Technical Education and Career Paths in Minnesota

A 2011 Report to the Minnesota Legislature on Technical Education Program Certificate and Diploma Requirements

March 2011

Contents

I. Introduction

Mandated by the 2010 legislature, this report describes Minnesota State Colleges and Universities technical programs for certificates and diplomas that allow students to earn credentials preparing them for opportunities in the workplace and that can be combined into higher degrees.

The report details current program award and graduate trends as well as responsiveness to employer and labor perspectives on technical programs.. It also includes descriptions of current opportunities and the potential to redesign programs to permit students and incumbent workers to flexibly earn "intermediate" credentials that are valued in the workplace and that may lead to a diploma or degree. This includes the identification of pathways to credentials by collaborating with other job training providers, industry and labor organizations.

Information and data informing the report include:

- program information from Minnesota's public two-year colleges
- data on the number of students graduating from four industry clusters
- number of award majors by industry cluster and students' attainment of degrees
- descriptions of career pathways
- initiatives in career and technical education that support career paths

In addition, two stakeholder groups, business and industry representatives and labor unions, participated through surveys conducted collaboratively by the Office of the Chancellor and the Minnesota Chamber of Commerce. Respondents were asked questions to determine their views related to short term programs and career pathways.

The Board of Trustees of Minnesota State Colleges and Universities, in conjunction with the Minnesota Chamber of Commerce is pleased to submit this report as defined in Session Law 2010, Chap. 34, Sec. 29; Study of Certificates and Diplomas, Educational Career Path:

> *The Board of Trustees of Minnesota State Colleges and Universities, in conjunction with the Minnesota Chamber of Commerce, representatives of industry groups, and labor unions, shall study the program requirements for certificates and diplomas awarded by the Minnesota State Colleges and Universities to determine the feasibility of designing technical education programs to allow students to have more opportunities to earn credentials with lower credit requirements that could be combined into higher level certificates or diplomas. The study must consult with business and industry representatives as well as labor unions and faculty on the types of credentials that would be recognized for employment purposes. In addition, the study must address the feasibility of increasing the capacity to accumulate credentials in related programs into an educational career path leading to a diploma or degree. The study must also address the need for workers in other fields and take into account other job training programs provided by labor unions and business. The board must report the study findings to the committees of the legislature with responsibility for postsecondary education finance by February 15, 2011.*

II. Current Programs Within Minnesota State Colleges and Universities

Overview

The Minnesota State Colleges and Universities offer eleven different awards[1] ranging from an undergraduate certificate to applied doctorate. Relevant to this study on career pathways are four awards[2]:

1. certificate
2. diploma
3. Associate in Applied Science (AAS) degree
4. Associate in Science (AS) degree

These program awards range from 9-72 credits in length and in this way serve a wide range of occupations and professions, serve multiple educational purposes, permit program flexibility and allow for student progression from the certificate level to degree completion. Programs which culminate in these four awards are designed for occupational or professional preparation and/or credit transfer. Individual programs may be designed as a set to align with corresponding occupational outcomes and maximize credit transfer.

For this report, included programs qualify for federal Carl D. Perkins Act funding and in this way constitute career and technical education programs. These programs are classified into 16 career clusters[3]. Four industry clusters[4] receive measured consideration within this report:

1. Construction and Architecture
2. Information Technology (IT)
3. Manufacturing
4. Transportation, Distribution and Logistics

To provide context, the Minnesota State Colleges and Universities offer over 4,250 programs. This report presents data on 3,005 or 70 percent of the total number of programs offered by the Minnesota State Colleges and Universities[5].

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[1] Chancellor's procedure 3.36.1 – Academic Programs defines attributes of academic programs.
[2] Table A-1 in the appendix, illustrates the attributes of the four awards included in this report.
[3] Table A-2 identifies the number of programs offered within each of the 16 industry clusters.
[4] Table A-3, displays the number of programs offered by each programs' classification by award for four career clusters.
[5] Program counts are as of December 1, 2010. Baccalaureate and graduate program are not included in this report.

Award and Graduate Trends, by Industry Cluster

Construction and Architecture

The Construction and Architecture cluster includes 315 programs within Minnesota State Colleges, constituting 10% of all career and technical education programs offered. Within the cluster, ninety-three (93) programs lead to an associate in applied science (AAS), six (6) lead to an associate in science (AS), one hundred (100) lead to a certificate, and one hundred sixteen (116) lead to a diploma.

Figure 1 illustrates the three year trend of program awards within this industry cluster. As might be expected from the decline in housing and building construction, the number of total award majors [6]dropped 13% from FY 2009 to FY 2010. The number of certificates awarded dropped 17% and the number of diplomas dropped 16% during this same period.

Figure 1: Construction and Architecture Award Majors

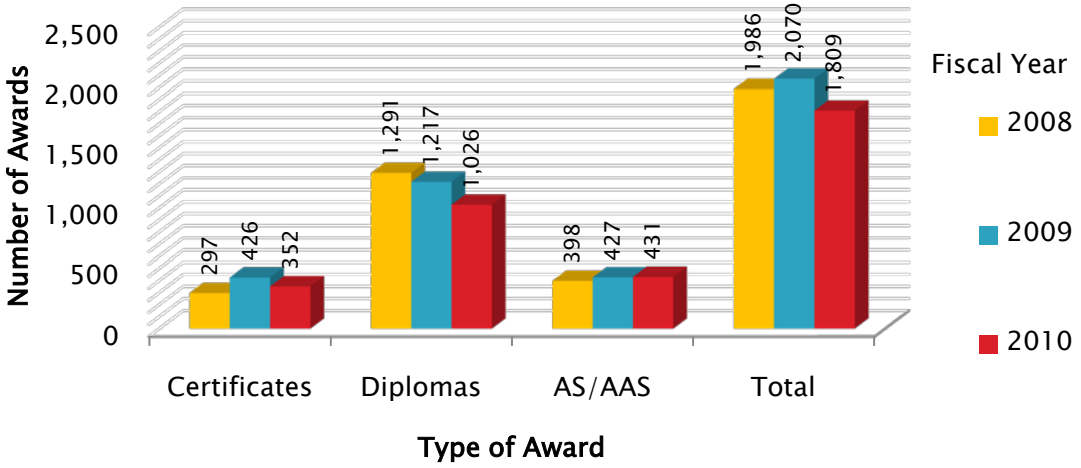

Table 2 provides graduate[7] data for the same three years within the Construction and Architecture industry cluster. Again, the housing and construction crisis led to a decline in program graduates. The majority of graduates are receiving diplomas and a growing number of graduates are receiving multiple awards.

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[6] **Award majors** are the number of unique award major combinations conferred during the fiscal year. Graduates may be included in the counts more than once if they received more than one award major in a given fiscal year.

[7] **Counts of graduates** are unduplicated across colleges. Graduates may be included in the counts more than once if they received awards in more than one cluster.

Table 2: Construction and Architecture Industry Cluster Graduates

Fiscal Year	Unduplicated Count of Graduates by Cluster							
	Certificate Only	Diploma Only	Associate Degree Only	Multiple Awards or Multiple Majors		Total	Change Previous Year	
				#	%		#	%
2008	186	1,225	356	82	4.4%	1,849	--	--
2009	227	1,106	373	133	7.2%	1,839	-10	-0.5%
2010	185	904	380	141	8.8%	1,610	-229	-12.5%
Totals	598	3,235	1,109	356	6.7%	5,298	--	--

Information Technology

The Information Technology cluster includes 234 programs within Minnesota State Colleges, constituting 8% of all career and technical education programs offered. Within the cluster, fifty-five (55) programs lead to an AAS, twenty-four (24) lead to an AS, one hundred twenty-seven (127) lead to a certificate, and twenty-eight (28) lead to a diploma.

Figure 2 illustrates the three year program award trend within this industry cluster. Award levels reflect student interest in a 2-year degree and certifications for specific equipment, processes or programming languages. The three year trend data below illustrate growth in certificate and degree awards.

Figure 2: Information Technology Award Majors

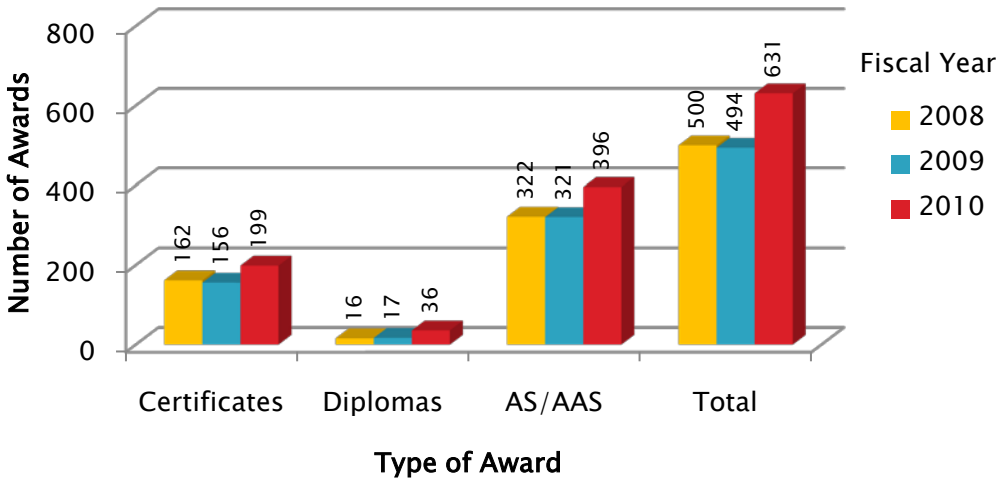


Table 3 provides graduate data for the same three years within the Information Technology industry cluster. These programs continue to see growth along with the importance of a knowledge-based workforce.

