281.10	215		
Interpersonal	Between Groups	48.02	5	9.60	9.16
	Within Groups	221.07	211	1.04	
	Total	269.09	216		

* All significant at $p < .05$

Table 11

Tukey HSD Significant Group Differences: Validity of Skill Set

Skill Set	(I) Group	(J) Group	Mean Difference (I-J)*	Std. Error
Learning	1	4	.72	.23
		6	1.22	.25
	2	6	.86	.25
	5	6	1.13	.26
Thinking	1	4	1.08	.25
		6	1.72	.26
	2	4	.78	.24
		6	1.42	.27
	3	6	1.08	.29
	5	6	1.37	.29
Communication	1	4	1.15	.23
		6	1.09	.25
	2	4	.94	.22
		6	.88	.28
	4	5	-.91	.24
	5	6	.85	.26
Technology	1	4	.78	.24
		6	1.12	.27
	2	4	.67	.23
		6	1.00	.26
	3	6	.925	.28
	5	6	1.05	.28
Interpersonal	1	4	1.11	.23
		6	1.15	.26
	2	4	1.03	.22
		6	1.07	.25
	4	5	-.91	.24
	5	6	.95	.27

Note:
1 Deans;
2 Department Chairs, English, Fine Arts, Humanities;
3 Department Chairs, Business, Business Technologies, Computer Systems;
4 Department Chairs, Math, Science, Engineering;
5 Department Chairs, Technologies, Healthcare;
6 Department Chairs, Social Science, Human Services, Education
*All listed mean differences are significant at the .05 level or lower.

Table 12

Dean vs. Department Chair Means for the Validity of the MSS by Prior Awareness

Group		Aware MSS		Total
		Yes	No	
Dean	Mean	5.79	5.08	5.44
	SD	.56	.92	.64
	N	32	7	39
Dept. Chair	Mean	5.48	4.77	5.12
	SD	.96	1.02	.99
	N	84	97	181
Total	Mean	5.11	4.79	
	SD	.913	1.02	
	N	116	104	

Table 13

Prior Awareness and Grand Mean Ratings for Validity of MSS

Skill Set		Aware MSS		Total
		Yes	No	
Learning	Mean	4.94	4.81	4.88
	SD	1.11	1.07	1.10
	N	117	102	219
Thinking	Mean	4.88	4.64	4.77
	SD	1.15	1.13	1.24
	N	117	104	221
Communication*	Mean	5.30	4.93	5.12
	SD	.97	1.20	1.10
	N	115	104	219
Technology	Mean	4.93	4.77	4.86
	SD	1.11	1.16	1.14
	N	115	102	217
Interpersonal	Mean	5.06	4.79	4.94
	SD	1.05	1.16	1.12
	N	115	103	218
Total	Mean	5.02	4.79	
	SD	.91	1.01	

* One-way ANOVA (F [1, 217] = 6.32, p = .013.

Perceptions Regarding Student Achievement of MSS Skill Expectations

MSS Achievement Overall

The question asking respondents if associate degree completers currently achieve the expectations listed in the Maryland Skills for Success was asked in relation to each of the five skill sets. Overall, lower means scores were obtained for this question than were obtained for the question regarding validity of the MSS. The combined group mean rating for this question was 3.81, indicating that respondents tended to disagree that associate degree completers currently achieve the skill expectations listed in the MSS. Each individual skill set, with the exception of communication skills, received a mean score below 4.0 when all group means were combined. Table 14 displays the grand mean ratings for each skill set. Ranked in order they were: (1) communication skills, (2) technology skills, (3) interpersonal skills, (4) thinking skills, and (5) learning skills. Ratings for the skill sets produced moderate to weak correlations suggesting that respondents were somewhat more likely to differentiate their ratings by skill set than they did for the question of validity. Correlations ranged from .66 between learning skills and thinking skills and .22 between learning skills and technology skills. Pearson correlation data for means by skill set for the question regarding student achievement of the MSS are listed in Table 15.

Deans Group Vs. Department Chair Group Ratings For Student Achievement of the MSS

Table 16 provides data comparing the grand means of each respondent group regarding level of agreement that students currently achieve the MSS. A comparison of

the deans group responses with those of the combined department chairs resulted in a similar pattern to that obtained for the validity question. The deans group rated student achievement of the MSS significantly higher overall than did the department chairs (t = 3.6, df = 216, p = <.01). While the deans agreed that students achieved the skills, the combined chairs group disagreed. Individual department chair group means for the combined skills set all fell in the disagreement range (below 4.0). The English group produced the highest grand mean score followed by the technologies group. The lowest mean score among the chairs was produced by the social science group. One-way analysis of variance revealed significant differences between individual department chair group means (F [5, 212] = 6.34, p <.01, MSE = .572). However, Tukey post hoc tests showed that the deans and English chair groups produced significantly higher grand means primarily in comparison to the math and social science chairs. Post hoc comparisons are listed in Table 17.

Group Comparisons by Individual Skill Set

Comparing responses of the various groups by individual skill set (see Table 14) yielded a wide range of mean scores. One-way ANOVA showed significant differences between all group ratings on each individual skill set (F [5, 210] = 3.52, p < .05, or greater for each skill set). Table 15 displays one way ANOVA data for group comparisons by skill category. Tukey's HSD post hoc tests were run to more closely compare group mean differences by individual skill set. Table 18 lists the significant group mean differences by skill category. For the majority of skill sets, the deans

produced the highest mean scores mostly in the agreement range. They were followed by the English chairs.

Regarding both learning and thinking skills, the deans were the only group to produce a mean score above 4.0. The deans and English chair mean ratings were significantly higher than the math and social science groups in these categories.

For the communication skills category, the deans, English, and technologies groups agreed that students currently achieve the MSS expectations, while the remaining groups disagreed. The deans and English groups produced significantly higher ratings than the business, math, and social science chair groups.

Concerning technology skills, the business chairs were the only group to agree that students currently achieve the skill expectations. The social science chairs produced significantly lower means than all other groups. It is interesting to note that the technology skills category was the only category the deans disagreed that students currently achieve the skill expectations listed in the MSS, and the only category for which the business chairs yielded the highest group rating.

The English chairs produced the highest ratings on the interpersonal skill set. Not surprisingly, the math chairs produced the lowest scores, disagreeing that students currently achieve interpersonal skill expectations.

Prior Awareness and Means for Students Currently Achieve MSS

On the question relating to student achievement of the MSS, respondents who had prior awareness of the Maryland Skills for Success did not produce significantly different mean scores than those who did not have prior awareness. When grand means were

compared by dean and department chair groups, mean scores for those with prior awareness were almost identical. Deans in both the aware and not aware groups obtained the same mean scores, agreeing somewhat that students currently achieve the overall MSS. Department chair scores for both the aware and not aware groups were close to identical, indicating they somewhat disagreed that students currently achieve the skills. Table 19 shows a comparison of achievement ratings differences for deans vs. department chairs by their level of awareness.

Ratings for the individual skill sets were also not appreciably different when compared by level of awareness. Table 20 displays data for prior awareness and mean ratings on the individual skill sets. Again, those with prior awareness produced higher means than those who did not have prior awareness. Both groups (aware and not aware) tended to disagree that students currently achieve the MSS. One-way ANOVA revealed no significant differences between the means of the aware and not aware groups, with the exception of communication skills, where those with prior knowledge rated the communication skills significantly higher.

Table 14

Group Means for Students Currently Achieve MSS by Individual Skills Set

Group		Learning	Thinking	Commun.	Technology	Interpersonal
1	Mean	4.17	4.32	4.66	3.94	4.10
	SD	.96	.841	.772	1.145	.940
	N	39	39	39	39	39
2	Mean	3.86	3.91	4.22	3.18	4.11
	SD	.990	1.018	.936	.994	.958
	N	45	45	44	44	44
3	Mean	3.29	3.87	3.90	4.22	3.70
	SD	.937	.846	.943	1.87	.987
	N	31	31	31	31	30
4	Mean	3.40	3.28	3.54	3.92	3.26
	SD	.981	.918	.942	.866	1.013
	N	40	42	42	42	42
5	Mean	3.81	3.78	4.06	3.96	4.09
	SD	1.045	.960	.877	.983	.842
	N	33	33	32	33	33
6	Mean	3.29	3.42	3.46	3.18	3.78
	SD	1.030	.997	.881	.833	.832
	N	27	28	28	27	28
Total	Mean	3.67	3.76	4.00	3.86	3.84
	SD	1.034	.978	.976	1.023	.982
	N	215	218	216	216	217

Note:
1. Deans
2. Department Chairs, English, Fine Arts, Humanities
3. Department Chairs, Business, Business Technologies, Computer Systems
4. Department Chairs, Math, Science, Engineering
5. Department Chairs, Technologies, Healthcare
6. Department Chairs, Social Science, Human Services, Education

Table 15

Pearson Correlation for Students Currently Achieve Expectations by MSS Category*

MSS Goals	Learning	Thinking	Commun.	Technology	Interperson.
Learning	1.00	.66	.55	.22	.47
Thinking	--	1.00	.60	.37	.54
Communication	--	--	1.00	.46	.60
Technology	--	--	--	1.00	.49
Interpersonal	--	--	--	--	1.00
Skill Set Grand Mean	3.67	3.76	4.00	3.86	3.84
SD	1.03	.98	.98	1.02	.98
N	215	218	216	216	217

* All correlations significant at the 0.01 level (two tailed).

Table 16

Students Currently Achieve MSS Expectations: Means by Group

Dean vs. Chairs Grand Means	Mean	SD	N
Academic Vice President, Dean, Associate Dean, Assistant Dean	4.22*	.63	39
All Department Chairs Combined	3.78*	.81	179
Total Grand Mean	3.83	.769	218

*(t = 3.6, df = 216, p < .01).

Department Chair Grand Means			
Department Chair, Division Chair, or Program Coordinator: English, Fine Arts, Humanities	3.98	.63	45
Department Chair, Division Chair, or Program Coordinator: Business, Business Technologies, Computer Systems	3.79	.75	31
Department Chair, Division Chair, or Program Coordinator: Math, Science, Engineering	3.49	.74	42
Department Chair, Division Chair, or Program Coordinator: Technologies, Health Care	3.94	.63	33
Department Chair, Division Chair, or Program Coordinator: Social Science, Human Services, Education	3.44	1.13	29

Table 17

Tukey HSD Significant Group Differences: Grand Mean Scores for Students Currently Achieve MSS by Group

Group (I)	Group (J)	Mean Difference (I-J)*	Std. Error
1	4	.73	.16
	6	.78	.18
2	4	.50	.16
	6	.54	.16

Note:
1. Deans
2. Department Chairs, English, Fine Arts, Humanities
3. Department Chairs, Business, Business Technologies, Computer Systems
4. Department Chairs, Math, Science, Engineering
5. Department Chairs, Technologies, Healthcare
6. Department Chairs, Social Science, Human Services, Education

*Mean difference significant at the .05 level

Table 18

ANOVA of Group Ratings for Students Currently Achieve MSS by Skill Category*

Skill Set		Sum of Squares	df	Mean Square	F
Learning	Between Groups	23.74	5	4.74	4.78
	Within Groups	207.46	209	.99	
	Total	231.20	214		
Thinking	Between Groups	22.60	5	4.52	5.18
	Within Groups	184.99	212	.87	
	Total	207.59	217		
Communication	Between Groups	36.64	5	7.33	9.14
	Within Groups	168.34	210	.80	
	Total	204.99	215		
Technology	Between Groups	17.41	5	3.48	3.52
	Within Groups	207.69	210	.98	
	Total	225.10	215		
Interpersonal	Between Groups	22.77	5	4.55	5.17
	Within Groups	185.89	211	.88	
	Total	208.67	216		

* All significant at $p < .05$

Table 19

Tukey HSD Significant Group Differences: Students Currently Achieve MSS

Skill Set	(I) Group	(J) Group	Mean Difference (I-J)*	Std. Error
Learning	1	3	.89	.24
		4	.78	.22
		6	.88	.24
Thinking	1	4	.95	.21
		6	.80	.23
	2	4	.63	.20
Communication	1	3	.76	.22
		4	1.12	.19
		6	1.20	.22
	2	4	.68	.19
		6	.76	.22
Technology	1	6	.76	.25
	3	6	1.04	.26
	4	6	.74	.25
	5	6	.79	.26
Interpersonal	1	4	.84	.21
	2	4	.85	.21
	4	5	-.81	.22

Note:
1. Deans
2. Department Chairs, English, Fine Arts, Humanities
3. Department Chairs, Business, Business Technologies, Computer Systems
4. Department Chairs, Math, Science, Engineering
5. Department Chairs, Technologies, Healthcare
6. Department Chairs, Social Science, Human Services, Education

*All listed mean differences are significant at the .05 level or lower.