Table 3: Information Technology Industry Cluster Graduates

Fiscal Year	Unduplicated Count of Graduates by Cluster							
	Certificate Only	Diploma Only	Associate Degree Only	Multiple Awards or Multiple Majors		Total	Change Previous Year	
				#	%		#	%
2008	74	9	275	61	14.6%	419	--	--
2009	89	15	289	44	10.1%	437	18	4.3%
2010	76	26	339	72	14.0%	513	76	17.4%
Totals	239	50	903	177	12.9%	1,369	--	--

Manufacturing

The Manufacturing cluster includes 399 programs within Minnesota State Colleges, constituting 13% of all career and technical education programs offered. Within the cluster, ninety-eight (98) programs lead to an AAS, seven (7) lead to an AS, one hundred seventy-one (171) lead to a certificate, and one hundred twenty-three (123) lead to a diploma.

Figure 3 illustrates the three year program award trend within this industry cluster. Award levels reflect an employer desire for specific skills sets and the ability to get on the job quickly. The numbers of all types of awards have risen over the three years represented in the chart below.

Figure 3: Manufacturing Award Majors

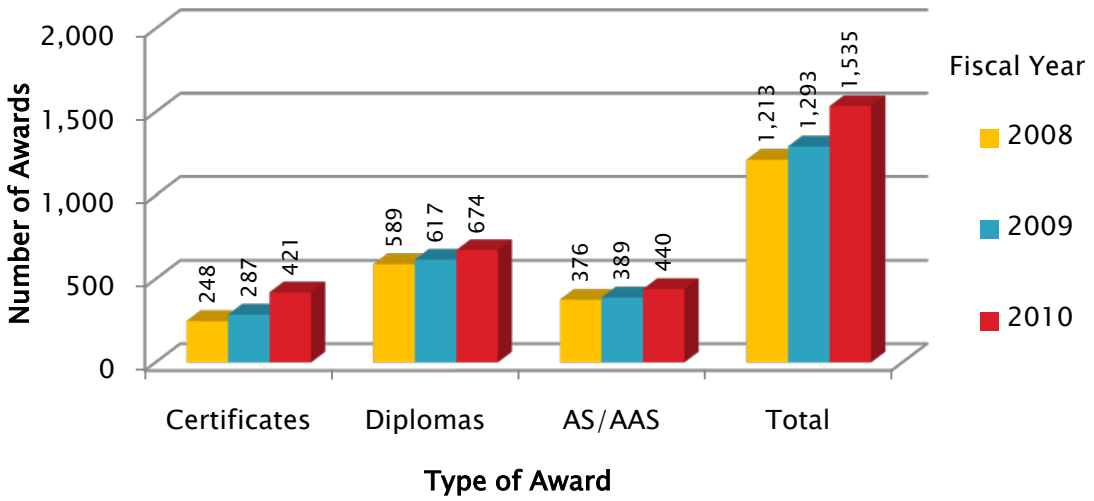


Table 4 provides graduate data for the same three years within the Manufacturing industry cluster. These programs also show an increasing number of students with an interest in multiple awards in 2010.

Table 4: Manufacturing Industry Cluster Graduates

Fiscal Year	Unduplicated Count of Graduates by Cluster							
	Certificate Only	Diploma Only	Associate Degree Only	Multiple Awards or Multiple Majors		Total	Change Previous Year	
				#	%		#	%
2008	129	508	309	112	10.6%	1,058	--	--
2009	139	548	331	106	9.4%	1,124	66	6.2%
2010	214	560	344	146	11.6%	1,264	140	12.5%
Totals	482	1,616	984	364	10.6%	3,446	--	--

Transportation, Distribution, and Logistics

The Transportation, Distribution, and Logistics cluster includes 169 programs within Minnesota State Colleges, constituting 6% of all career and technical education programs offered. Within the cluster, fifty-one (51) programs lead to AAS, zero (0) lead to an AS, fifty-nine (59) lead to a certificate, and fifty-nine (59) lead to a diploma.

Figure 4 illustrates the three year program award trend within this industry cluster. MnSCU award levels reflect an employer desire for specific skills sets and the ability to get on the job quickly. The numbers of all types of awards have risen over the three years represented in the chart below.

Figure 4: Transportation, Distribution, Logistics Award Majors

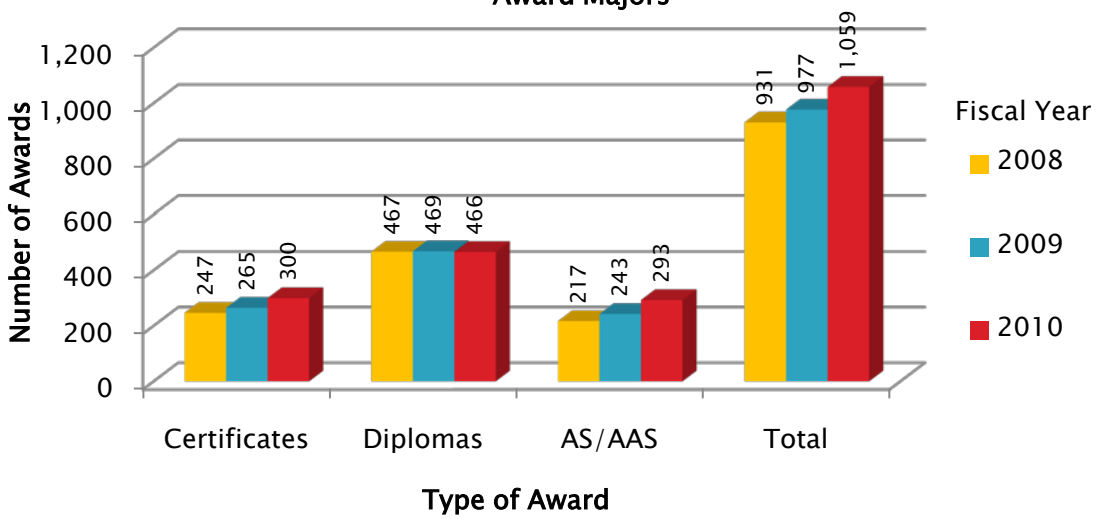


Table 5 provides graduate data for the same three years within the Transportation, Distribution, and Logistics industry cluster. Fewer students in this industry compared to the manufacturing and information technology, show interest in multiple awards.

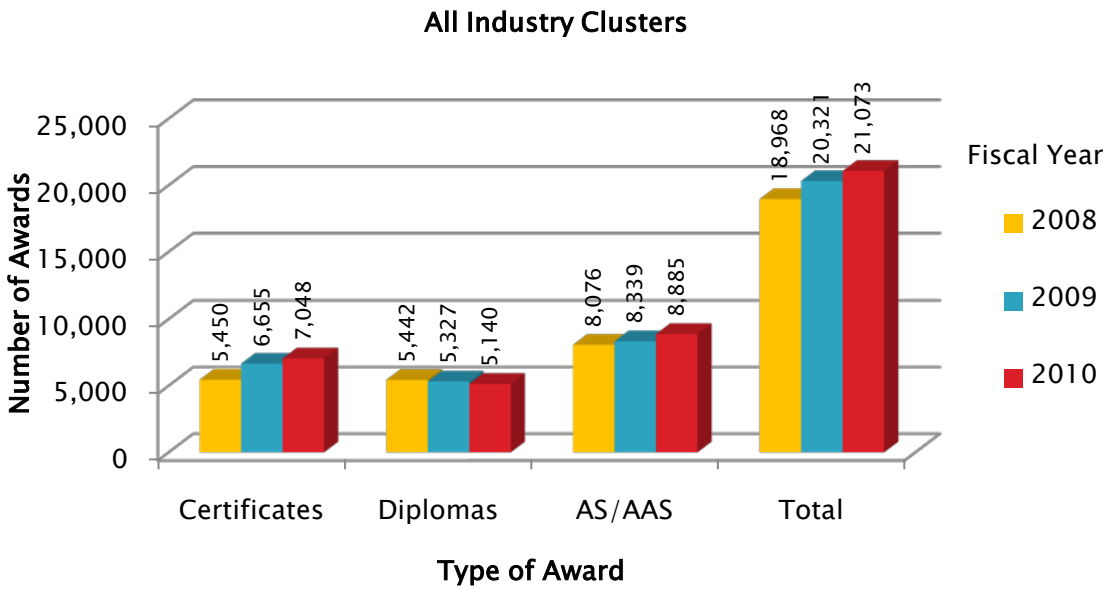
Table 5: Distribution, Transportation, and Logistics Industry Cluster Graduates

Fiscal Year	Unduplicated Count of Graduates by Cluster							
	Certificate Only	Diploma Only	Associate Degree Only	Multiple Awards or Multiple Majors		Total	Change Previous Year	
				#	%		#	%
2008	190	423	211	46	5.3%	870	--	--
2009	186	424	220	64	7.2%	894	24	2.8%
2010	215	410	264	72	7.5%	961	67	7.5%
Totals	591	1,257	695	182	6.7%	2,725	--	--

All Industry Clusters

As identified previously, there are sixteen (16) industry clusters, representing over 3,000 programs (1,196 Certificate, 771 Diploma, 273 Associate in Science, 765 Associate in Applied Science) within Minnesota State Colleges and Universities. A complete listing of clusters and number of credit bearing programs by cluster can be found in Appendix A, Table A-2.

In the last fiscal year (2010), the number of awards rose approximately 4% from the prior year. The growth was seen in the number of certificates (5.9%) and AS/AAS (6.5%) awarded.



III. Short-Term Credentials and Career and Educational Paths

Learner Opportunities for Short-Term Credentials

Minnesota's state colleges offer Minnesota learners many short-term programs to improve employability. These short-terms programs are flexible, accessible through traditional, customized and online training, and in many cases serve as the starting point for career and educational paths. The following facts illustrate the availability of short-term training options:

- Seventy percent (70%) of all programs offered by Minnesota State Colleges and Universities can be completed in two years or less.
- Twenty-eight percent (28%) of programs offered are completed with 9 – 30 credits.
- Most colleges offer free resources to find the shortest path to a new job or career. These include information sessions, career planning tools, access to computer labs and many workshops, including those on job-searching skills. ISEEK.org provides an easy to search tool for finding short-term programs offered throughout the state.
- Continuing education classes are offered in a wide variety of subjects that apply to today's workplace.
- Customized training programs are offered through each Minnesota State Colleges and Universities institution. Career education is offered by 6,000 employers and 179,500 employees each year.

Online Education

- Of the 317 programs offered online, eighty-five percent (85%) may be completed in less than two years. (certificates = 158 (42%), diplomas = 40 (10%), AS/AAS = 119 (32%).
- Seventy-five (75) of the online programs offered provide credentials within the four industry clusters highlighted throughout this report. Many are from the Information Technology cluster (50). Twenty-three (23) are from the Manufacturing cluster, and two (2) are from Construction and Architecture.
- Program information is easily accessible via the online portal: www.minnesotaonline.org. The number of students accessing the system's online offerings has grown significantly in the last few years and is now at nearly 50,000 students.

Services for Dislocated Workers

With its fifty-four (54) campuses around the state, Minnesota State Colleges and Universities provide most of the dislocated working training in Minnesota. Working closely with the state's Department of Employment and Economic Development and WorkForce Centers, the system's institutions have been adding special programs to respond to the economic downturn and dislocated workers. Much of the response involves leveraging existing short-term programs and addressing regional need.

Examples of how two-year colleges have responded include:

- Next STEP, Successful Transitions for Experienced Populations, at Anoka Technical College provides fast, flexible training in new skills and education starting at various times during a semester. Programs include medical assistant, information technology, and electronic engineering technology.
- Alexandria Technical College opened an evening section in welding and has seen enrollment grow. The college is also growing the mechatronics program, with learners from both these programs well positioned for highly skilled manufacturing jobs.
- College Prep programs at North Hennepin Community College, in collaboration with Osseo adult basic education, is helping strengthen academic and computer skills among area residents with limited education and preparing them for college-level work.
- WorkFast training at Hennepin Technical College prepared a group of students for work in the medical device manufacturing sector. Other groups have been trained in Swiss machining, CNC and robotics automation welding through dislocated worker programs.
- Anoka Technical College and Inver Hills Community College were among several colleges offering programs with flexible start dates so students did not have to wait until the start of a new semester.
- Central Lakes College and the Rural Minnesota Concentrated Employment Program joined forces to offer short-term, entry-level training in retro-green construction, renewable energy and administrative office management.
- Fond du Lac Tribal and Community College developed a series of sessions in leadership and supervisory skills for dislocated workers who had experience but no formal training.
- Ten metro area state colleges have collaboratively developed new programs in a variety of career areas for older workers.
- Anoka Ramsey Community College offered a 50% tuition grant in classes with available space to those who qualify for unemployment insurance.

Status of Minnesota State College and Universities' Occupational Programs

Among the findings in the March 2009 Evaluation Report, *MnSCU Occupational Programs*, prepared by the Office of the Legislative Auditor, was that, "Generally, MnSCU colleges respond well to economic conditions and workforce needs, but they should also more routinely assess job prospects for their occupational program graduates**."**

Recommendations provided by the report included:

- The system should better assess how well the supply of graduates and workers matches demand for occupations related to a program.
- The system should explore improvements to assessing graduates' success at finding employment related to their chosen occupation.
- Policy should require colleges to ensure that information on career exploration and job opportunities is getting to the occupational program students who need it, especially for occupations with mixed expectations for regional job opportunities.

In response the Minnesota State Colleges and Universities system has:

- Added a criterion to the review process of existing programs that incorporates a supply-demand dimension;
- Explored a regional approach to job placement;
- Begun to consider regional market analysis in program creation, revision and enrollment policy and procedure;
- Initiated the development of policy to ensure effective delivery of career exploration and job opportunities; and
- Continued improving college and program effectiveness in providing job opportunities information including the on-going enhancement of ISEEK.

A National Perspective

The December 2010 publication, *Certificates Count: An Analysis of Sub-baccalaureate Certificates*, released by Complete College America, provides national data on certificate programs. Among the major conclusions was that long-term certificates (those that take a year or more to complete) "have significantly higher labor market value than short-term certificates because of their greater technical and academic rigor, and because of the wider range of job-related skills they provide graduates."

Long-term certificate completers report increased earnings over short-term certificate holders. The study finds this to be particularly true in the nursing and allied healthcare, technology, construction, and mechanic and repair trades. Minnesota ranks 10th in the nation, and above the national average in the award of long-term certificates per capita.

National data of interest as identified by the Certificates Count study include:

- Over the last 20 year, short term certificate awards have accelerated to nearly 54% of all certificates. Certificate programs are especially important to women, black and Hispanic students.
- Nearly 750,000 certificates were awarded in 2007 – 2008, the year in which there is most recent data. The number of certificates awarded was nearly equal to the number of associate degrees awarded.
- Public colleges in Minnesota grant 77% of all certificates in the state versus private and non-profit institutions. This percentage varies widely among states for many reasons. Minnesota's ranking is 6th for the highest percentage of certificates awarded by public institutions.
- In the nation, healthcare certificates awarded constitute about 43%. Information and technology awards have leveled off and manufacturing certificates awarded have remained steady.
- *"Community colleges in Iowa, Minnesota, Wyoming, New Mexico, Kansas, and Washington produce well above the national average in both degrees and long-term certificates and as a result are leading producers of all sub--baccalaureate credentials. They are not making*

any apparent trade-offs and seem to have figured out how to incorporate a strong portfolio of long-term certificates into an aggressive push for associate degrees.[8]"

Carl D. Perkins Career and Technical Education Act: Career and Educational Pathways

The ***Carl D. Perkins Career and Technical Education Act*** (Perkins Act) requires local recipients of Perkins funds to implement technical education career pathways/programs of study that span at least grades 11 and 12, and the first two years of college. As a result of the Perkins Act, education and employment transitions for youth and adults are being enhanced and strengthened by focusing on high-wage, high-skill, or high-demand occupations, particularly for special and under-represented populations.

The Perkins IV goals, as described in the Minnesota Five-Year State CTE Plan, align with the strategic goals of the Minnesota State Colleges and Universities system and are consistent with the Minnesota Department of Education goals. The goals from the state's Perkins plan relevant to this study include:

- Implement a Career Pathway/Programs of Study Structure that aligns high schools, community and technical colleges and university level programming to support: a) high school to college transitions for students in career and technical education programs, and b) adult student transitions into high-skill, high-wage or high-demand occupations
- Effectively use employer, community and education partnerships to support career and technical education.
- The development of separate technical skill attainment measures as part of the overall accountability requirements.

The following page provides an illustration of Minnesota Career Fields, Clusters and Pathways designed for the Perkins Act. The framework of career and technical education provides for six general career fields, 16 career clusters, and the potential for career paths in many different occupational areas. Career pathways represent an organization of related occupational areas within a specific career cluster. Each of these pathways has identified knowledge and skills validated by industry from which programs and programs of study can be developed.

The four industry cluster programs identified for this report constitute 37% of all career and technical education programs offered within the system: 10% in architecture and construction; 13% in manufacturing; 8% in information technology; and 6% in transportation.