Table 20

Prior Awareness Grand Means by Group for Students Achieve MSS

Group		Aware MSS		Total
		Yes	No	
Dean	Mean	4.22	4.23	4.23
	SD	.55	.95	.63
	N	32	7	39
Dept. Chair	Mean	3.76	3.73	3.74
	SD	.74	.81	.77
	N	83	96	179
Total	Mean	4.65	3.91	
	SD	.60	.83	
	N	116	104	

Table 21

Prior Awareness and Grand Mean Ratings for Students Achieve MSS by Skill Set

Skill Set		Aware MSS		Total
		Yes	No	
Learning	Mean	3.75	3.59	3.91
	SD	1.05	1.01	1.32
	N	116	100	218
Thinking	Mean	3.80	3.68	4.16
	SD	.99	1.00	1.14
	N	116	103	220
Communication*	Mean	4.80	3.91	4.34
	SD	.95	.99	1.12
	N	115	102	218
Technology	Mean	3.81	3.89	4.00
	SD	1.07	.99	1.28
	N	116	101	218
Interpersonal	Mean	3.90	3.75	3.86
	SD	1.00	.99	1.28
	N	116	102	219
Total	Mean	4.01	3.76	
	SD	1.01	1.00	

Note: One-way ANOVA revealed no significant differences between groups

Respondent Perceptions that their Courses and Programs Contain Specific Objectives Requiring Students to Learn and Perform MSS Expectations

Overall Ratings for Students Required to Learn and Perform MSS

A question asking if the courses and programs for which the respondents were responsible had specific written learning objectives requiring students to learn and perform the skills was asked in relation to each of the five skill sets. Respondents agreed somewhat. The rating of all groups combined for the entire set of skills was 4.04. The individual skill sets received overall mean scores ranging between 4.34 to 3.8. Grand means for each skill set are displayed in Table 22. In descending order they were: (1) communication skills, (2) thinking skills, (3) technology skills, (4) learning skills, and (5) interpersonal skills. Again moderate to low correlations were found among the grand means for this question suggesting respondent ratings were somewhat differentiated. Correlations ranged from .64 between thinking and interpersonal skills and .36 between learning skills and technology skills. Pearson correlation data are provided in Table 23.

Dean Vs. Combined Department Chair Ratings for Students Required to Learn and Perform

Table 24 displays data comparing the deans' responses with those of the combined department chairs for the overall skill set. The data showed that the deans agreed more strongly than did the combined chairs that their programs and courses include specific learning objectives requiring students to learn and perform the expectations; although, an independent sample *t*-test did not show a significant difference between the two group's ratings ($t = .42$, df = 218, $p > .05$). Broken out by individual

department chair groups, mean scores for the combined skill sets showed that only the English chair group tended to agree that students are required to learn and perform the MSS expectations. All other chair groups tended to disagree. One-way ANOVA indicted there were significant differences between group ratings (F [5, 214] = 6.11, $p < .01$, *MSE* = .843); however, applying Tukey's HSD post hoc test showed significant differences in mean ratings between the English chairs and math chairs, and between the technologies chairs and the business, math, and social science chair groups. Tukey HSD post hoc comparisons showing significant grand mean differences by group are listed in Table 25.

Group Comparisons by Individual Skill Set

Comparing responses of the various groups as to agreement that courses and programs contain specific learning objectives requiring students to learn and perform the skills in the individual skill sets (Table 22) yielded somewhat different response patterns than were obtained for the validity and achievement questions. Uncharacteristically, the deans did not produce the highest means for any of the skill sets. Instead, the technologies chairs produced the highest mean scores on four of the five skill sets. One-way analysis of variance showed significant differences between group ratings on each skill set (F [5, 211] = 2.62, $p < .05$, *MSE* 1.57, or greater for each skill set). Table 26 displays one-way ANOVA group comparisons by skill set. However, Tukey HSD post hoc tests showed fewer significant group mean differences, which are displayed in Table 27.

For the learning skills category, the technologies chairs and English groups produced the highest means which were significantly different than those of the deans,

business, and math groups. For the thinking skills category, only the math group disagreed that students were required to learn and perform the MSS thinking skill expectations. Their mean score was significantly lower than the two highest means which were produced by the technologies and English groups. The highest level of agreement for communication skills stemmed from the English group who produced significantly higher means than the business, math, and the social science groups. Again, the math group was the only group to disagree that their students were required to learn and perform communication skills expectations. For technology skills, the social science and math groups tended to disagree that students were required to learn and perform the associated expectations and produced significantly lower scores than the business and technologies groups. The English and math groups produced mean scores in the disagree range for technology skills; although, their means were not significantly different from the other groups. Finally, for the interpersonal skills, the technologies and English groups tended to agree that students are required to learn and perform the associated expectations. Their ratings were significantly higher than all other groups except of the technologies group.

Prior Awareness Ratings for Students Required to Learn and Perform MSS Expectations

Respondents having prior awareness of the Maryland Skills for Success did not give significantly different ratings than those who were not aware prior to receiving the survey. Table 28 shows a comparison of mean differences between the dean and department chair groups by their level of agreement. The deans with prior awareness of the MSS produced higher mean scores than those not aware; although, the deans without

prior awareness tended to disagree. In contrast, department chairs with prior awareness produced lower means than chairs with no prior awareness; although, both chair groups tended to agree that students were required to learn and perform the skills. One-way analysis of variance revealed no significant difference when awareness levels by groups were examined.

Ratings on the individual skill sets were also not significantly different when compared by level of awareness. One-way ANOVA revealed no significant difference when examining means by awareness level on the ratings for individual skill sets. Table 29 displays mean ratings on individual skill sets by awareness level. With the exception ratings for the interpersonal skill set, means given by the aware group were somewhat higher than those given by group who had no prior awareness.

Table 22

Group Means for Students Courses Require Students to Learn and Perform by Skill Set

Group		Learning	Thinking	Commun.	Technology	Interpersonal
1	Mean	3.97	4.34	4.64	4.07	3.74
	SD	1.36	.966	.931	1.33	1.23
	N	39	38	38	39	39
2	Mean	4.33	4.42	4.79	3.90	4.26
	SD	1.14	1.10	1.02	1.37	1.29
	N	45	45	44	44	45
3	Mean	3.41	4.06	4.06	4.45	3.60
	SD	1.33	.85	1.12	1.21	1.10
	N	31	31	31	31	30
4	Mean	3.34	3.60	3.74	3.97	3.37
	SD	1.17	1.20	1.07	1.19	1.18
	N	41	43	43	43	43
5	Mean	4.75	4.63	4.68	4.30	4.66
	SD	1.19	1.14	1.11	1.31	1.13
	N	33	33	32	33	33
6	Mean	3.89	4.03	4.00	3.37	3.60
	SD	1.17	1.24	1.08	.97	1.23
	N	28	29	28	27	28
Total	Mean	3.92	4.17	4.33	4.02	3.88
	SD	1.32	1.13	1.12	1.27	1.26
	N	217	219	217	217	218

Note:
1. Deans
2. Department Chairs, English, Fine Arts, Humanities
3. Department Chairs, Business, Business Technologies, Computer Systems
4. Department Chairs, Math, Science, Engineering
5. Department Chairs, Technologies, Healthcare
6. Department Chairs, Social Science, Human Services, Education

Table 23

Pearson Correlation for Students Required to Learn and Perform Expectations by MSS Category*

MSS Goals	Learning	Thinking	Commun.	Technology	Interperson.
Learning	1.00	.60	.52	.36	.62
Thinking	--	1.00	.62	.45	.64
Communication	--	--	1.00	.49	.62
Technology	--	--	--	1.00	.44
Interpersonal	--	--	--	--	1.00
Skill Set Grand Mean	3.92	4.17	4.33	4.02	3.88
SD	1.32	1.13	1.12	1.27	1.27
N	217	219	217	217	218

***** All correlations significant at the 0.01 level (two tailed).

Table 24

Students Required to Learn and Perform MSS Expectations: Grand Mean Scores by Group

Dean vs. Chairs Grand Means	Mean	SD	N
Academic Vice President, Dean, Associate Dean, Assistant Dean	4.11*	.92	39
All Department Chairs Combined	4.03*	.92	181
Total Grand Mean	4.05	.97	220

*(t = .42, df = 218, p > .05).

Department Chair Grand Means			
Department Chair, Division Chair, or Program Coordinator: English, Fine Arts, Humanities	4.33	.87	45
Department Chair, Division Chair, or Program Coordinator: Business, Business Technologies, Computer Systems	3.92	.89	31
Department Chair, Division Chair, or Program Coordinator: Math, Science, Engineering	3.60	.94	43
Department Chair, Division Chair, or Program Coordinator: Technologies, Health Care	4.60	.97	33
Department Chair, Division Chair, or Program Coordinator: Social Science, Human Services, Education	3.74	.93	29

* (F [5, 214] = 6.11, p < .01, MSE = .843

Table 25

Tukey HSD Significant Group Differences: Grand Mean Scores for Students Required to Learn and Perform MSS

Group (I)	Group (J)	Mean Difference (I-J)*	Std. Error
2	4	.73	.20
5	3	.66	.23
	4	1.00	.21
	6	.87	.23

Note:
1. Deans
2. Department Chairs, English, Fine Arts, Humanities
3. Department Chairs, Business, Business Technologies, Computer Systems
4. Department Chairs, Math, Science, Engineering
5. Department Chairs, Technologies, Healthcare
6. Department Chairs, Social Science, Human Services, Education

*Mean difference significant at the .05 level

Table 26

ANOVA of Group Ratings for Students Required to Learn and Perform by Skill Category*

Skill Set		Sum of Squares	df	Mean Square	F
Learning	Between Groups	52.95	5	10.59	6.94
	Within Groups	321.86	211	1.52	
	Total	374.88	216		
Thinking	Between Groups	25.7	5	5.15	4.31
	Within Groups	254.28	213	1.19	
	Total	280.06	218		
Communication	Between Groups	37.37	5	7.47	6.71
	Within Groups	235.06	211	1.11	
	Total	272.44	216		
Technology	Between Groups	20.55	5	4.11	2.62
	Within Groups	330.32	211	1.56	
	Total	350.88	216		
Interpersonal	Between Groups	43.40	5	8.68	6.04
	Within Groups	305.49	212	1.44	
	Total	348.89	217		

*All significant at $p < .05$

Table 27

Tukey HSD Significant Group Differences: Courses Require Students to Learn and Perform

Skill Set	(I) Position	(J) Position	Mean Difference (I-J)*	Std. Error
Learning	1	5	-.96	0.29
	2	3	.91	0.29
		4	.99	0.27
	3	5	-1.34	0.31
	4	5	-1.45	0.29
Thinking	1	4	.74	0.24
	2	4	.82	0.23
	4	5	-1.03	0.25
Communication	1	4	.90	0.23
	2	3	.73	0.25
		4	1.05	0.23
		6	.80	0.25
	4	5	-.94	0.25
Technology	3	6	1.08	0.33
	5	6	0.93	0.32
Interpersonal	1	5	-0.92	0.28
	2	4	0.90	0.26
	3	5	-1.07	0.30
	4	5	-1.30	0.28
	5	6	1.06	0.31

Note:
1. Deans
2. Department Chairs, English, Fine Arts, Humanities
3. Department Chairs, Business, Business Technologies, Computer Systems
4. Department Chairs, Math, Science, Engineering
5. Department Chairs, Technologies, Healthcare
6. Department Chairs, Social Science, Human Services, Education

*All listed mean differences are significant at the .05 level or lower.

Table 28

Prior Awareness Grand Means by Group for Students Required to Learn and Perform MSS

Group		Aware MSS		Total
		Yes	No	
Dean	Mean	4.23	3.60	4.11
	SD	.89	.93	.92
	N	32	7	39
Dept. Chair	Mean	4.08	4.02	4.04
	SD	1.06	.91	.98
	N	84	97	181
Total	Mean	4.65	3.91	
	SD	.96	.91	
	N	116	104	

Note: One-way ANOVA yielded no significant difference between awareness means.