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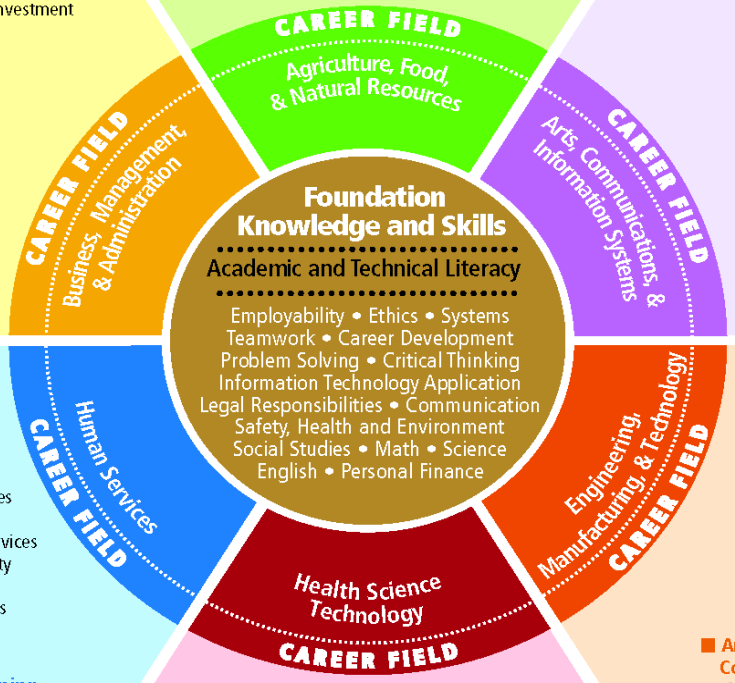
[8] *Certificates Count: An Analysis of Sub-baccalaureate Certificates.* Complete College America. December 2010. p 13

Minnesota Career Fields, Clusters & Pathways



■ **Marketing**
> Merchandising
> Marketing Management
> Marketing Communications
> Marketing Research
> Professional Sales

■ **Business, Management, and Administration**
> Administrative Support
> Operations Management
> Business Information Management
> Human Resources Management
> General Management

■ **Finance**
> Banking Services
> Business Finance
> Securities and Investment
> Accounting

■ **Hospitality and Tourism**
> Lodging
> Recreation, Amusements and Attractions
> Restaurants and Food/Beverage Services
> Travel and Tourism

■ **Agriculture, Food, and Natural Resources**
> Animal Systems
> Agribusiness Systems
> Environmental Service Systems
> Food Products and Processing Systems
> Natural Resources Systems
> Plant Systems
> Power, Structural, and Technical Systems

■ **Arts, Audio/Video Technology, and Communications**
> Audio/Video Technology and Film
> Journalism and Broadcasting
> Performing Arts
> Printing Technology
> Telecommunications
> Visual Arts

■ **Information Technology**
> Information Support and Services
> Network Systems
> Programming and Software Development
> Web and Digital Communications

Minnesota State Colleges & Universities

Minnesota Department of Education

■ **Law, Public Safety, Corrections, and Security**
> Correction Services
> Emergency and Fire Management Services
> Law Enforcement Services
> Legal Services
> Security and Protective Services

■ **Government and Public Administration**
> Revenue and Taxation
> Foreign Service
> Governance
> National Security
> Planning
> Public Management and Administration
> Regulation

■ **Human Services**
> Consumer Services
> Counseling and Mental Health Services
> Early Childhood Development and Services
> Family and Community Services
> Personal Care Services

■ **Education and Training**
> Administration and Administrative Support
> Professional Support Services
> Teaching/Training

■ **Health Science**
> Biotechnology Research and Development
> Diagnostic Services
> Support Services
> Health Informatics
> Therapeutic Services

■ **Transportation, Distribution, and Logistics**
> Facility and Mobile Equipment Maintenance
> Health, Safety, and Environmental Management
> Logistics Planning and Management Services
> Sales and Services
> Transportation Operations
> Transportation Systems/Infrastructure Planning, Management, and Regulation
> Warehousing and Distribution Center Operations

■ **Architecture and Construction**
> Construction
> Design/ Pre-construction
> Maintenance/ Operations

■ **Manufacturing**
> Production
> Manufacturing Production Process Development
> Maintenance, Installation, and Repair
> Quality Assurance
> Logistics and Inventory Control
> Health, Safety, and Environmental Assurance

■ **Science, Technology, Engineering, and Mathematics**
> Engineering and Technology
> Science and Mathematics

Additional Resources
www.cte.mnscu.edu/programs/index.html
www.mnpos.com

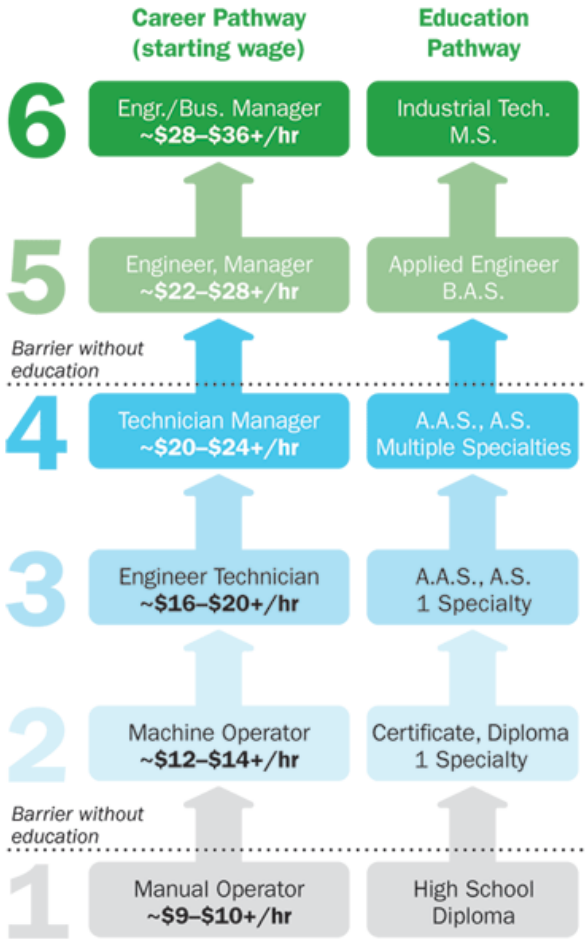
Legend:
■ = Career Cluster
> = Career Pathway

Explanation provided on reverse side.

Other Career Pathway Initiatives

The most defined pathways within the system are nursing and healthcare, manufacturing, information technology and energy, due to the emphasis placed on these sectors through the Centers of Excellence and a more recent focus on energy from a federal funding perspective. However, each career and study field is identified and linked to available training programs and job opportunities on ISEEK.

The manufacturing center of excellence, 360° Center for Manufacturing and Applied Engineering, is led by Bemidji State University and includes 8 other 2-year community and technical colleges. 360° has developed a seamless career pathway and an interactive online tool (accessible at www.360mn.org)to lead prospective and current students through career and educational choices, as illustrated below.



Information Technology. Advance IT Minnesota, the state's information technology center of excellence, is led by Metropolitan State University. The center works to align student learning outcomes with employer need and occupational trends. Advance IT has over a dozen career and education pathways identified, from general business and

accounting to computer programming or networking. Diplomas, certificates and AAS degrees are offered.

The **Minnesota FastTRAC** (Training, Resources and Credentialing) initiative is building a statewide "stackable credentials" framework for delivering education, training, and employment services. A stackable credentials framework refers to highly coordinated programming and policy alignment across Adult Basic Education (ABE), the WorkForce Center System, the Minnesota State Colleges and Universities system, and community based organizations (CBOs) that provide training and employment services. The framework enables low-wage and educationally under-prepared Minnesota adults to access a continuum of education and job training opportunities that lead to the attainment of in-demand occupational certificates or credentials, and ultimately, to jobs paying a family-supporting wage.

Transferability is a critical issue that has been and is continuing to be addressed by Minnesota State Colleges and Universities in collaboration with the University of Minnesota, Minnesota private colleges and other neighboring institutions. The objective is the credential for employment. At www.mntransfer.org**,** learners may begin transfer planning or contact a transfer specialist from any institution.

Apprenticeship Relationships. There are currently no instances in the selected industry clusters where a system is in place to grant post secondary credit to apprentices who are employed (simultaneously, pre, or post-college or technical school) in the same industry cluster for which they are preparing. However, apprenticeship regulations allow apprentices to receive credit for post secondary education upon entering an apprenticeship program in the same industry cluster. Credit is determined on a case-by-case basis by individual apprenticeship sponsors or by Joint Apprenticeship Training Councils

Recent efforts made by apprenticeship staff and DEED representatives to facilitate collaboration between credit-based programs and apprenticeship programs include:

- Meetings with manufacturing technical school instructors to propose collaboration to start an apprenticeship program that would serve incumbent or new employees of partnering manufacturing companies. A key part of this discussion has been to provide credit to the student/apprentice for skills learned on the job.
- Initial steps to determine the feasibility of granting academic credit to Health Support Specialist apprentices who may continue on a healthcare career pathway. Currently there are approximately 90 health support specialist apprentices in Minnesota.