Table 29

Prior Awareness Means by MSS Skill Category for Students Required to Learn and Perform MSS

Skill Set		Aware MSS		Total
		Yes	No	
Learning	Mean	3.97	3.85	3.91
	SD	1.41	1.22	1.32
	N	117	101	218
Thinking	Mean	4.27	4.05	4.16
	SD	1.13	1.13	1.14
	N	116	104	220
Communication*	Mean	4.41	4.27	4.34
	SD	1.15	1.09	1.12
	N	115	103	218
Technology	Mean	4.08	3.93	4.00
	SD	1.31	1.25	1.28
	N	116	102	218
Interpersonal	Mean	3.86	3.87	3.86
	SD	1.35	1.19	1.28
	N	116	103	219
Total	Mean	4.11	3.99	
	SD	1.31	1.20	

Note: One-way ANOVA yielded no significant differences between awareness means

Comments From Section II

Respondents were asked to provide comments on each of the five skill sets. The comments were analyzed for common themes. This section provides several pertinent examples of responses typifying those themes. A complete list of comments is provided in Appendix C.

Learning Skills

Comments associated with learning skills could be classified into three general categories, a) those dealing with learning processes, b) those dealing with teaching processes, and c) those dealing with content of the questionnaire or of the skill set. Thirty one comments were received for the learning skills segment.

Typical of the learning process comments were questions about the scope of the learning skills and how to get students to embrace them. For example a respondent wrote, “I don’t believe students think objectively about learning strategies. Rather, I believe they cast around until they find things that seem to work for them in each situation.”

Teaching process comments indicated a level of concern about how to teach the skills when most course objectives focus on content issues. Comments typical of this thinking were: “These goals are rarely identified as written objective, but are implicit in instruction. Delineating them would probably make them artificial and would make them unobtainable. Transfer of skills tends to be limited when skills are taught in isolation” and “Our learning objectives are more content oriented rather than encompassing, broad, philosophical expectations—the state demands more objective accountability criteria.”

Comments regarding content of the learning skills reflected the need for a context in which to respond adequately to the questions. Some felt the learning skills were too broad and wanted more specificity. Another respondent thought it would have been easier to respond had the instruction been to rate each expectation instead of rating the grouping.

Thinking Skills

Of the comments listed under the thinking skills section, the majority of the responses expressed skepticism or an unwillingness to be bound by a list. Some respondents questioned the appropriateness of the level of expectation. For example, a respondent wrote "We have these but don't prescribe them. Every college course should involve critical thinking, not just learn a checklist of thinking skills." Another respondent wrote, "To really learn these skills students need either a 4 year …or graduate degrees." Other comments indicated agreement that the skill set was important, or referred to how they are used in specific disciplines. Five comments focused on the importance of thinking skills in all areas of the curriculum.

Communication Skills

Surprisingly, the communication skills category received only 10 comments, the fewest of any of the skill sets. Comments did not seem to fall along a line of classification. Examples of the range of comments include: "This set is the most desired set by employers next to critical thinking. Through careful programming, it is possible to effect change—i.e. through six-credit writing sequence, writing intensive courses etc."

and “I should note that students who develop such skills do not do so by the means that you suggest” and “students on the whole come to college completely unprepared in communication skills—high schools only seem to stress informal communication skills ‘feeling’ equates to ‘thinking’ and students aren’t used to speaking in complete sentences in class or writing papers more than five pages.” Two respondents suggested additional skills. For example, “what about ‘quantitative skills’, ‘number sense’, ‘mathematical reasoning’?” and “more emphasis should be placed on listening skills. It is a vital component for learning success.”

Technology Skills

Comments under the technology skills category indicated a fair level of support for the goals and expectations; however, concerns were expressed regarding the feasibility and expense of keeping technology up to date. Again, content issues were cited by respondents ranging from the skill set being too broad, to the set being too narrow. Some suggested the skill expectations listed were too high for AA degree students, while others suggested an across the curriculum approach was necessary to enable students to learn technology skills. In all, 17 comments were received under the technology skills category.

Interpersonal Skills

Interpersonal skills receive many favorable comments (7 out of 16 responses). Some of the positive comments suggested the use of collaborative learning as part of course design, for example, a respondent wrote, “ certainly a pedagogical tool, good for

learning for many." Another respondent commented, " possibly the most important of the five goals." Others questioned whether the emphasis on interpersonal skills was valid, for example, one respondent commented, "group work is a business thrust. Individuals get hired, not teams. When businesses hire teams, we should more consistently train them." Another respondent commented, "in the end, 'works well with others' is part of life, but the bottom line in business is the person individually produces, not…the group. This much emphasis on group work is more politically correctness than addressing reality."

Section Three: Additional Questions

Respondents were asked three questions in the third section of the survey (marked "Additional Questions"), which pertain to research questions four through six. Using a six point Likert-like scale, respondents were asked to indicate the extent to which they agreed with the following statements:

- All Maryland community colleges should *teach* a common skill set similar to the Skills for Success for All Associate degree holders.
- All Maryland community colleges should *assess* student learning of a common skill set similar to the Skills for Success for all Associate degree holders.

Respondents were also asked to list any skills that should be added to the Skills for Success to make them more appropriate for associate degree completers. Results are reported for each question by presenting mean ratings given by the dean group and the combined department chairs and then by examining differences among the department

chair groups. The first two questions were examined for possible correlations with responses to questions regarding validity of MSS, whether students currently achieve the skills, and whether courses and programs contain specific objectives requiring students to learn and perform the MSS. Respondents were also asked to provide comments regarding the first two questions, which are summarized at the end of this section.

All Maryland Community Colleges Should Teach a Common Skill Set

Overall, respondents tended to disagree that all Maryland community colleges should teach a common skill set. Table 30 lists grand mean ratings by respondent group. In a characteristic pattern, the deans group produced the highest mean score for the question while the combined department chairs group tended to disagree. An independent sample t-test comparison of mean scores indicated there was a significant difference between the dean and combined department chair ratings (t= 2.12, df = 213, p = .03).

In terms of department chair comparisons, the technologies group tended to agree that a common skill set should be taught and produced the highest mean for the question. The English and the business groups also tended to agree. In characteristic fashion, the groups producing means in the disagreement range were math and the social science chairs. One-way analysis of variance revealed significant differences between the groups (F [4 171] = 3.40, p = .029, MSE = 2.03). However, application of Tukey's post hoc tests revealed significant differences between the social science group who produced the lowest mean score and the English, and technologies groups. Table 31 displays post hoc data showing significant group mean differences.

Grand mean ratings for the question “should all Maryland college teach a common skill set” were correlated with grand mean ratings for the other questions on the survey. Table 32 displays the correlation data for the survey questions. Correlation data indicated respondents tended to be very consistent in their answers to the “should teach” and “should assess” questions (grand means =4.19 and 3.95 respectively, r = .83). Moderate correlations were found between the should teach and should assess questions and responses for other questions on the survey, the strongest relationships occurring between the “should teach” and “should assess” questions with the validity question (r = .47, and r =.48 respectively).

Prior Awareness and Group Means for Should Teach Common Skill Set

One the whole respondents who had prior awareness tended to produce higher-mean ratings than those who did not. The deans who were aware tended to agree that a common skill set should be taught, while those with who were not tended to disagree. One-way ANOVA revealed no significant difference between the aware deans and the not aware deans. Department chairs with prior awareness produced slightly higher means than those with no prior awareness; although, both means fell in the disagreement range. Table 33 shows a comparison of mean differences between the dean and department chair groups, by their level of agreement.

Comments

Comments for the question of all Maryland community colleges should teach a common skill set were classified into three major categories: (a) those dealing with process issues, (b) those stating support, and (c) those pertaining to content issues. A total

of 28 comments were received. Respondents commenting on process issues tended to be skeptical that either statewide intervention, or having to respond to a formula, would denigrate rather than contribute to student learning. For example, one respondent said, “Once the government gets involved, my experience is that higher achieving groups are lowered, and the lower groups rise only appreciably.”

There was also disagreement as to whether the expectations were appropriate for all community college students. For example, a respondent thought that the skills should be taught “to appropriate student cohorts,” implying that students in non college-level courses were not yet ready to tackle these expectations. In contrast, three comments related to perceptions that high schools should be preparing students to perform the skills. A respondent commented, “Common skills should be taught in high school, leaving community colleges more autonomy.” Three comments focused on the theme of how to teach the common skill set. Expressing this sentiment, a respondent wrote, “Integrate into current curriculum—interdisciplinary concept. No separate curriculum/courses.”

Comments conveying support for all Maryland community colleges teaching a common skill set were typified by the following comments: “The ability to problem solve, think and communicate ARE [respondent’s emphasis] critical for any one completing higher educational programs” and “These seem to be critical skills for success beyond the community college in the educational arena and in life, work, etc. as well. I strongly agree!”

Comments relating to content of the skill sets indicated that the skill sets were too broad or lofty to be of practical use: “Every time I see a survey such as this, I understand why we do so poorly as a country on standardized tests. Where is the content? These

statements given in earlier pages provide absolutely no guidance as to educational level and serve only as feel good fluff! What a waste of taxpayer money."

Table 30

Means for All Maryland Community Colleges Should Teach a Common Skill Set

Dean vs. Chairs Grand Means*	Mean	SD	N
Academic Vice President, Dean, Associate Dean, Assistant Dean	4.41	1.29	39
All Department Chairs Combined	3.96	1.44	175
Total Grand Mean	4.19	1.41	214

*(t = 2.12, df = 213, p = .034).

Department Chair Grand Means**			
Department Chair, Division Chair, or Program Coordinator: English, Fine Arts, Humanities	4.20	1.40	45
Department Chair, Division Chair, or Program Coordinator: Business, Business Technologies, Computer Systems	4.00	1.20	30
Department Chair, Division Chair, or Program Coordinator: Math, Science, Engineering	3.52	1.45	42
Department Chair, Division Chair, or Program Coordinator: Technologies, Health Care	4.33	1.49	30
Department Chair, Division Chair, or Program Coordinator: Social Science, Human Services, Education	3.24	1.55	29

**One-way ANOVA (F [4, 171] = 3.40, p = .003, MSE = 2.03)

Table 31

Tukey HSD Multiple Comparison: Significant Group Differences for Should Teach Common Skill Set

(I) Position	(J) Position	Mean Difference (I-J)*	Std. Error
1	6	1.16	.34
	4	.89	.31
2	6	.96	.33
5	6	1.09	.37

Note:
1. Deans
2. Department Chairs, English, Fine Arts, Humanities
3. Department Chairs, Business, Business Technologies, Computer Systems
4. Department Chairs, Math, Science, Engineering
5. Department Chairs, Technologies, Healthcare
6. Department Chairs, Social Science, Human Services, Education

*All listed mean differences are significant at the .05 level or lower.

Table 32

Pearson Correlation* for Should Teach and Should Assess MSS With Grand Means of Section Two Questions

Survey Question	Should Teach	Should Assess	Grand Mean Valid Expect	Grand Mean Students Achieve	Grand Mean Learn & Perform
Should Teach	1.00	.83	.47	.33	.40
Should Assess	--	1.00	.48	.29	.40
Grand Mean	4.19	3.95	4.90	3.83	4.05
N	214	212	221	218	220
SD	1.41	1.45	.97	.77	.97

* Correlation is significant at the 0.01 level (2-tailed).

Table 33

Impact of Prior Awareness on Group Means for Should Teach Common Skill Set

Group		Aware MSS		Total
		Yes	No	
Dean	Mean	4.53	3.85	4.19
	SD	1.24	1.46	1.44
	N	32	7	39
Dept. Chair	Mean	3.92	3.81	3.86
	SD	1.44	1.45	1.45
	N	83	93	176
Total	Mean	4.12	3.91	
	SD	1.02	.91	
	N	116	104	

Note: One-way ANOVA yielded no significant difference between awareness means

All Maryland Community College Should Assess a Common Skill Set

Overall, respondents tended to disagreed that all Maryland community colleges should assess student learning of a common skill set. The range and standard deviation of responses were among the widest on any question. Table 34 lists grand mean ratings by respondent group. The deans group tended to agree that Maryland community colleges should assess student learning of a common skill set. The combined department chairs group disagreed somewhat. One-way analysis of variance showed a significant difference between the deans group and the department chairs group (F [1, 210] = 12.96, $p < .01$, $MSE = 2.02$).

Comparing department chair responses, the technologies group produced the highest mean score, agreeing that a student learning of a common skill set should be assessed. The English group also tended to agree while the math, business, and the social science groups tended to disagree. The social science mean for this question (3.10) was the lowest produced on the entire survey. One-way analysis of variance revealed significant differences between the groups (F [5, 206] = 6.28, $p < .01$, $MSE = 1.89$). However, applying Tukey's post hoc test revealed significant differences only between the social science group and the deans, math, and technologies groups. Table 35 displays post hoc data showing significant group differences for the colleges should assess a common skill set question.

Grand mean ratings for this question were correlated with the grand mean ratings for the other questions on the survey. Correlation data was presented in Table32 and reported in the previous section.

Prior Awareness and Should Assess Means

Table 36 shows a comparison of mean differences between the dean and department chair groups, and their level of agreement that all Maryland colleges should assess student learning of a common skill set. Deans with prior awareness tended to agree that a common skill set should be taught, while those with no prior awareness disagreed. Department chairs in both aware and not aware groups produced means in the disagree range. Those department chairs with prior awareness produced a slightly lower mean than those not aware; although, the difference was negligible. One-way ANOVA showed no significant difference between the aware and not previously aware groups.

Comments

Respondents provided 29 comments in all. Comments fell in four categories, (a) those flatly against the notion of assessing a common skill set, (b) those who questioned the feasibility of assessment, (c) those in general support, and (d) miscellaneous comments. Comments that indicated an opposition to assessing a common skill that were characterized by such comments as: “Not sure I like overall uniformity. I want to maintain academic freedom” and “We would spend too much time trying to fit into some government format for learning/assessment.”

Respondents questioning the feasibility of assessment of a common skill set stated were represented in the following comments: “Several goals wold be difficult if not impossible to assess-i.e. Goal 1, expectation #3; Goal 4, expectation #4. Others would be best assessed post graduation.” Another comment in this category was “very difficult because of so many variables which come into play.”

Comments indicating support for assessing a common skill set included, “The education system needs to change- but it isn’t wise to simply overlay these objectives and assess them. They need to be carefully built into the philosophy of teaching and creating learning communities,” and “If a common set is established, we should assess”. Another comment in this category was, “I think this is an excellent plan to promote higher standards, thus greater potential for life proficiency.”

Questions regarding content issues expressed concern that the skills were not complete. Such comments as, “I think that the skills for success should be spelled out more specifically,” and “This content needs more work from my perspective before uniform outcomes assessment is adopted” typified this sentiment.

Table 34

Means for All Maryland Community Colleges Should Assess a Common Skill Set

Dean vs. Chairs Grand Means*	Mean	SD	N
Academic Vice President, Dean, Associate Dean, Assistant Dean	4.69	1.17	39
All Department Chairs Combined	3.78	1.46	173
Total Grand Mean	3.95	1.46	212

*(t = 3.60, df = 210, p < .01)

Department Chair Grand Means**			
Department Chair, Division Chair, or Program Coordinator: English, Fine Arts, Humanities	4.02	1.45	45
Department Chair, Division Chair, or Program Coordinator: Business, Business Technologies, Computer Systems	3.80	1.24	30
Department Chair, Division Chair, or Program Coordinator: Math, Science, Engineering	3.51	1.45	41
Department Chair, Division Chair, or Program Coordinator: Technologies, Health Care	4.50	1.40	28
Department Chair, Division Chair, or Program Coordinator: Social Science, Human Services, Education	3.10	1.49	29

**One-way ANOVA (F [4, 168] = 4.15, p = .003, MSE = 2.01)

Table 35

Tukey HSD Multiple Comparison: Significant Group Differences for Should Assess Common Skill Set

(I) Position	(J) Position	Mean Difference (I-J)*	Std. Error
1	4	1.180	.301
	6	1.588	.337
4	5	-.987	312
5	6	1.3962	.365

Note:
1. Deans
2. Department Chairs, English, Fine Arts, Humanities
3. Department Chairs, Business, Business Technologies, Computer Systems
4. Department Chairs, Math, Science, Engineering
5. Department Chairs, Technologies, Healthcare
6. Department Chairs, Social Science, Human Services, Education

*All listed mean differences are significant at the .05 level or lower.

Table 36

Impact of Prior Awareness on Group Means for Should Assess Common Skill Set

Group		Aware MSS		Total
		Yes	No	
Dean	Mean	4.78	4.28	4.38
	SD	1.12	1.38	1.21
	N	32	7	39
Dept. Chair	Mean	3.77	3.79	3.78
	SD	1.44	1.49	1.47
	N	83	92	175
Total	Mean	4.06	3.82	
	SD	1.43	1.45	
	N	113	99	

Note: One-way ANOVA yielded no significant difference between awareness means

Suggestions for Additional Skills

Respondents were asked to suggest any additional skills that should be added to the MSS to make them more appropriate for associate degree completers. Fourteen comments were received and are characterized in two groups: those suggesting additional skills and those taking the form of a final comment on the MSS.

Additional Skills Grouping:

Two comments were received suggesting additional skills. One of those comments suggested three skills related to personal management, " 1. Time management. 2. Prioritizing how do you do your home work when kids are sick, or how do you get to class when the day care provider is sick? 3. Self Evaluation—aiming higher." Another comment suggested the addition of "leadership skills" to the MSS.

Final Comment Grouping:

Twelve comments seemed to sum up the respondent's feelings about the skills. Most comments (10) questioned the feasibility of a common skill set or questioned the process. The following represent sentiments expressed among the comments about feasibility: "No doubt, these are worthwhile skills for people to have, but how will you teach them?" and, "I think the focus on AA completers is too narrow because there are so few completers. All of these skills might appropriately be part of the general education core where most students sit at any given time." Examples of comments relating to process are: "It does become tiring trying keep up with the latest goals in education. Is this for real, or will it be merely another in a long list of old ideas?" and, "These

expectations seem high even for a 4-year program. Do you really expect these kind of results from a 2-year education?" Two comments supported the MSS: "Very well done." and, "If we graduate students with these skills we will have done a good job."

Chapter Summary

Respondents indicated agreement that the MSS were valid expectations for Associate degree completers. They were less enthusiastic regarding questions relating to students currently achieving such skills or that their courses and programs contained specific objectives requiring students to learn and perform the skills. Overall, respondents did not agree that all colleges should teach and assess a common skill set; although, analysis by group indicated that some groups thought a common skill set would be desirable. Several concerns were expressed about the feasibility of a common skill set and about possible intrusion from state governmental bodies. As one respondent put it "I suggest that the committee which came up with this survey [skills set] be disbanded and reformed [replaced] with academics who have some idea about college-level education." [researcher's clarification]

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The SCANS report issued in 1990 brought national attention to concerns about lagging competencies of US workers and their lack of preparedness for the high-performance workplace. Since the SCANS report, several national and statewide efforts have attempted to identify skill sets appropriate for success in the changing workplace. Recent discussion has included skill sets appropriate for college graduates. This study was designed to determine perceptions of Maryland community college chief academic officers and department chairs toward the one such skill set, the Maryland Skills for Success, and whether they are perceived as appropriate learning expectations for associate degree completers. Chief academic officers and department chairs were selected as subjects for the study because they are responsible for overseeing change in academic policy and curriculum development processes at their institutions.

The study included a survey of 293 individuals in this population at the 18 community colleges across Maryland. A 75.4 percent response rate was achieved. The survey instrument included questions pertaining to: (a) whether the Maryland Skills for Success are appropriate expectations for associate degree completers, (b) respondent perceptions about student achievement of these skills, (c) the degree to which courses and programs contain specific learning objectives that require students to learn and perform such skills, (d) respondent attitudes about all Maryland colleges teaching and assessing a

common set of higher-order knowledge application skills, and (e) suggestions for skill additions to the MSS.

Summary

Summary of Findings for Questions I through III

All groups tended to agree the Maryland Skills for Success represented valid expectations for associate degree completers. Similar to Matlick's (1990) findings regarding Maryland higher educator's perceptions of the validity and worth of outcomes assessment, the deans group provided the highest ratings of all groups on the question of validity while department chairs tended to produce lower mean ratings. Of the department chair groups, the English and the technologies chairs tended to provide significantly higher ratings than did the math and social science groups, which tended to provide significantly lower ratings.

The individual skill sets received ratings in the agreement range by each group, with the exception of thinking skills, which received disagreement ratings from the social science group. Communication skills received the highest validity mean scores, which ranged from 5.12 given by the deans, to 4.57 given by the social science chairs. Very few comments were received regarding communication skills. One respondent stated his college was involved in teaching communication skills across the curriculum. Another respondent wrote, "this set is the most desired by employers next to critical thinking skills. Through careful programming, it is possible to effect change, i.e. six credit writing sequence, writing intensive courses etc." One respondent thought the skills lacked direction about the extent and nature of class participation. Another respondent wrote,

"more emphasis should be placed on listening skills. It is a vital component of learning success."

The individual skill sets were seen as valid by groups that have primary responsibility for imparting them. For example, the communications and interpersonal skill sets passed muster with the English/fine arts/humanities group, the departments most closely associated with teaching them. Technology skills received favorable ratings by all groups including the business group, the technologies group, and the math group. However, a technologies chair commenting on the expectation "*Students will be able to analyze the effects of technology on individuals and society and the environment*" stated that they were beyond the expectations normally thought of for AA degree students.

Learning and thinking skill sets were also seen as valid, however, several comments indicated the associated expectations were too broad. There was a sense that it would be somewhat overwhelming to try to integrate them into courses, and that performance of these skill sets would be difficult to track.

Respondents generally disagreed that students currently achieve the MSS skill expectations except for the communication skills, which received the highest grand-mean rating (4.0) of the skill sets on this question. Learning skills received the lowest grand-mean rating (3.67). The deans tended to agree most often that students currently achieve the MSS skills expectations; although, they disagreed students achieved technology skill expectations. The English chairs and the technologies chairs tended to agree that their students achieved both the communication and interpersonal skill expectations, and the business group tended to agree their students achieved technology expectations. The

other groups produced significantly lower means for the question, disagreeing their students currently achieved the expectations listed in any of the five skill sets.

Comments indicated respondents did not see eye to eye over the level of expectation of the skill sets. Some respondents thought the levels were too advanced to be accomplishable within the scope of a two year program, while others thought students should come to the community college prepared to perform such skills. However, given the general disagreement shown in respondent ratings regarding student achievement of the MSS, it is evident relatively few respondents would have expected students to come from high school prepared to demonstrate the MSS skills expectations. Other comments indicated associate degree completers were not an appropriate group to be concerned with because relatively few students complete degree programs.

On the question of whether respondent's courses and programs contained specific learning objectives requiring students to learn and perform the MSS expectations, responses took on a somewhat different pattern than was found for the previous questions. The deans tended to disagree while the chairs tended to agree; although, this was primarily due to the influence of the scores produced by the English and technologies chairs (grand means of 4.33 and 4.60 respectively). Responses for the individual skill sets were also varied. With the exception of the math chairs, all groups agreed students were required to learn and perform both thinking and communication skills expectations. While it is not surprising the math group disagreed their courses and programs had specific objectives requiring students to learn and perform communications skills, it is surprising they disagreed their courses and programs required students to learn and perform thinking skills, since thinking skill expectations represent many of the reasoning

processes required in the disciplines of math, science and engineering. Additionally, they were the only group to produce a score in the disagreement range for the thinking skill set for this question. It is interesting to note from the previous question, that the math chairs disagreed students achieve the MSS thinking skills, but agreed their students currently achieve communication skills.

Only the English and technologies groups agreed students were required to learn and perform both the learning and interpersonal skills expectations. Noting their responses from the previous question, they also agreed their students achieve them. For technology skills, the deans, business, and technologies chairs agreed their courses and programs contained learning objectives requiring students to learn and perform the MSS expectations. The math group tended to disagree, producing a mean score that was consistent with their rating on the question of student achievement of technology skills.

Several comments related to the question of whether the courses and programs offered by respondents had specific learning objectives requiring students to learn and perform the MSS expectations. For example, some respondents commented they thought "learning objectives" were tantamount to educational jargon and were not necessary for good teaching. Some commented that their objectives were not as "metacognitive" in nature and tended to focus more on content goals. Evidently, those providing comments saw little connection between the expectations for students in their classes and those listed in the MSS. Indeed it was somewhat surprising based on ratings that more respondents did not comment that they had already incorporated many of the expectations, particularly those listed in the communication skill set.

Summary of Findings for Question IV through VI

Respondents generally disagreed when asked if all Maryland community colleges should teach and assess a common skill set. Again, the deans tended to agree with both questions while the combined department chairs tended to disagree; however, this was primarily due to the influence of significantly lower mean scores produced by the math and social science chairs. The remaining department chair groups produced mean scores in the agreement range for both questions.