Recent Graduate Progression

Minnesota State Colleges and Universities system office recently conducted a survey of 2008 and 2009 career and technical education graduates to determine interest in or participation in continuing education. While self-reported one year from the date of graduation, the data do give some understanding of continuing education interest levels across industry clusters. Across all clusters, 31% (2008 graduates) and 36% (2009 graduates) of the respondents indicated they are continuing their education. Within the

four clusters being examined in-depth in this report, the most interest in continuing education comes from responding graduates of the information technology industry cluster at 30% (2008) and 31% (2009). Table A-7 in Appendix A provides detail of responses by industry cluster.

Compared to the graduate follow-up survey, system data for graduates indicate a lower rate of continuing education participation. Approximately 21% of 2008 career and technical education graduates obtained additional credentials between 2008 and 2010 fiscal years. Within the industry clusters selected for study in this report, the largest percentage of 2008 graduates obtaining additional awards at the same or multiple levels were within the information technology cluster (31%). Data from all industry clusters may be found in Table A-8 in Appendix A.

IV. Program Offerings and Employment Needs

Survey of Minnesota Employers and Labor Representatives

In collaboration with the Minnesota Chamber of Commerce, the Minnesota State Colleges and Universities conducted an Internet survey of participants from the Chamber's Grow Minnesota! campaign from the four industry areas selected for this study. A separate survey of labor union representatives was also conducted.

A total of 294 Minnesota companies out of 1145 (26% response rate) responded to the survey. Manufacturing was the largest group with 179 companies responding, followed by Construction & Architecture with 36 respondents, Information Technology with 24 respondents and Transportation with 11 companies responding. Companies surveyed ranged in size from less than 50 employees to over 500 employees. The majority of companies from manufacturing, construction and information technology reported having 50 or fewer employees, while the 11 transportation companies that responded were nearly evenly divided with 45% reporting less than 50 and 45% reporting between 101 and 500 employees.

Researchers surveyed 270 representatives of Minnesota's labor unions. A total of 82 labor representatives responded to the survey (30% response rate). Labor representatives for the construction industry were the largest group of respondents at 69% (n=186). Comparably fewer labor representatives from information technology or communications and manufacturing responded to the survey with less than ten responding from each group.

Perspectives on Minnesota's Public Two-Year College Programs:

Both groups of survey respondents were asked to select a group of employees in their firm or workers in their labor organization for whom a two-year education was most typical. For employees (workers) in the occupational group selected, respondents were asked to indicate their level of agreement with two statements: 1) the extent to which public two

year colleges offered programs of study that permit employees to progress along a career path, and 2) whether public two-year college programs needed to be redesigned so short-term certificates or diplomas could be combined to meet a two- and four-year degree requirement.

Employer and labor union representative perspectives on two-year college program design were as follows:

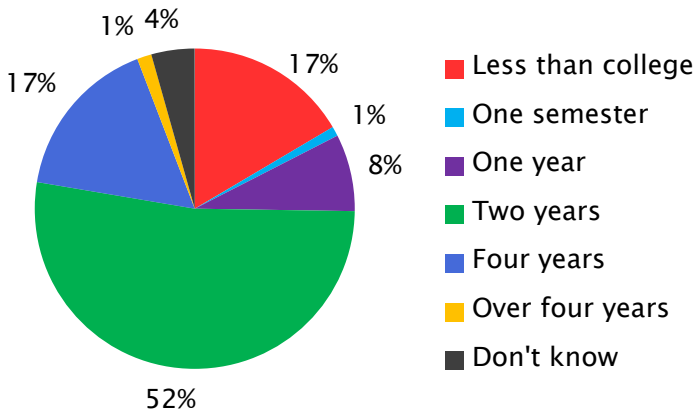
- Seventy-two percent (72%) of **business** respondents and fifty-eight percent (58%) of **labor** respondents agreed or strongly agreed that public two-year colleges offered programs of study that permit employees to progress along a career path.
- Sixty-five percent (65%) of **business** respondents and sixty percent (60%) of **labor** respondents agreed or strongly agreed that public two-year college programs needed to be redesigned so short-term certificates or diplomas could be combined to meet a two- and four-year degree requirement.

Additional Results from the Business Survey

Entry-level education requirements

The majority of the business respondents stated that some college studies were required for an entry level applicant in their organization. Sixty percent (60%) of the respondents felt that an applicant must have at least one or two years of college study. Eighteen percent (18%) stated that an entry level applicant would need four years or more of college study. Only 17% of the respondents required no college for entry level applicants.

For employees in the occupational group selected, what is the appropriate length of college study for an entry level applicant in our organization? (n=206)

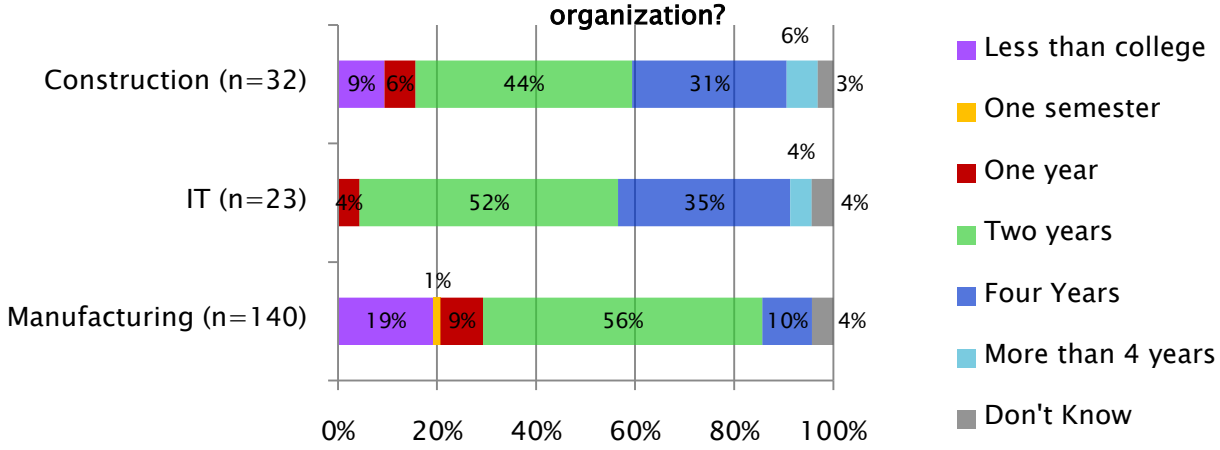


Length of College Study, by Industry

When addressing this question by industry, the majority of the business respondents stated that some college studies was required for an entry level applicant in their organization. A majority of the respondents again felt that an applicant must have at least one or two years of college study.

However, the percents varied slightly by industry with 65% of the manufacturing respondents rating one or two years of college to be an appropriate length; IT was at 56%; and construction at 50%. Slightly less than 40% of both the IT and construction industry respondents stated that entry level applicants would need four years or more of college study. 15% of the manufacturing respondents required no college for entry level applicants.

By Industry: For employees in the occupational group selected, what is the appropriate length of college study for an entry level applicant in our organization?



General Comments by Business Respondents

In general, two-year college education appears to have value to a majority of respondents surveyed although more specific training that focuses on specialized occupational areas or industry needs is desirable: Some cited examples:

- ⇒ *adding more courses that focus on systems-order entry (basics of on how all [operations] come together)*
- ⇒ *specialized/customized services and production provided by smaller industries or sub-markets*
- ⇒ *training on more specific skills areas within an industry rather than just general*
- ⇒ *more training on communications with diverse groups*

Based on the type of questions asked and the limited answers received, there are mixed responses and uncertainty on whether two-year college education programs can have (or had) most impact to the occupation and general competencies or to the increased labor demand for higher level of technical skill and the need for more (or less) formal education, which will specifically address this need. Both are potential factors among other possibilities.

- ⇒ O*ur industry requires highly trained and educated…two year colleges don't [get] many into positions except at the lowest levels*

⇒ *Generally I think they do a very good job and provide a valuable resource to people, businesses and communities*

⇒ *Two year degrees could be streamlined to better prepare entry level workers…more on specific training in whatever discipline...*

Business Respondents' Views on Educational Preparation

In general, participants were most satisfied with the basic educational preparation of the employees in their occupational group. Sixty-five percent (65%) of the respondents stated that employees were very well prepared or adequately prepared in this area.

- Approximately 50% of the participants rated the employees' educational preparation in the liberal arts and technical expertise as very well prepared or adequately prepared.
- Only 19% of the participants rated the employees as prepared in global awareness
- Sixty-six percent (66%) of those surveyed said the employees needed additional training, either internally or through formal education.

Survey participants were also asked to rate the educational preparation of employees in employability skills including interpersonal relations, communications, critical thinking, cultural diversity, teamwork, flexibility/stability, customer relations, and innovation/creativity.

- The majority of business respondents said that employees needed more educational preparation (either internal training or formal education) in all 8 categories.
- The highest concern was in customer relations where 72% of the respondents felt the employees needed additional educational preparation for this skill.
- Communications and critical thinking were second with 63% of the respondents stated the need for additional preparation.
- Innovation/creativity was third with 57% of the participants stating a need for additional preparation.