A number of comments reflected support for all community colleges teaching and assessing a common higher-order skill set. One respondent (a dean) even thought the practice should eventually be tied to performance funding, an issue that is under consideration in Maryland. However, even from those providing favorable comments, came concerns over the feasibility of reaching consensus and appropriate methods for integrating and assessing a common skill set. Some respondents warned against establishing individual courses to teach the skills, arguing that the skills should be integrated into existing courses. Others expressed distrust of state involvement in curricular processes and argued an "artificial list" would impinge on academic freedom and would be too restrictive in terms of approach. Others thought that it was too difficult to teach and assess the MSS because there were too many variables to control for, and community college student populations were too diverse to make the practice valid and meaningful.

When asked to suggest additional skills that might make the MSS more appropriate for associate degree completers, respondents provided very few comments

related to additional skills. Computational skills and leadership skills were notable suggestions.

Summary of Findings for Question VII

In general, ratings of those with prior awareness were somewhat higher than for those who were not aware prior to receiving the survey; however, only the grand mean difference for the validity of communication skills was significantly higher for those with prior awareness. This question was examined because the statewide Mandate for the secondary system in Maryland to integrate and assess the MSS into the core learning goals had received strong criticism from many educators across the state. It was expected that those from the community colleges who were knowledgeable of this requirement would have been less favorable toward the MSS because of the controversy associated with the mandate. While some respondents expressed concerns about the state's involvement in curricular processes, the expected patterns of receiving less favorable responses from the groups with prior awareness was not evident.

Conclusions

On the basis of respondent ratings and comments it is reasonable to conclude the Maryland Skills for Success provide a valid set of higher-order knowledge application skills for associate degree completers. Colleges wishing to integrate such skills into their curricula would likely find the MSS an acceptable framework from which to begin discussion. It appears the deans had a generally more favorable view of the validity of the

MSS, and were more confident that colleges are requiring students to learn them. However, they were not as convinced that students currently achieve them as were the department chairs. It is possible that the deans ratings are higher because they have to keep a broader view of what must be accomplished within the curriculum and see a stronger connection between higher-order knowledge application skills and the requirements of the workplace. Of the chairs groups, the English and technology chairs tended to give significantly higher ratings while the math and social science groups tended to give significantly lower ratings. Moderate to high correlations indicated that respondents tended to be fairly consistent in their ratings across the skill sets.

Communication skills stood out as the skill set receiving the most congruent responses; that is, the communication skills were seen as valid, most groups agreed they were required to be learned and performed, and most groups believed students generally achieve them. It is difficult to know why this skill set received the highest mean scores. A plausible conjecture is that respondents were more sensitized to communication skills than other skill sets because many faculty have encountered issues associated with student communication skills in their classes. Additionally, emphasis on writing across the curriculum in some institutions has brought disciplines outside of English and humanities to consider requiring that students perform writing competencies. It is interesting to note that although the respondents tend to believe students achieve communication skills in particular, employers in the state rate communication competencies as those most lacking among new hires (MHEC, 1996).

The skills producing the most incongruent ratings were the learning skills and technology skills. They were rated as valid expectations, but received the most

disagreement on questions relating to student achievement, and requirements for them to be learned and performed. Learning and technology skills were the most vague of the five skill sets. In particular, the technology skills would be the most difficult to be translated into concrete learning objectives across the array of disciplines. Learning skills, on the other hand, should be easily translatable in terms of learning objectives. It is possible that learning process expectations do not tend to be emphasized in courses and programs because instructors believe that learning strategies should be well practiced before students enter college. Several respondent comments support this conjecture.

On the basis of the above, it is reasonable to conclude that in terms of individual skill sets, the communication, thinking and interpersonal skill sets would likely have the best chance of gaining acceptance by colleges interested in integration of purposeful teaching and assessment of a higher-order skill set. Because of their lower overall ratings, technology and learning skill expectations might prove to be more difficult to use for this purpose.

Based on respondent ratings about teaching and assessing a common skill set, it is safe to conclude that it is unlikely that the colleges would undertake a common initiative to develop the Maryland Skills for Success on their own. Even though the deans tended to support the idea of teaching and assessing a common higher-order skill set, in all probability they would face opposition from some department chairs, who were less than enthusiastic about the notion. In particular, consideration would need to be given to the difference in perceptions between the deans and the math/science/engineering and social science/human services/education department chairs over the viability of the skills and the appropriateness of teaching and assessing the MSS. The perceptual differences

between these groups are wide enough that friction is likely to develop over the prospect of adopting a common skill set.

The business/business technologies/computer systems and the technologies/healthcare department chairs oversee programs that prepare students for direct entry into the workforce. On that basis, these groups could have reasonably been expected to produce a higher level of agreement on the questionnaire. The technologies healthcare group tended to produce mean scores significantly higher than other groups, but that was not the case for the business chairs. The business chairs tended to consistently fall in the middle of the five chairs groups in their ratings. Based on these findings it would be important to engage the business group in a deeper discussion of the skills sets, especially focusing on their reactions to the skills sets as preparation for the workforce.

If a mandate to integrate the Maryland Skills for Success into the current general education core, or through some other curricular method, was to be issued from the legislature or state educational agencies, some opposition would be met. However, that opposition is not likely to be strong since the deans, who would most likely be involved in such discussion, tend to be favorable toward teaching and assessing a common skill set. Based on respondent comments, the resistance encountered would most likely center on process, assessment, and accountability issues, and would only be strong if care were not taken to involve the colleges in the process of designing the system and establishing accountability guidelines. Respondent concerns over state involvement in curricular processes and the feasibility of the integration of skills without harming course content would have to be dealt with.

Based on respondent ratings and comments, it appears that short of direct intervention from the state, the most feasible approach to promote a more purposeful and systematic inclusion of higher-order knowledge application skills in postsecondary settings would come from a voluntary effort that would stem from an established venue for discussing statewide educational concerns, not directly from MHEC or MSDE. Such venues would include the K–16 partnership, the current school-to-work transition efforts in Maryland, referred to as "Career Connections," or perhaps through the developing Maryland Business/Higher Education Council. There was agreement from all groups the communications skills were valid, and moderate agreement that they were both included as learning requirements and currently being achieved by students. Therefore, the communications skill set should serve as the focal point of initial discussion among participants. The English/Fine Arts/Humanities department chairs, who would most likely be involved in the discussion, tended to agree that a common skill set should be taught and assessed statewide, and were favorable in most of their ratings for the entire skill set. Additionally, there is a current effort, under the auspices of the Maryland K-16 Partnership, to define college-level competencies, as well as the adoption of common assessment instruments and cut-off scores for placing students into college-level vs. remedial classes. MSS communication skill expectations could be included in the deliberations of the K-16 Partnership working groups. Because of their relative levels of agreement among respondents, thinking and interpersonal skill sets could also be placed in the queue. Further discussion would have to take place regarding the feasibility of adding the learning and technology skill sets since they tended to receive lower overall ratings.

The ratings of respondents with prior awareness tended to be slightly more favorable than the ratings of those who did not have prior awareness. Although the group differences were not significant, a reasonable conclusion can be offered that greater efforts to create awareness of the MSS might have a positive effect on perceptions of higher educators across the state. However, based on respondent comments, focus would need to be placed on feasible approaches that are accomplished within higher education settings. Indeed, some respondents were interested in the possibility of ensuring greater student achievement of higher-order knowledge application skills but were uncertain as to how this might be accomplished, and were fearful of bureaucratic intrusion in the process. As a respondent stated, "the education system needs to change but it isn't wise to simply overlay these objectives and assess them. They need to be carefully built into the philosophy of teaching and creating learning communities." Therefore, before any wide-scale adoption of a common skill set is feasible, extensive efforts to promote discussion, faculty development, and providing information regarding strong models would have to be made available statewide.

Recommendations

Recommendations are written in two parts: 1) recommendations for Maryland education agencies and community colleges interested in promoting the development of higher-order knowledge application skills, and 2) recommendations for further research.

Recommendations for Maryland State Agencies and Community Colleges

1. Several respondent comments indicated a sense of confusion over how the MSS skill expectations could be taught and assessed. Some warned against establishing separate courses and questioned whether the MSS could be appropriately integrated out side of general education courses. Some were especially distrustful of the notion of government involvement. Therefore, rather than a mandate, the Maryland Higher Education Commission, in cooperation with the Maryland State Department of Education, should develop an incentive system for institutions interested in working together toward a purposeful approach to teaching and assessing higher-order knowledge application skills. Incentives could be in the form of challenge grants to develop demonstration projects and to provide faculty development, training, and exploration of appropriate practices. Once models are established, the emphasis should shift toward rewarding institutions who demonstrate student achievement of the learning expectations involved in the MSS. If the feasibility and practice of integrating and assessing student learning of the MSS or similar skill set is improved via the incentive funding approach, then perhaps a mandate with incentives should be considered for institutions not participating in the practice.
2. Build on current strengths and processes by reviewing the skill sets which produced the highest ratings from respondents. Using communication skills as a model skill set, engage appropriate groups in discussions about strengthening these skills and creating a common standard for performance. Establish a subcommittee under the auspices of either the Maryland K-16 partnership, or MHEC's proposed Maryland

Business/Higher Education Council to examine and recommend appropriate methodologies for integration of the skills. Emphasis should be placed on faculty development and on creating appropriate curricular enhancements, including effective teaching and assessment strategies. Such efforts would have to respond to misconceptions, answer questions about process, provide examples of good practice and models for integrating and assessing higher-order skills expectations.

3. Because concern was expressed over being overly constrained by a the MSS, establish processes whereby appropriate department chairs and faculty review and compare the MSS with other learning goals, such as those developed by the NCTLA, or SCANS. If necessary, draft a new MSS for Higher Education.
4. Examine the progress being made by the public school system toward their mandate for teaching and assessing the MSS. Attention should be given to issues identified by the public schools as students and local jurisdictions become accountable for demonstrating MSS skill expectations within the core disciplines. Colleges will be the beneficiaries of the expected improvement in student performance; therefore, they should work closely with the public schools to help clarify skill levels needed at the college level, both in terms of the discipline requirements and in terms of higher-order knowledge application skills.
5. If a mandatory requirement to teach and assess the Maryland Skills for Success were to be issued, it should be linked to the statewide performance indicator system for higher education, or be placed as a specific requirement in the obligatory outcomes assessment reporting process required for each college. Currently, the performance indicator system does not include indicators for learning effectiveness.

6. Since representatives from the business and employment community were involved in the development of the skill set, it would be helpful to create a stronger connection between the department chair groups and representatives from the employment community. A subcommittee of the developing Business and Education Council should created to sponsor this discussion and to build a better understanding of how the skill set expectations might and might not meet the needs of all constituents.
7. Maryland should seek funding through the US Department of Education and work with the higher education research community to develop models for promoting teaching and assessment of higher-order knowledge application skills. Specifically, the Maryland Higher Education Commission should closely monitor the work of the National Higher Education Cooperative's Student Outcomes From a Policy Perspective Working Group as they research and evaluate their academic outcomes taxonomy.

Recommendations for Further Research

1. Research is needed to examine the difference between high school and college level performance on the MSS skill expectations. If the secondary schools are developing criteria for assessing the MSS, how can these criteria be used to begin defining the differences between secondary and post secondary levels of skill performance.
2. Because the generalizability of this study is limited to the state of Maryland, replication of this study in other states is needed to deepen understanding of

community college educators attitudes toward teaching and assessing higher-order knowledge application skills.

3. This study found evidence that some academic deans and department chairs believe their courses and programs have specifically written requirements for students to learn and perform the MSS expectations. Case studies and an examination of such specific course requirements at various colleges could be useful in providing needed information to improve practice. Jones et al (1994) noted a similar recommendation for research regarding the NCTLA learning goals:
4. A formal and systematic review of cross-sectional samples of collegiate assignments and examinations by the faculty members who teach courses could provide useful information. Expectations and levels of advanced achievements could be more clearly defined. In order to determine if college students have become better critical thinkers or communicators, an evaluation would need to be tied to the goals that were specifically targeted in the courses. Innovative, model course activities and assessment techniques that faculty have designed to develop students' communication and critical thinking skills could be identified and serve as examples that other faculty…could consider. (p.45)
5. Research is also needed to better define the interactive nature of higher-order skills and to illuminate more specifically their dependence and reliance on other higher-order skill sets. Carter-Wells (1996) cited a similar need for specific research on higher order skills relating to critical reading. She stated:
6. What are the behaviors common to critical thinking and all of the communication skills including reading? What does it mean to assess, evaluate, judge, or interpret in

each of these areas and what do they have in common? What might be the components of a theoretical construct linking critical thinking and reading, writing, and speaking? What are their common underpinnings, such as organizing information or seeing relationships? Finally, what are the adult development theories that correlate or better explain the critical reading process as a constructionist, or meaning-making, or lifelong leaning process? (p. 52&53)

7. Maryland has established a system of higher education effectiveness indicators, and also specifies a requirement for institutions to report yearly on their learning outcomes assessment practices. However, learning outcomes, especially those associated with higher-order knowledge application skills, have not been integrated into the effectiveness indicator system. Additional research on the inclusion of learning outcomes expectations in higher education effectiveness indicator systems could be useful to the Maryland Higher Education Commission, as well groups such as the National Higher Education Cooperative.