Comments by Industry Cluster

Construction-Related: Those who commented on educational attainment noted:

⇒ *It is important…to include as much safety instruction for the construction industry*

⇒ *[Broadening the career options specifically] public relations of training offered beyond union contract jobs, which make up only 15% of the construction industry*

Information Technology: Those who commented on educational attainment noted:

⇒ *Two year colleges…could [re-]create an education program that will deliver students that are highly sought after by businesses. In IT, real life project-based training could deliver well educated experienced individuals.*

⇒ *[We] value and are impressed with the technical programs in Minnesota [that we have hired from] namely the specific and useful IT training and the depth of specific knowledge taught…two-year colleges need to offer more specific job training programs as well as continued path to the four-year schools*

Manufacturing-related: Those who commented on educational attainment noted:

⇒ *…the two-year programs give our shop workforce a good base for our in-house training (respondent on need for more manufacturing engineers)*

⇒ *Two year degrees could streamlined to better prepare entry level workers…more on specific training in whatever discipline…*

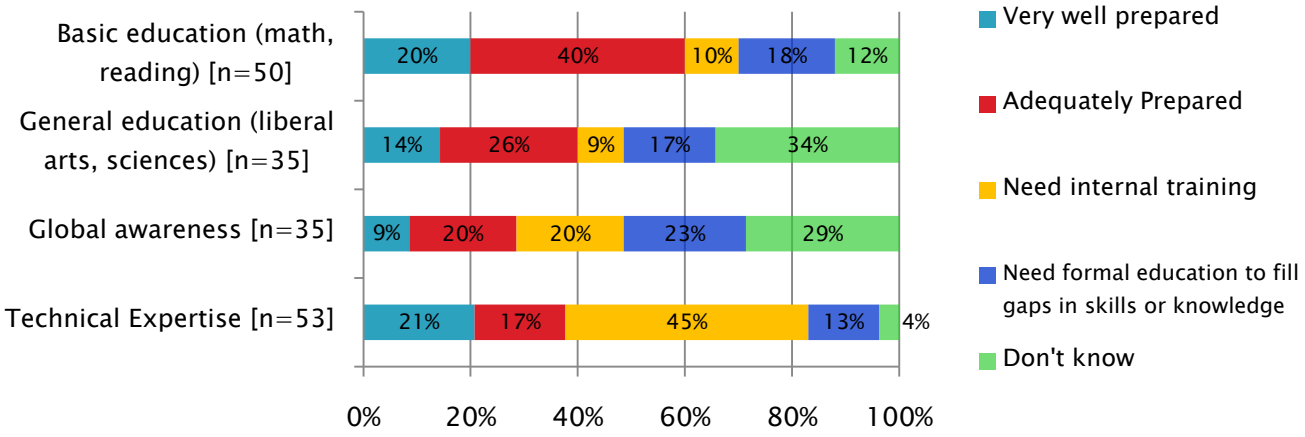
Additional Results from the Survey of Labor Union Representatives

Educational Preparation

In general, labor union representatives reported that most workers had the appropriate level of basic educational preparation in each occupational group.

- Sixty percent (60%) of the respondents stated that workers were very well prepared or adequately prepared.
- Approximately 40% of the labor respondents rated educational preparation in the liberal arts and technical expertise as very well prepared or adequately prepared.
- Twenty-nine percent (29%) of respondents stated workers were very well prepared or adequately prepared in global awareness; this is 10% higher than the employers who responded to the survey.
- Still 66% of the respondents said workers needed additional training, either internally or through formal education.

For workers in this occupational group, rate their educational preparation in the following areas:



Labor respondents were also asked to rate educational preparation of workers in employability skills including interpersonal relations, communications, critical thinking, cultural diversity, teamwork, flexibility/stability, customer relations, and innovation/creativity.

- About 50% of labor respondents felt workers were very well prepared or adequately prepared in teamwork and flexibility/ adaptability.
- Forty to forty-five percent (40-45%) of labor respondents said workers were very well prepared or adequately prepared in interpersonal relations, communications, critical thinking, cultural diversity, and innovation/creativity.
- Only 31% of the surveyed labor respondents said workers were very well prepared or adequately prepared in customer satisfaction.
- Communications and innovation/creativity were identified as the highest desire for internal training or formal education to fill gaps in skills or knowledge.

V. Conclusions

- Award types, as defined in Chancellor's procedure 3.36.1 - Academic Programs, provide a comprehensive array of design alternatives that permit programs to (a) be sequenced, (b) vary in length, and (c) align with occupational training requirements.

- The system (a) offers a significant majority of its occupational programs that can be completed in less than two years, (b) engage in initiatives to inter-relate programs across career levels, and (c) align programs with occupational requirements.

- For all industry clusters, except construction, the number of graduates has increased in each of the past three years (in programs of two years or less).

- Minnesota ranks 6th nationally for the percentage of long-term certificates (over 1 year) awarded by public institutions.

- The state's 26 Perkins consortia develop pathways/programs of study that span at least grades 11 and 12, and the first two years of college, and are being enhanced by focusing on high-wage, high-skill, or high-demand occupations, particularly for special and under-represented populations.

- Career pathways are also notable in nursing, allied health and energy, due to emphasis placed on these sectors through the Centers of Excellence and a federal grant in energy.

VI. Recommendations

- The system should continue to develop career pathways that begin at adult basic education or high school levels and, by design, progress to undergraduate programs.

- The system should expand short-term program offerings in the skill areas identified by labor and business representatives where educational preparation is indicated as not adequate. These areas may include: customer relations, communications, innovation/creativity and global awareness.

- The system should continue to work with Minnesota employers and labor when designing career pathways and program curriculum.

Appendix

Table A-1: Awards by Attribute

Attribute	Associate in Applied Science (AAS)	Associate in Science (AS)	Diploma	Certificate
Purpose, outcome, or fields of study	• employment in an occupation or range of occupations • scientific, technological or other professional fields	• transfer to a baccalaureate degree or • transfer and employment if designed for a specific field • scientific, technological, or other professional fields	• employment	• occupational outcome or address a focused area of study
Credit range[9]	60-72[10]	60	31-72	9-30
General education: Minnesota Transfer Curriculum goal areas	• minimum of 15 general education credits selected from at least three of the ten goal areas	• a minimum of 30 general education credits selected from at least six of the ten goal areas	• none required by policy • required by Higher Learning Commission for programs above 44 credits	• optional
Transfer	• may be accepted in transfer to a related baccalaureate program	• designed to transfer in its entirety to a related baccalaureate program by way of an articulation agreement	• up to 16 occupational-professional credits must transfer as electives • other credits determined by receiving college or university	• up to 16 occupational-professional credits must transfer as electives • other credits determined by receiving college or university

[9] Awards are permitted to exceed credit limits if applicable criteria are met.

[10] Legislation temporarily exempts the AAS degree from a 60 credit limit that is imposed on other two-year degrees.

Table A-1: Awards by Attribute

Attribute	Associate in Applied Science (AAS)	Associate in Science (AS)	Diploma	Certificate
Emphases[11]	• may have one or more of at least 9 credits when there are at least 30 credits in the major that are common to the emphases	• not permitted	• may have one or more of at least 9 credits when there are at least 30 credits in the major that are common to the emphases	• not permitted
Other	• at least 30 credits shall be in the academic program's occupational or technical field of preparation		• a minimum of 24 credits shall be in occupational or technical courses	

[11] An emphasis is a focused component of an academic program. For example, students in a Paralegal program may select an emphasis in elder law, litigation or commercial law.

Table A-2: Number of Credit Bearing Programs by Career Cluster						
	Award					
Career Cluster	Associate in Applied Science (AAS)	Associate in Science (AS)	Certificate	Diploma	Total	Percent
Agriculture, Food and Natural Resource	36	23	67	54	**180**	**6%**
Architecture and Construction	93	6	100	116	**315**	**10%**
Arts, Audio/Video Technology and Communications	40	10	39	39	**128**	**4%**
Business, Management and Administration	78	38	206	63	**385**	**13%**
Education and Training	8	16	29	6	**59**	**2%**
Finance	40	12	26	49	**127**	**4%**
Government and Public Administration	2		4		**6**	**0%**
Health Science	140	58	173	140	**511**	**17%**
Hospitality and Tourism	17		28	11	**56**	**2%**
Human Services	42	24	73	39	**178**	**6%**
Information Technology	55	24	127	28	**234**	**8%**
Law, Public Safety, Corrections and Security	27	29	49	19	**124**	**4%**
Manufacturing	98	7	171	123	**399**	**13%**
Marketing	35	9	41	25	**110**	**4%**
Science, Technology, Engineering and Mathematics	3	17	4		**24**	**1%**
Transportation, Distribution and Logistics	51		59	59	**169**	**6%**
Total	**765**	**273**	**1196**	**771**	**3005**	
Percent	**25%**	**9%**	**40%**	**26%**		**100%**

Table A-3: Program Counts by Program and Award for Selected Career Clusters				
National Program Classification	AAS	AS	Diploma	Certificate
Cluster: Architecture and Construction				
Building/Construction Site Management/Manager.	2	2	1	2
Building/Home/Construction Inspection/Inspector.	2			7
Building/Property Maintenance and Management.	2		4	2
Carpentry/Carpenter.	9		22	12
Civil Engineering Technology/Technician.	8		2	3
Concrete Finishing/Concrete Finisher.				1
Construction Trades, General.	1		2	4
Drywall Installation/Drywaller.				3
Electrical and Power Transmission Installation/Installer, General.	1	1	1	1
Electrical and Power Transmission Installers, Other.	1		4	3
Electrician.	6		17	
Environmental Design/Architecture.		1		
Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician (HAC, HAC	9		16	9
Lineworker.	3		5	
Mason/Masonry.	1		2	3
Pipefitting/Pipefitter and Sprinkler Fitter.			3	3
Plumbing Technology/Plumber.	4		9	
Roofer.				1
Surveying Technology/Surveying.	1	2		3
Cluster: Information Technology				
Computer and Information Sciences, General.	1	5		2
Computer and Information Systems Security.	7		1	23
Computer Engineering Technology/Technician.	1		1	
Computer Graphics.		1		1
Computer Hardware Technology/Technician.			1	3
Computer Installation and Repair Technology/Technician.			1	2
Computer Programming, Specific Applications.	4		1	12
Computer Programming, Vendor/Product Certification.				2
Computer Programming/Programmer, General.	10	1	7	3

Table A-3: Program Counts by Program and Award for Selected Career Clusters				
National Program Classification	AAS	AS	Diploma	Certificate
Computer Science.		11		
Computer Software Technology/Technician.	1			
Computer Systems Networking and Telecommunications.	21	4	12	57
Computer Technology/Computer Systems Technology.	17	2	9	37
Data Entry/Microcomputer Applications, General.			1	12
Data Modeling/Warehousing and Database Administration.	1		1	8
Information Technology.	1	2	1	1
Management Information Systems, General.	4	2	1	1
System Administration/Administrator.	2			2
Web Page, Digital/Multimedia and Information Resources Design.	8	2	5	13
Web/Multimedia Management and Webmaster.				3
Cluster: Transportation, Distribution, and Logistics				
Air Traffic Controller.	1			
Air Transportation, Other.	1			
Airframe Mechanics and Aircraft Maintenance Technology/Technician.	1		1	
Airline/Commercial/Professional Pilot and Flight Crew.	1		1	1
Autobody/Collision and Repair Technology/Technician.	11		15	19
Automobile/Automotive Mechanics Technology/Technician.	21		24	18
Aviation/Airway Management and Operations.	3			
Construction/Heavy Equipment/Earthmoving Equipment Operation.			1	
Logistics and Materials Management.	1			2
Marine Maintenance/Fitter and Ship Repair Technology/Technician.	3		4	2
Truck and Bus Driver/Commercial Vehicle Operation.				9
Cluster: Manufacturing				
Animation, Interactive Technology, Video Graphics and Special Effects.	7		5	3
Architectural Drafting and Architectural CAD/CADD.	9		9	2
Cabinetmaking and Millwork/Millwright.	2		3	4

Table A-3: Program Counts by Program and Award for Selected Career Clusters				
National Program Classification	AAS	AS	Diploma	Certificate
CAD/CADD Drafting and/or Design Technology/Technician.	6		5	12
Drafting and Design Technology/Technician, General.				3
Electromechanical Technology/Electromechanical Engineering Technology.	1		2	1
Graphic and Printing Equipment Operator, General Production.	2		1	1
Industrial Electronics Technology/Technician.	2		1	
Industrial Mechanics and Maintenance Technology.	8		10	12
Ironworking/Ironworker.				1
Machine Shop Technology/Assistant.			2	3
Machine Tool Technology/Machinist.	11		16	17
Mechanical Drafting and Mechanical Drafting CAD/CADD.	7		8	8
Plastics Engineering Technology/Technician.			1	3
Precision Production Trades, General.				1
Prepress/Desktop Publishing and Digital Imaging Design.	3		3	5
Printing Press Operator.				2
Sheet Metal Technology/Sheetworking.	1		2	
Tool and Die Technology/Technician.	3		5	
Welding Technology/Welder.	3		17	26
Woodworking, General.			1	
Woodworking, Other.				1

Table A-4: Award Majors and Unduplicated Counts of Graduates in Career and Technical Education (CTE) Programs by Award and Career Cluster

Minnesota State Colleges

FY 2008

	Award Majors in FY*					Unduplicated Count of Graduates by Cluster						
				Total								
Career Cluster	Certificates	Diplomas	AS/AAS	#	%	Certificate Only	Diploma Only	Associate Degree Only	Multiple Awards or Multiple Majors #	Multiple Awards or Multiple Majors %	Total #	Total %
Agriculture, Food and Natural Resource	227	243	192	662	3.5%	152	215	145	64	11.1%	576	3.3%
Architecture and Construction	297	1,291	398	1,986	10.5%	186	1,225	356	82	4.4%	1,849	10.5%
Arts, Audio/Video Technology and Communications	75	114	398	587	3.1%	55	93	361	37	6.8%	546	3.1%
Business, Management and Administration	521	105	614	1,240	6.5%	396	88	563	79	7.0%	1,126	6.4%
Education and Training	8	2	97	107	0.6%	6	2	97	1	0.9%	106	0.6%
Finance	90	79	410	579	3.1%	64	77	393	19	3.4%	553	3.1%
Government and Public Administration	10			10	0.1%	10	0	0	0	0.0%	10	0.1%
Health Science	2,673	2,105	3,456	8,234	43.4%	2,522	1,895	3,269	257	3.2%	7,943	45.1%
Hospitality and Tourism	73	60	75	208	1.1%	44	54	66	18	9.9%	182	1.0%
Human Services	185	236	344	765	4.0%	124	220	302	55	7.8%	701	4.0%
Information Technology	162	16	322	500	2.6%	74	9	275	61	14.6%	419	2.4%
Law, Public Safety, Corrections and Security	498	68	766	1,332	7.0%	285	39	535	227	20.9%	1,086	6.2%
Manufacturing	248	589	376	1,213	6.4%	129	508	309	112	10.6%	1,058	6.0%
Marketing	136	67	329	532	2.8%	123	59	288	29	5.8%	499	2.8%
Science, Technology, Engineering and Mathematics			82	82	0.4%	0	0	82	0	0.0%	82	0.5%
Transportation, Distribution and Logistics	247	467	217	931	4.9%	190	423	211	46	5.3%	870	4.9%
2008	**5,450**	**5,442**	**8,076**	**18,968**	**100.0%**	**4,360**	**4,907**	**7,252**	**1,087**	**6.2%**	**17,606**	**100.0%**
	28.7%	**28.7%**	**42.6%**	**100.0%**		**24.8%**	**27.9%**	**41.2%**	**6.2%**		**100.0%**	
Unduplicated Count of Graduates (unduplicated across institution and cluster)						**4,199**	**4,848**	**7,087**	**1,257**	**7.2%**	**17,391**	
						24.1%	**27.9%**	**40.8%**	**7.2%**		**100.0%**	

Award majors are the number of unique award major combinations conferred during the fiscal year. Graduates may be included in the counts more than once if they received more than one award major in a given fiscal year. Included awards are certificates, dimplomas, AS degrees and AAS degrees.

Counts of graduates are unduplicated across colleges. Graduates may be included in the counts more than once if they received awards in more than one cluster.

Table A-5: Award Majors and Unduplicated Counts of Graduates in Career and Technical Education (CTE) Programs by Award and Career Cluster

Minnesota State Colleges

FY 2009

	Award Majors in FY*					Unduplicated Count of Graduates by Cluster						
				Total					Multiple Awards or			
						Certificate	Diploma	Associate Degree	Multiple Majors		Total	
Career Cluster	Certificates	Diplomas	AS/AAS	#	%	Only	Only	Only	#	%	#	%
Agriculture, Food and Natural Resource	152	246	225	623	3.1%	137	222	182	38	6.6%	579	3.1%
Architecture and Construction	426	1,217	427	2,070	10.2%	227	1,106	373	133	7.2%	1,839	9.9%
Arts, Audio/Video Technology and Communications	60	100	403	563	2.8%	42	74	374	33	6.3%	523	2.8%
Business, Management and Administration	937	87	682	1,706	8.4%	612	72	594	187	12.8%	1,465	7.9%
Education and Training	39	1	128	168	0.8%	26	1	123	9	5.7%	159	0.9%
Finance	209	78	384	671	3.3%	110	73	341	59	10.1%	583	3.1%
Government and Public Administration	7		5	12	0.1%	4	0	4	2	20.0%	10	0.1%
Health Science	3,113	2,092	3,509	8,714	42.9%	2,938	1,823	3,307	308	3.7%	8,376	44.9%
Hospitality and Tourism	90	51	90	231	1.1%	45	42	80	25	13.0%	192	1.0%
Human Services	213	221	338	772	3.8%	182	206	301	40	5.5%	729	3.9%
Information Technology	156	17	321	494	2.4%	89	15	289	44	10.1%	437	2.3%
Law, Public Safety, Corrections and Security	496	94	796	1,386	6.8%	309	36	574	212	18.7%	1,131	6.1%
Manufacturing	287	617	389	1,293	6.4%	139	548	331	106	9.4%	1,124	6.0%
Marketing	205	37	319	561	2.8%	170	32	283	34	6.6%	519	2.8%
Science, Technology, Engineering and Mathematics			80	80	0.4%	0	0	80	0	0.0%	80	0.4%
Transportation, Distribution and Logistics	265	469	243	977	4.8%	186	424	220	64	7.2%	894	4.8%
All Clusters	**6,655**	**5,327**	**8,339**	**20,321**	**100.0%**	**5,216**	**4,674**	**7,456**	**1,294**	**6.9%**	**18,640**	**100.0%**
	32.7%	**26.2%**	**41.0%**	**100.0%**		**28.0%**	**25.1%**	**40.0%**	**6.9%**		**100.0%**	
Unduplicated Count of Graduates (unduplicated across institution and cluster)						**4,915**	**4,637**	**7,275**	**1,486**	**8.1%**	**18,313**	
						26.8%	**25.3%**	**39.7%**	**8.1%**		**100.0%**	

Award majors are the number of unique award major combinations conferred during the fiscal year. Graduates may be included in the counts more than once if they received more than one award major in a given fiscal year. Included awards are certificates, dimplomas, AS degrees and AAS degrees.