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Appendix A

Survey

SURVEY
Maryland Skills for Success

Code:_____ (need only for contacting nonrepondents)

Dear Maryland Community College Academic Leader:

Education has recently been criticized for not assuring that students have developed essential skills needed for success in the workplace. As you may know, the Maryland Skills for Success were developed by the State Department of Education as part of the high school performance assessment. They are designed to ensure that students develop higher-order skills to better prepare them for the rapidly changing workplace and for continued learning. There are those who believe that the skills identified will be applicable to community colleges as well. Accordingly, I am distributing the enclosed questionnaire to community college academic deans and department heads across the state to assess the extent to which they believe these skills are applicable to the community college. An overview of the Skills for Success is provided on the next page.

Your responses will be kept confidential. *No individual respondent or college will be identified in the results.* Only aggregated data will be reported. In addition to helping me complete my doctoral studies, the results of this study will be helpful to the Maryland State Department of Education, the Maryland Higher Education Commission, and the work of the K-16 Partnership. A summary of the survey results will be made available to all survey respondents.

I appreciate your assistance. Please return the survey to Mr. James Ball at Howard Community College using the enclosed pre-addressed and stamped envelope by February 20, 1998.

Sincerely,

James D. Ball
Vice President and Dean of Students
Howard Community College
10901 Little Patuxent Parkway
Columbia, MD 21044
410-772-4767
jball@ccm.howardcc.edu

The Maryland Skills for Success

✳✳✳✳✳✳

In 1994, the Maryland State Board of Education charged the Maryland State Department of Education (MSDE) to develop a program to identify, integrate and measure core academic learning goals, as well as student acquisition of "cross disciplinary" skills. The cross disciplinary skills represent higher-order skills which should better prepare students for lifelong learning and for employment in the high performance workplace. MSDE has dubbed these higher-order skills the "Skills for Success" to distinguish them from the content-centered core learning goals established in English, mathematics, science, and social studies.

Five teams comprised of representatives from secondary and postsecondary education, and the Maryland Business Roundtable developed the Skills for Success. The teams consulted several existing skill sets such as those developed by the Secretary's Commission on Achieving Necessary Skills (SCANS). Although the teams conceived the skills for inclusion in high school programs, the skill goals were also intended to be applicable at the post secondary level as well.

The Skills for Success are comprised of five major skill goal categories: 1) learning; 2) thinking; 3) communication; 4) technology; and 5) interpersonal. Statements of learning expectations elaborate what students should be able to achieve under each goal. While the Skills for Success goals and expectations are all listed within the attached survey, a list including examples of learning activities (too numerous to list in this document), may be obtained from MSDE.

Directions:

1. Please complete the information in sections I and II on the opposite page.

2. Then, on the following pages, review each ***skill goal*** and ***expectation*** for the five Maryland Skills for Success. On the opposite page, indicate your agreement with each statement. Your responses should reflect your sense of all the expectations listed on that page, not each expectation individually.

4. If you have any questions regarding this survey, please call James Ball at 410-772-4767.

Section I
Please check only one box below that ***most closely*** fits your title.

❑ Academic Vice President, Dean, Associate Dean, or Assistant Dean

❑ Department Chair, Division Chair, Program Coordinator: English, Fine Arts, Humanities

❑ Department Chair, Division Chair, Program Coordinator: Business & Business Technologies, Computer Systems

❑ Department Chair, Division Chair, Program Coordinator: Mathematics, Science, Engineering,

❑ Department Chair, Division Chair, Program Coordinator: Technologies, Healthcare

❑ Department Chair, Division Chair, Program Coordinator: Social Science, Human Services, Education

Section II
Before receiving this survey, I was aware of the Maryland Skills for Success**.**

❑ Yes ❑ No

Maryland Skills for Success

✳✳✳✳✳✳

Goal #1 Learning Skills: The community college student will plan, monitor, and evaluate his or her own learning.

1. ***<u>Expectation</u>: The student will establish and pursue clear and challenging goals and plans for learning by:***

   - Developing short- and long-range goals for learning.
   - Developing plans to support achievement of learning goals.
   - Implementing learning plans, using appropriate resources, skills, and learning strategies.

2. ***<u>Expectation</u>: The student will monitor progress, solve problems, and evaluate his or her own learning experiences by:***

   - Monitoring progress when learning.
   - Identifying and evaluating problems that may interfere with learning.
   - Persevering, when appropriate, in difficult learning situations.
   - Identifying and adapting, as necessary, to difficulties in learning and to changing needs and situations.
   - Evaluating learning experiences and plans.

3. ***<u>Expectation</u>: The student will apply acquired knowledge, skills, and strategies effectively in new learning situations by:***

   - Identifying and evaluating new learning opportunities.
   - Identifying similarities and differences between old and new learning situations.
   - Identifying and using knowledge, skills, or strategies, as appropriate, in new learning situations.
   - Evaluating the usefulness of acquired knowledge, skills, and strategies in new learning situations.

Survey Questions:

Please indicate your agreement with each of the three statements below by circling the number on the continuum that best represents your views,with 1 being **strongly disagree** and 6 being **strongly agree**. Your responses should reflect your sense of all the expectations taken collectively, not each expectation individually.

1) The skills and expectations on the facing page are valid expectations for associate degree completers.

1 - 2 - 3 - 4 - 5 - 6
strongly disagree *strongly agree*

2) Most associate degree completers at your college currently achieve the skill expectations stated on the facing page.

1 - 2 - 3 - 4 - 5 - 6
strongly disagree *strongly agree*

3) In the courses and programs you oversee, there are specific written learning objectives that require students to learn and perform the expectations listed on the facing page.

1 - 2 - 3 - 4 - 5 - 6
strongly disagree *strongly agree*

Comments about expectations listed in this section:

Maryland Skills for Success

✳✳✳✳✳✳

Goal #2 Thinking Skills The community college student will think creatively, critically, and strategically to make effective decisions, solve problems, and achieve goals.

1. ***Expectation: The student will generate and evaluate creative ideas in a variety of situations by:***

   - Developing alternative perspectives or ways of thinking and acting in complex situations.
   - Representing creative ideas in verbal or nonverbal forms appropriate to purposes and situations.
   - Testing and evaluating creative ideas before adopting them.

2. ***Expectation: The student will evaluate ideas, information, issues, and positions critically by:***

   - Identifying key ideas and issues in complex situations.
   - Evaluating the relevance and usefulness of supporting information in ideas and issues.
   - Examining basic concepts and assumptions underlying ideas, issues, or positions.
   - Establishing clear criteria for evaluating ideas, issues, or positions.
   - Recognizing bias, vested interests, stereotyping, manipulation, and misuse of information.
   - Using evidence and/or reason to support or refute ideas, issues, or positions.

3. ***Expectation: The student will demonstrate strategic thinking to make effective decisions, solve problems, and achieve goals in a variety of situations by:***

   - Demonstrating an awareness of his or her own strategic thinking and that of others.
   - Framing questions, problems, and issues strategically in specific situations.
   - Identifying performance goals appropriate to available resources, skills, and situations.
   - Identifying alternative strategies to achieve performance goals.
   - Planning and following steps to make effective decisions and achieve goals.
   - Monitoring, evaluating, and making necessary adjustments in goals, plans, or actions.

4. <u>Expectation</u>: The student will solve problems systematically and rationally by:

- Understanding situations within which problems are embedded.
- Defining problems in specific situations.
- Identifying and evaluating alternative ways of solving problems.
- Selecting and using appropriate strategies to solve problems.
- Evaluating solutions and strategies used to solve problems.

Survey Questions:

Please indicate your agreement with each of the three statements below by circling the number on the continuum that best represents your views,with 1 being **strongly disagree** and 6 being **strongly agree**. Your responses should reflect your sense of <u>all the expectations taken collectively, not each expectation individually.</u>

1) The skills and expectations on the facing page are valid expectations for associate degree completers.

1 - 2 - 3 - 4 - 5 - 6
strongly disagree *strongly agree*

2) Most associate degree completers at your college currently achieve the skill expectations stated on the facing page.

1 - 2 - 3 - 4 - 5 - 6
strongly disagree *strongly agree*

3) In the courses and programs you oversee, there are specific written learning objectives that require students to learn and perform the expectations listed on the facing page.

1 - 2 - 3 - 4 - 5 - 6
strongly disagree *strongly agree*

Comments about expectations listed in this section:

Maryland Skills for Success

✳✳✳✳✳✳

Goal #3: Communication Skills: The community college student will plan, participate in, monitor, and evaluate communication experiences in a variety of situations.

1. ***Expectation:*** ***The student will plan for successful communication experiences by:***

   - Identifying purposes, intended audiences, proposed messages, and specific situations for communicating.
   - Identifying appropriate means for delivering messages for a variety of purposes, audiences, and situations.
   - Constructing spoken and other messages in forms appropriate to purposes, audiences, and situations.
   - Using writing skills and strategies to construct written messages.
   - Practicing, when possible, before attempting to communicate.

2. ***Expectation:*** ***The student will gather, manage, and convey information, using a variety of skills, strategies, resources, and technologies by:***

   - Gathering information from a variety of sources, using appropriate skills, strategies, resources, and technologies.
   - Using listening skills and strategies to gather and interpret verbal and nonverbal messages.
   - Using reading skills and strategies to gather information and interpret written messages.
   - Evaluating the usefulness of information gained for specific purposes.
   - Organizing, storing, and accessing information, using appropriate written, graphic, electronic, or other formats.
   - Conveying information and messages, using strategies and means appropriate to audiences, purposes, and situations.

3. ***Expectation:*** ***The student will monitor, problem-solve, and evaluate communication experiences by:***

   - Monitoring ongoing communication processes.
   - Identifying communication problems and solving them as necessary.
   - Evaluating success in achieving purposes.
   - Evaluating the effectiveness of communication strategies and technologies for audiences, purposes, and situations.

Survey Questions:

Please indicate your agreement with each of the three statements below by circling the number on the continuum that best represents your views,with 1 being **strongly disagree** and 6 being **strongly agree**. Your responses should reflect your sense of all the expectations taken collectively, not each expectation individually.

1) The skills and expectations on the facing page are valid expectations for associate degree completers.

1 - 2 - 3 - 4 - 5 - 6
strongly disagree *strongly agree*

2) Most associate degree completers at your college currently achieve the skill expectations stated on the facing page.

1 - 2 - 3 - 4 - 5 - 6
strongly disagree *strongly agree*

3) In the courses and programs you oversee, there are specific written learning objectives that require students to learn and perform the expectations listed on the facing page.

1 - 2 - 3 - 4 - 5 - 6
strongly disagree *strongly agree*

Comments about expectations listed in this section:

Maryland Skills for Success

✳✳✳✳✳✳

Goal #4: Technology Skills: The student will understand, use, and evaluate technologies for a variety of purposes in a rapidly changing technological society.

1. ***Expectation: The student will understand and evaluate the uses of current technologies for a variety of purposes and situations by:***

   - Identifying and using resources and strategies for keeping abreast of advances in technologies.
   - Identifying and describing current technologies used to meet a variety of needs, including accessing and managing information, communicating, performing work, and solving problems.
   - Evaluating the uses of current technologies in specific situations.
   - Identifying needs not being met by current technologies and emerging technological solutions that may meet those needs.

2. ***Expectation: The student will use technologies effectively for a variety of purposes and situations by:***

   - Using technologies in a safe and effective manner.
   - Using technologies in a legal and ethical manner.
   - Using appropriate technologies to access, store, manage, analyze, and communicate information.
   - Using appropriate technologies for research, creativity, and problem solving.
   - Monitoring, evaluating, and planning to improve personal uses of technologies.

3. ***Expectation: The student will demonstrate an understanding of the impact of technology on individuals, society, and the environment by:***

   - Analyzing the effects of technologies on individuals, society, and the environment.
   - Evaluating the effects of technologies on individuals, society, and the environment.

Survey Questions:

Please indicate your agreement with each of the three statements below by circling the number on the continuum that best represents your views,with 1 being **strongly disagree** and 6 being **strongly agree**. Your responses should reflect your sense of all the expectations taken collectively, not each expectation individually.

1) The skills and expectations on the facing page are valid expectations for associate degree completers.