Counts of graduates are unduplicated across colleges. Graduates may be included in the counts more than once if they received awards in more than one cluster.

Table A-6: Award Majors and Unduplicated Counts of Graduates in Career and Technical Education (CTE) Programs by Award and Career Cluster

Minnesota State Colleges

FY 2010

	Award Majors in FY					Unduplicated Count of Graduates by Cluster						
				Total								
Career Cluster	**Certificates**	**Diplomas**	**AS/AAS**	**#**	**%**	**Certificate Only**	**Diploma Only**	**Associate Degree Only**	**Multiple Awards or Multiple Majors #**	**Multiple Awards or Multiple Majors %**	**Total #**	**Total %**
Agriculture, Food and Natural Resource	253	253	217	723	3.4%	206	223	176	53	8.1%	658	3.4%
Architecture and Construction	352	1,026	431	1,809	8.6%	185	904	380	141	8.8%	1,610	8.4%
Arts, Audio/Video Technology and Communications	70	92	412	574	2.7%	45	73	371	41	7.7%	530	2.8%
Business, Management and Administration	880	115	775	1,770	8.4%	606	92	688	156	10.1%	1,542	8.0%
Education and Training	39	48	134	221	1.0%	22	48	130	10	4.8%	210	1.1%
Finance	216	87	424	727	3.4%	103	74	394	67	10.5%	638	3.3%
Government and Public Administration	1		3	4	0.0%	1	0	3	0	0.0%	4	0.0%
Health Science	3,201	1,974	3,644	8,819	41.8%	3,024	1,752	3,453	276	3.2%	8,505	44.2%
Hospitality and Tourism	143	77	105	325	1.5%	74	64	92	38	14.2%	268	1.4%
Human Services	194	179	375	748	3.5%	168	161	343	36	5.1%	708	3.7%
Information Technology	199	36	396	631	3.0%	76	26	339	72	14.0%	513	2.7%
Law, Public Safety, Corrections and Security	644	74	818	1,536	7.3%	436	39	579	227	17.7%	1,281	6.7%
Manufacturing	421	674	440	1,535	7.3%	214	560	344	146	11.6%	1,264	6.6%
Marketing	135	39	319	493	2.3%	113	36	289	25	5.4%	463	2.4%
Science, Technology, Engineering and Mathematics			99	99	0.5%	0	0	99	0	0.0%	99	0.5%
Transportation, Distribution and Logistics	300	466	293	1,059	5.0%	215	410	264	72	7.5%	961	5.0%
All Clusters	**7,048**	**5,140**	**8,885**	**21,073**	**100.0%**	**5,488**	**4,462**	**7,944**	**1,360**	**7.1%**	**19,254**	**100.0%**
	33.4%	**24.4%**	**42.2%**	**100.0%**		**28.5%**	**23.2%**	**41.3%**	**7.1%**		**100.0%**	
Unduplicated Count of Graduates (unduplicated across institution and cluster)						**5,217**	**4,411**	**7,742**	**1,568**	**8.3%**	**18,938**	
						27.5%	**23.3%**	**40.9%**	**8.3%**		**100.0%**	

Award majors are the number of unique award major combinations conferred during the fiscal year. Graduates may be included in the counts more than once if they received more than one award major in a given fiscal year. Included awards are certificates, dimplomas, AS degrees and AAS degrees..

Counts of graduates are unduplicated across colleges. Graduates may be included in the counts more than once if they received awards in more than one cluster.

Table A-#: Unduplicated Count of Graduates in Career and Technical Education (CTE Programs) who Indicated they are Continuing their Education

Graduate Follow-up Responses by Career Cluster

Minnesota State Colleges

FY 2008 and FY 2009 Graduates

	FY 2008 Graduates			FY 2009 Graduates		
		Continuing Education			Continuing Education	
Career Cluster	**Total**	**#**	**%**	**Total**	**#**	**%**
Agriculture, Food and Natural Resource	576	188	32.6%	579	261	45.1%
Architecture and Construction	1,849	241	13.0%	1,839	383	20.8%
Arts, Audio/Video Technology and Communications	546	105	19.2%	523	135	25.8%
Business, Management and Administration	1,126	490	43.5%	1,465	831	56.7%
Education and Training	106	42	39.6%	159	72	45.3%
Finance	553	182	32.9%	583	261	44.8%
Government and Public Administration	10	5	50.0%	10	4	40.0%
Health Science	7,943	3,017	38.0%	8,376	3,281	39.2%
Hospitality and Tourism	182	40	22.0%	192	46	24.0%
Human Services	701	206	29.4%	729	259	35.5%
Information Technology	419	127	30.3%	437	137	31.4%
Law, Public Safety, Corrections and Security	1,086	272	25.0%	1,131	360	31.8%
Manufacturing	1,058	194	18.3%	1,124	326	29.0%
Marketing	499	147	29.5%	519	234	45.1%
Science, Technology, Engineering and Mathematics	82	75	91.5%	80	73	91.3%
Transportation, Distribution and Logistics	870	130	14.9%	894	117	13.1%
Total -- Unduplicated Across Clusters	**17,391**	**5,371**	**30.9%**	**18,313**	**6,577**	**35.9%**

Table A-#: Educational Attainment at System Institutions within Two Years Following the FY of Graduation in a CTE Program
Minnesota State Colleges
FY 2008 Graduates

Career Cluster	Number of Graduates	Educational Attainment of FY 2008 Graduates Measure through FY 2010														
		Single Award/Single Major					Multiple Awards or Majors/Same					Multiple Award Levels				
		#	%	Award Level			#	%	Award Level			#	%	Highest Award Level		
				Certificate	Diploma	AS/AAS			Certificate	Diploma	AS/AAS			Diploma	Assoc.	Bach.
Agriculture, Food and Natural Resource	576	384	66.7%	61	197	126	135	23.4%	106	11	18	57	9.9%	10	44	3
Architecture and Construction	1,849	1655	89.5%	171	1156	328	84	4.5%	11	56	17	110	5.9%	20	83	7
Arts, Audio/Video Technology and	546	458	83.9%	48	84	326	22	4.0%	0	2	20	66	12.1%	7	53	6
Business, Management and Administration	1,126	726	64.5%	199	79	448	146	13.0%	80	6	60	254	22.6%	17	198	39
Education and Training	106	76	71.7%	4	2	70	10	9.4%	2	0	8	20	18.9%		2	18
Finance	553	431	77.9%	21	61	349	46	8.3%	15	4	27	76	13.7%	4	56	16
Government and Public Administration	10	5	50.0%	5	0	0	2	20.0%	2	0	0	3	30.0%		3	
Health Science	7,943	6365	80.1%	2127	1278	2960	331	4.2%	46	23	262	1247	15.7%	209	984	54
Hospitality and Tourism	182	144	79.1%	33	50	61	10	5.5%	5	0	5	28	15.4%	5	22	1
Human Services	701	544	77.6%	88	197	259	36	5.1%	9	3	24	121	17.3%	8	100	13
Information Technology	419	285	68.0%	39	7	239	43	10.3%	19	0	24	91	21.7%	17	66	8
Law, Public Safety, Corrections and	1,086	665	61.2%	211	36	418	45	4.1%	5	2	38	376	34.6%		304	72
Manufacturing	1,058	819	77.4%	103	443	273	81	7.7%	16	29	36	158	14.9%	77	77	4
Marketing	499	369	73.9%	65	53	251	60	12.0%	19	4	37	70	14.0%	2	56	12
Science, Technology, Engineering and	82	59	72.0%	0	0	59	22	26.8%	0	0	22	1	1.2%			1
Transportation, Distribution and Logistics	870	769	88.4%	177	397	195	54	6.2%	16	27	11	47	5.4%	23	22	2
Total -- Undup. Across Clusters &	**17,391**	**13,754**	**79.1%**	**3,352**	**4,040**	**6,362**	**1,034**	**5.9%**	**324**	**153**	**557**	**2,603**	**15.0%**	**380**	**1,975**	**248**