1 - 2 - 3 - 4 - 5 - 6
strongly disagree *strongly agree*

2) Most associate degree completers at your college currently achieve the skill expectations stated on the facing page.

1 - 2 - 3 - 4 - 5 - 6
strongly disagree *strongly agree*

3) In the courses and programs you oversee, there are specific written learning objectives that require students to learn and perform the expectations listed on the facing page.

1 - 2 - 3 - 4 - 5 - 6
strongly disagree *strongly agree*

Comments about expectations listed in this section:

Maryland Skills for Success

✳✳✳✳✳✳

Goal #5—Interpersonal Skills: The community college student will work effectively with others and participate responsibly in a variety of situations.

1. Expectation: The student will demonstrate effective interaction strategies in groups by:

1.1 Accepting responsibility for personal actions and contributions to group activities.

1.2 Showing respect and empathy for others in group activities.

1.3 Using feedback to adjust behavior in group activities.

2. Expectation: The student will work cooperatively with others in a variety of group situations by:

- Participating in developing goals for group activities.
- Participating in developing rules and procedures for group activities and following them.
- Demonstrating understanding of and assuming various roles in group activities.
- Contributing personal resources to group activities.
- Supporting group decisions and respecting dissenting positions.
- Helping to identify and resolve conflicts and bringing groups to consensus when appropriate.

3. Expectation: The student will monitor, evaluate, and plan improvements in group performance by:

- Monitoring individual and group performance in group activities.
- Evaluating individual and group performance, using explicit criteria.
- Planning improvements in individual and group performance.

4. Expectation: The student will function as a responsible citizen by:

- Participating in democratic decision-making processes in a variety of social situations.
- Making reasoned consumer decisions in a variety of situations.
- Managing financial resources responsibly.
- Planning and acting in support of communities.

Survey Questions:

Please indicate your agreement with each of the three statements below by circling the number on the continuum that best represents your views,with 1 being **strongly disagree** and 6 being **strongly agree**. Your responses should reflect your sense of all the expectations taken collectively, not each expectation individually.

1) The skills and expectations on the facing page are valid expectations for associate degree completers.

1 - 2 - 3 - 4 - 5 - 6
strongly disagree *strongly agree*

2) Most associate degree completers at your college currently achieve the skill expectations stated on the facing page.

1 - 2 - 3 - 4 - 5 - 6
strongly disagree *strongly agree*

3) In the courses and programs you oversee, there are specific written learning objectives that require students to learn and perform the expectations listed on the facing page.

1 - 2 - 3 - 4 - 5 - 6
strongly disagree *strongly agree*

Comments about expectations listed in this section:

Maryland Skills for Success

✳✳✳✳✳✳

Additional Questions: Please indicate your agreement with each of the three statements below by circling the number on the continuum that best represents your views,with 1 being **strongly disagree** and 6 being **strongly agree**. Your responses should reflect your sense of <u>all the expectations taken collectively, not each expectation individually.</u>

16) All Maryland community colleges should *teach* a common skill set similar to the Skills for Success in all associate degree programs?

1 - 2 - 3 - 4 - 5 - 6

strongly disagree *strongly agree*

Comments:

17) All Maryland community colleges should *assess* student learning of a common skill set similar to the Skills for Success in all associate degree programs?

1 - 2 - 3 - 4 - 5 - 6

strongly disagree *strongly agree*

Comments:

List any skills you think should be added to the Skills for Success to make them more appropriate for associate degree completers?

Thank you very much for your assistance! Please return the survey to Mr. James Ball at Howard Community College using the enclosed pre-addressed and stamped envelope by February 20, 1998.

Appendix B

Pretest (Pilot Study) Questionnaire

Questions for Pilot Study Reviewers

1. How long did it take you to complete the survey not including this questionnaire?

   ____ 10 mins. ____ 20 mins. ____ 30 mins. ____ 40 mins.
   ____ 15 mins. ____ 25 mins. ____ 35 mins. ____ 45 mins.

2. How helpful was the description of the Maryland Skills for Success in understanding the nature of the skill set?

   not at all helpful 1 2 3 4 very helpful

   Comments:

3. How clear were the expectations under each skill goal?

   very unclear 1 2 3 4 very clear

   Comments:

4. To what extent do you agree that the information under each goal was adequate for you to validly answer the questions?

   strongly disagree 1 2 3 4 strongly agree

   Comments:

5. How comfortable were you rating the expectations listed under each goal statement collectively (as opposed to rating each expectation separately)?

   very uncomfortable 1 2 3 4 very comfortable

   Comments:

6. How did you interpret the goal statements dealing with Goal #4: Technology Skills? Check one below:

   ____ I thought about computer technology
   ____ I thought more broadly in terms of technology such as: _____
   ____ Not sure
   ____ Other *Please explain:*

7. How comfortable were you using the four point rating scale?

   very uncomfortable 1 2 3 4 very comfortable

   Comments:

8. Would you change any of the questions? Yes No

   If so, please indicate the changes directly on the questionnaire where called for.

Appendix C

Survey Comments

Comments Goal 1: Learning Skills

Title	Comments
Chair: Math, Science, Engineering	Expectations 1& 2 should be dealt with advising or college orientation programs. Most successful students learn these two. There is no significant, controlled experimental evidence which shows written "behavioral objectives" induce learning. It is just something we can watch teachers do!
Chair: Math, Science, Engineering	How are the old and new learning situations defined? Does "new" refer to alternate ways of delivering instruction? Under #2, the first and last items are repetitions of the statements of expectations #2!
Chair: Math, Science, Engineering	Hard to respond, you should have a response to each expectation instead of as a group
Dean	Our courses do not state these as learning objectives because it has traditionally been assumed that in order to be successful in higher education, students should have mastered these goals.
Chair: Technologies	Internships are invaluable & we work to help students get them. Culturally, the goals can be very difficult for many students with little past skills or encouragement.
Chairperson, Psychology	Could you be more specific – examples…All this is nice language and lofty terms; however, I don't know what they mean in actual specifics.
Chairperson, Education, Psychology, Music	Some of these objectives are related to age as well as educational experiences.
Chairperson, Information Science & Business Administration	I encourage them, but I don't write "You must persevere" in the lesson plan.
Chair: Math, Science, Engineering	I don't believe students think objectively about learning strategies. Rather, I believe they cast around until they find things that seem to work for them in each situation.
Coordinator, English	The expectations are very broad
Dean of Arts and Sciences	Learning skills are an important part of our course objectives.
Chair: Math, Science,	Too broad

Engineering	
Humanities, Communications, English & Arts Chair	Too student managed—student designed
Nursing and Health Studies Chair	Nursing student expectations tend to be more stringent that college norms.
Dance/Education Department Head	I'd like to know what mechanisms will be used to implement expectation achievement. How will students acquire the tools to carry this out?
Department Head, Music	Learning in music causes carry over-class piano, theory, literature, applied music (private lessons).
Chair: Math, Science, Engineering	Students become excited intellectually through talented professors, not by enduring "process" or other forms of academic jargon.
Chair: Math, Science, Engineering	Students have difficulty accepting responsibility for their own learning. When asked to do group work or use a computer, they say "teach me, that's what you're paid for."
Dean	There seems to be little long-term retention and applications of many of these goals.
Chairperson, Social and Behavioral Science	The future is uncertain. Students must develop strong skills to take advantage of new and emerging opportunities that will be the earmark of the future.
Chairperson, Arts and Humanities	Since most students who come here are not associate degree completers these expectations are evident in varying degrees. We get many students who are experimenting or otherwise formulating their plans. Frequently these students leave us still formulating plans. In terms of our learning objectives for specific courses, they tend to be not as metacognative as the expectations here, but rather focus on course-specific learning objectives.
Acting Chairperson, English & Foreign Language	The degree of intentionally doesn't seem realistic.
Chair, Business	These are silly kinds of things that people with education degrees fill up their time. If students had basic literacy this

	problem would vanish.
Chair, Humanities	These goals are rarely identified as a written objective, but are implicit in instruction. Delineating them would probably make them artificial and would make them unobtainable. Transfer of skills tends to be limited when skills are taught in isolation
Chair, Social Sciences	The boring objectives are more content oriented rather that encompassing, broad, philosophical expectations – the state demands more "objective" accountability criteria.
	We have general Education goals that approximate the expectancies. There are differences in what is measured or emphasized and this list.

Comments Goal 2: Thinking Skills

Title	Comment 1
Dance/Education Department Head	I'd like to know what mechanisms will be used to implement expectation achievement. How will students acquire the tools to carry this out?
Coordinator English	The expectations are very broad
	We have general Education goals that approximate the expectancies. There are differences in what is measured or emphasized and this list.
Chairperson, Psychology	Could you be more specific – examples…? All this is nice language and lofty terms; however, I don't know what they mean in actual specifics.
Dean	Our courses do not state these as learning objectives because it has traditionally been assumed that in order to be successful in higher education, students should have mastered these goals.
Chair, Social Sciences	The boring objectives are more content oriented rather that encompassing, broad, philosophical expectations – the state demands more "objective" accountability criteria.

Department Head, Music	Learning in music causes carry over-class piano, theory, literature, applied music (private lessons).
Chair: Math, Science, Engineering	Expectations 1& 2 should be dealt with advising or college orientation programs. Most successful students learn these two. There is no significant, controlled experimental evidence which shows written "behavioral objectives" induce learning. It is just something we can watch teachers do!
Acting Chairperson, English & Foreign Language	The degree of intentionally doesn't seem realistic.
Chair: Math, Science, Engineering	How are the old and new learning situations defined? Does "new" refer to alternate ways of delivering instruction? Under #2, the first and last items are repetitions of the statements of expectations #2!
Chair: English, Fine Arts, Humanities	Too student managed—student designed
Dean	It's nearly impossible to answer #2 because we do not for these specific skills. AA degree completers are few and probably don't present a real view of what happens in CCs.
Chairperson, Arts and Humanities	Since most students who come here are not associate degree completers these expectations are evident in varying degrees. We get many students who are experimenting or otherwise formulating their plans. Frequently these students leave us still formulating plans. In terms of our learning objectives for specific courses, they tend to be not as metacognative as the expectations here, but rather focus on course-specific learning objectives.

Comment Goal 2 – Thinking Skills

Chair, Humanities	These goals are rarely identified as a written objective, but are implicit in instruction. Delineating them would probably make them artificial and would make them unobtainable. Transfer of skills tends to be limited when skills are taught in isolation

Chair, Business	These are silly kinds of things that people with education degrees fill up their time. If students had basic literacy this problem would vanish.
Chair: Math, Science, Engineering	I don't believe students think objectively about learning strategies. Rather, I believe they cast around until they find things that seem to work for them in each situation.
Department Head, Biology	Students become excited intellectually through talented professors, not by enduring "process" or other forms of academic jargon.
Chair: Math, Science, Engineering	Students have difficulty accepting responsibility for their own learning. When asked to do group work or use a computer, they say "teach me, that's what you're paid for."
Dean	Learning skills are an important part of our course objectives.
Chair: Math, Science, Engineering	Hard to respond, you should have a response to each expectation instead of as a group
Chairperson, Education, Psychology, Music	Some of these objectives are related to age as well as educational experiences.
Chairperson, Social and Behavioral Science	The future is uncertain. Students must develop strong skills to take advantage of new and emerging opportunities that will be the earmark of the future.
Chair: Math, Science, Engineering	Too broad
Nursing and Health Studies Chair	Nursing student expectations tend to be more stringent than college norms.
Dean	There seems to be little long-term retention and applications of many of these goals.

Comments Goal 3: Communications Skills

Title	Comment 3
Department Head, Hotel/Restaurant Management	More emphasis should be placed on listening skills. It is a vital component for learning and success.
Chair, Social Sciences	Students on the whole come to college completely unprepared in communication skills – high schools only seem to stress informal communication skills "feeling" equates to "thinking" and students aren't used to speaking in complete sentences in class or writing papers more than 5 pages.
Department Head, Music	Students write their own program notes for performance pieces in recital. There are written expectations for performance. Weekly repertoire classes provides amazing feedback to the students.
Chair: Math, Science, Engineering	What about "quantitative skills," "number sense," "mathematical reasoning"
Dean	This set is the most desired set by employers next to critical thinking skills. Through careful programming, it's possible to effect change – i.e.; 6 credit writing sequence, writing intensive courses, etc.
Chair, Business	See Above
Department Head, Biology	I should note that students who develop such skills do not do so by the means that you suggest.
Dean of Arts and Sciences	We have started a communication process across this program at our college.
Chair: Math, Science, Engineering	Too Broad
Dean	Lacks statements of expectation: course extent/natures of participation.

Comments Goal 4: Technology Skills

Title	Comment 4
Chairperson, Psychology	Again this is quite vague, could you include specific examples?
Department Head, hotel/Restaurant management	While important, time as well as money can be wasted in this area. Success is ultimately a people oriented goal.
Chair, Social Sciences	This is an area of critical need, but unless state or local gov't steps in, community colleges can't afford to keep up with the workplace.
Department Head, Music	Students use technology on a regular basis. The piano lab is used for class piano and theory. However, technology is used as a vehicle for learning the knowledge & Skills offered in the courses – not an end to itself. Expectation #3 is much too overblown in this context.
Chair: Math, Science, Engineering	Should be in our technology requirement.
Division Chair, Technical Studies	Regarding #3 –I would suggest that this is beyond the expectations for an AA students at age 18.
Dean	I disagree with "understanding impact of technology on individual, society, and environment."
Dean	If they leave without these skills they will not succeed. But again, the focus should be on incorporating these skills into what might be called first semester gen ed courses since so many students leave after 1 or 2 semesters.
Chairperson, Arts and Humanities	Students spend a lot of time making use of these technologies and much less time analyzing or evaluating the effects.
Chair, Business	See Above
Chairperson, Applied Technologies	We work hard to keep our computer and software current although funding is competitive.
Chair: Math, Science, Engineering	Students may develop good skills in technology, but the descriptions of technology on p. 10 are too narrow.
Chair: Math, Science, Engineering	You can not expect community colleges to teach technology effectively when we are severely handicapped by budgets.

Dean	Changing technology presents an on-going challenge.
Chair: Math, Science, Engineering	Too broad
Dean	#2 appears to be the more appropriate expectations. As do the circled items in #1. These expectations are generally too broad & rhetorical to have much meaning to me.
Dean	Students seem to grasp and be able to apply their learning related to computers and high-tech equipment.

Comments Goal 5: Interpersonal Skills

Title	Comment 5
Coordinator English	Interpersonal skills are not written into our learning objectives in English courses.
Department Head, Hotel/Restaurant Management	Possibly the most important of the five goals.
Chair, Social Sciences	In the end, "works well with others" is a part of life, but the bottom line in business is the person who individually produces, not what the group does. This much emphasis on group work is more politically correctness than addressing reality.
Department Head, Music	Through performing together and for one another, students critique one another within a positive and constructive environment.
Chair: Math, Science, Engineering	Group work is a business thrust. Individuals get hired, not teams. When businesses hire teams, we should more consistently train them. Certainly a pedagogical tool, good for learning for many.
Division Chair, Technical Studies	If anything, the student should come into the community college with these skills. They certainly are included in skills which the high school should be stressing.
Acting Chairperson,	Students are not always purposeful monitoring performance.

English & Foreign language	#4 probably isn't addressed systematically at all.
Chairperson, Arts and Humanities	Courses that have lecture formats are probably less effective at developing these skills.
Chair, Business	See Above
Chairperson, Applied Technologies	Team projects are very important in our programs so I may just be too critical of less that perfection.
Chair: Math, Science, Engineering	Students interested in group work and their own work usually socialize well. Collaboration is not new. I think that "interaction strategy" is an appalling chunk of educationese.
Chair: Math, Science, Engineering	Group work is difficult to assign in the community college setting. Family, work etc takes precedence for many students.
Dean	Local businesses believe we need to spend more time on this.
Chair: Math, Science, Engineering	Too Broad
Physical Education Department Head	Financial resources part not really incorporated
Chair: Math, Science, Engineering	The expectations are reasonable. Are there different outcomes expected for the transfer vs. the 2yr-terminal student?

Comments: Maryland Community Colleges Should Teach a Common Skill Set Similar to the Skills for Success

Title	Comment
Dean, Division of career and Technical education	Statewide General Education competencies?? –we won't live long enough!
Dance/Dance Education Department Head	Though I believe these are valid objectives, to insist that all faculty work from this would be a bad idea. Retraining and faculty development to embrace these objectives must come first.
Chair, Physical Sciences	The skills need to be in place before the community college.

Science, Aviation and Parks	The ability to problem solve, think and communicate ARE critical for anyone completing higher educational programs.
Dean	If high schools do this, why is this necessary?
Department Head, education	"Incorporate/infuse" not teach
Department Head, Hotel/Restaurant Management	Too divers a population. Too non-traditional
Chair: Math, Science, Engineering	Every time I see a survey such as this, I understand why we do so poorly as a country on standardized tests. Where is the content? These statements given in the earlier pages provide absolutely no guidance to educational level and serve only as "feel good" fluff! What a waste of taxpayer money.
Electronic Engineering Technology	But it should be a replacement for, not in addition to the existing state requirements. It is not fair to add courses that will not transfer.
Chair, social Sciences	Once the government gets involved, my experience is that the higher achieving groups are lowered, and the lower groups rise only appreciably.
Nursing Program Director	I do not have sufficient information to answer.
Dean	We expect students to have some skills when they come to us.
Acting Chairperson, English & Foreign Language	To appropriate student cohorts
Dean of Enrollment Policy and Planning	Integrated into current curriculum-interdisciplinary studies concept. No separate curriculum/courses.
Chair: Math, Science, Engineering	Skill set should be incorporated into existing course/curricula. Attitudinal changes can not be taught!
Coordinator, radiology	Easier said than done.
Dean	A noble idea, but the reality of getting all MD CCs to agree on anything is dim.
Dean	Does this become integrated into existing programs or is it

	freestanding?
Chairperson, Applied Technologies	These skills should be integrated into all courses... not just a simple 1-credit class
Chair: Math, Science, Engineering	If this is done, US students' performance will fall even further behind that of other nations.
ESL Department Chair	Common skills should be done in high school, leaving community colleges more autonomy.
Chair: Math, Science, Engineering	I worry that this would limit us expanding possibilities as we would have to re-format to fit a guideline
Chairperson, Education, Psychology, Music	While the skills presented here are worthwhile, the value students' place on them varies with their individual student goals.
Chair: Math, Science, Engineering	Too Broad
Nursing and Health Studies Chair	These seem to be critical skills for success beyond community college in the educational arena and in life, work, etc as Well! I strongly agree.
Chair: Math, Science, Engineering	This will require accountability at the course, program and college level.
Engineering Technologies Chair	Dress neatly, do not use profanity, be polite, be courteous, if you wear a hat, do not wear it backwards.
Dance/Dance Education Department Head	The education system needs to change - but it isn't wise to simply overlay these objectives and assess them. They need to be carefully built into the philosophy of teaching and creating learning communities.
Chair: Math, Science, Engineering	not sure I like overall uniformity. I want to maintain academic freedom
Coordinator English	I am loathe to commit to a system of carbon copied institutions. Our student populations are very different, and they have different strengths and weaknesses
Chair: Math, Science, Engineering	Why teach if you do not assess! These expectations are very vague and teaching/evaluators are not amenable to most assessment methods

Chairperson, Psychology	I think that the skills for success should be spelled out more specifically
Department Head, Hotel/Restaurant Management	Ok, but not as a condition to be achieved to graduate.
Chair: Math, Science, Engineering	See previous comment
Electronic Engineering Technology	I would like to see some sort of "exit test"
Nursing Program Director	I do not have sufficient information to answer
Department Chair, Speech & Theatre	Very difficult because of so many variables which come into play.
Dean	These skills are very difficult to accurately assess.
Division Chair, Business Administration, and Hospitality	Several goals would be difficult if not impossible to assess - ie. Goal #1, Expectation #1, Goal #4, Expectation #3. Others would be best-assessed post-graduation.
Chair: Math, Science, Engineering	Not a separate assessment!
Division Chair, Technical Studies	I would be hard pressed to attempt such an assessment.
Coordinator, Radiography	When a dept. chair can't get all physics professors or English professors to assess the same learning, how can you even do it college wide? What about academic freedom issues? The clinical portion of a health care curriculum forces students to meet these learning expectations. What about pure, classroom only experiences? Students are very adept at "shopping around" until they get an instructor who is less demanding.
Dean	Yes, and it should eventually be tied to performance funding.

Comments: Maryland Community Colleges Should Assess Student Learning of a Common Skill Set Similar to the Skills for Success

Dean	Yes, and it should eventually be tied to performance funding.
Dean	If a common set is established we should assess.
Chairperson, Applied Technologies	I don't understand the question.
ESL Department Chair	Do it in high school! But aren't high schools teaching a statewide curriculum. Therefore, isn't this just reflective?
Chair: Math, Science, Engineering	We would spend too much time trying to "fit" into some government format for learning/assessment.
Chairperson. Education, Psychology, Music	Most are too difficult to assess and it would take too much time
Dean	Assessment should be made at the college level by the college, not the state
Chair: Math, Science, Engineering	Too Broad
Nursing and Health Studies Chair	I think this is an excellent plan to promote higher standards, thus greater potential for life proficiency
Dean	This content needs more work from my perspective before uniform outcomes assessment is adopted.

Comments: Please List any skills that you think should be added to the skills for success to make them more appropriate for associate degree completers.

Title	Comment
Emergency Medical Technology	Some of the skills are very appropriate to Health Care Technologies and easy to measure. May not be so in General Education population
Dean	Aren't community colleges supposed to BUILD on high school work?
Computer Science	1. Time Management

	2. Prioritizing – how do you do your homework when kids are sick, or how do you get to class when the day care provider is sick? 3. Self-evaluation - aiming higher
Chair: Math, Science, Engineering	I suggest that the committee, which came up with this survey, be disbanded and reformed with academics who have some idea about college level education.
Chair: Math, Science, Engineering	These expectations seem high even for a 4-year program. Do you really expect these kinds of results from a 2-year education?
Electronic Engineering Technology	No doubt these are worthwhile skills for people to have, but how will you teach them?
Chair, Social Sciences	It does become tiring trying to keep up with the latest goals in education. Is this for real, or will it be merely another in a long list of old ideas?
Human Services Chair	Leadership skills
Dean of Career and Technical Education	Be equally as prepared for further education as for entry into the workforce.
Allied Health Chair	Very well done!
Dean	I think the focus on AA degree completers is too narrow because there are so few completers. What about certificate program completers. All of these skills might appropriately be part of the general education core where most students sit at any given time.
Chair, Humanities	My problem with skill sets is the fear that they are taught in isolation. I do not see my daughter, a 9th grader, reading or writing enough to master these goals.
Department Head, Biology	As is common, teachers without ability seek to describe "process" because they can't do (perform).
Dean	If we graduate all students with these skills, we will have done a good job. Please send me a copy of your findings!
Nursing and Health Studies Chair	Unfortunately, most AA degree programs do not have credit availability for students to have ample exposure to other liberal arts studies, i.e. Foreign languages. It would be helpful if course credits would be totally consistent and the receiving institutions would accept a greater number of AA or AS credits in transfer. Although these issues are not totally skills related, I believe consideration would facilitate a more inspirational, overall educational system.

Appendix D

Vita

V I T A

J a m e s D . B a l l

Experience: Twenty years progressively responsible experience in community college teaching and administration

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1995–Present: *Vice President and Dean of Students.* Howard Community College, Columbia, MD

Managed student affairs division for college of 5000 credit and 20,000 non-credit students; provided leadership for enrollment management functions (recruitment, admissions, records, registration, retention, and academic support services), advising, career services, athletics, student life, academic and certification testing services, and world wide web services; managed multiple continuous quality improvement teams relating to students services and cross functional areas; created and managed collaborative initiatives with instructional unit including retention projects, learning communities, honors programs, innovative co-curricula program, workforce development initiatives.

1991–1995: *Assistant Vice President and Dean of Instruction.* Howard Community College, Columbia, MD

Provided leadership and management for workforce development programs including school-to-work and tech prep initiatives; developed and assessed associate degree curricula and applied science programs; monitored faculty productivity processes; directed faculty promotion and sabbatical leave processes; co-directed selective honors learning community program.

1986–1991: *Director of Adult and Evening Services*. Howard Community College, Columbia, MD

Provided evening college administration; faculty development services; experiential learning & assessment of prior learning programs; administered Maryland Sate Department of Education career & technology grant programs (Perkins funds); associate professor social science.

1978–1986: *Career Development Coordinator and Assistant Professor Social Science.* Howard Community College, Columbia, MD

Coordinated career counseling services, coordinated job placement services; provided academic advising; taught social science courses.

Education:

North Texas State University — Denton, TX

- M.Ed. Counseling and Student Services (1976)
- BS Education, Psychology (1975)