



Division of Community  
Colleges and Workforce  
Preparation



THE ANNUAL  
**CAREER** AND  
**TECHNICAL**  
**EDUCATION**  
HIGH SCHOOL REPORT  
2007

State of Iowa  
Department of Education  
Grimes State Office Building  
Des Moines, Iowa  
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# INTRODUCTION

We are pleased to present the first *Annual Career and Technical Education High School Report*. This report was created to serve as a rich resource for educators, school and college administrators, policymakers, and other citizens by providing essential summative data on career and technical education in Iowa at the high school level.

Students increasingly need advanced academic and technical skills to enter and remain successfully employed. Because of rapid changes in the workplace, it is critical that all high school students be prepared for both careers and postsecondary education.

As this report demonstrates, career and technical education in Iowa's high schools is strong with many exceptional programs and initiatives such as career academies/tech prep and Project Lead The Way®. For the past five years, Iowa has exceeded most federal performance benchmarks, enrollment in career and technical offerings has been rising, and minority enrollment has been improving. Additionally, the Choices career information and decision-making system is increasingly being utilized by Iowa middle and high schools.

While we are proud of these achievements, we also recognize the increasing challenges faced by career and technical education. These challenges include the impact of decreased state support for high school career and technical education offerings, improving nontraditional enrollment in certain career clusters, increasing the number of minority teachers in smaller school districts, and improving linkages between all levels of education.

We hope you find this year's report to be a valuable resource, providing an understanding of the condition of career and technical education at the high school level and enhancing the accountability and improvement processes.



Janice Nahra Friedel, Ph.D., Administrator  
Division of Community Colleges and Workforce Preparation  
Iowa Department of Education



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# SECTION 1

## Purpose of the Report

Career and technical education at the high school level is significant with nearly 1,800 full-time teachers and most students taking one or more courses. Part I of the 2006 Iowa Condition of Community Colleges and Workforce Preparation Report reviews career and technical education at the high school level (grades 9-12).

In this report, the updated term “career and technical” is used interchangeably with the terms “vocational” and “vocational technical” used in state and federal code.

This report is comprised of the following basic sections:

**Career Clusters and Pathways:** An explanation of the national 16 career cluster framework and Iowa’s six career pathways, six service areas, and three targeted industry clusters.

**High School Career and Technical Education Program Enrollment:** Includes career and technical (vocational) participant enrollment by fiscal year and cluster.

**High School Career and Technical Education Demographics:** Consists of gender and racial/ethnic background of career and technical (vocational) participants and the total number of career and technical (vocational) participants facing educational barriers.

**Career Academies/Tech Prep:** An explanation of career academies/tech prep in Iowa.

**High School Career and Technical Education Programs:** An explanation of the career and technical education program approval process with a list of programs approved by the Iowa Department of Education during Fiscal Years 2004, 2005, and 2006. This section also contains information and data on Project Lead The Way®.

**High School Career and Technical Education Performance Indicators:** Reports on a set of performance indicators (as defined for federal Perkins III reporting requirements) for high school career and technical education program participants.

**High School Career and Technical Education Staff:** Includes a variety of reports on full-time high school career and technical faculty.

**High School Career and Technical Education Finances:** Consists of the state vocational education appropriation, rate of reimbursement, and high school career and technical education expenditures by category.

**Career and Technical Student Organizations (CTSOs):** Includes career and technical student organizations active at the secondary and postsecondary level along with the total number of members and chapters.

**Career Planning and Exploration:** Highlights career planning and exploration activities and reports related to Iowa’s Career Information and Decision-Making System.





## SECTION 2

### Career Clusters

Career and technical education's direct and explicit focus on preparing students for specific ranges of occupations has resulted in a long history of interest and involvement in educational, occupational, and industrial classification systems. These systems have been used to organize career and technical education into categories for a variety of purposes. The following is a brief overview of various the systems used by career and technical educators in Iowa today.

#### **National Career Clusters**

Career clusters provide a way for schools to organize instruction and student experiences around 16 broad categories that together encompass all occupations from entry through professional levels. The clusters are groupings of careers with similar skills or common themes based on industry groups. They assist students, parents, employers, and those in the educational system understand how curriculum relates to the career opportunities from which students will choose and for which schools must prepare them. Career clusters can be divided into smaller categories of more than 81 career pathways that each serve as the foundation for numerous career specialties.

The 16 career clusters are: Marketing, Sales, and Service; Business, Management, and Administration; Information Technology; Finance; Agriculture, Food, and Natural Resources; Arts, Audio/Visual Technology, and Communications; Hospitality and Tourism; Law, Public Safety, and Security; Government and Public Administration; Education and Training; Human Services; Health Sciences; Transportation, Distribution, and Logistics; Manufacturing; Science, Technology, Engineering, and Mathematics; Architecture and Construction. See Appendix A for descriptions of the clusters.

Career clusters evolved from a variety of taxonomies. In the late 1990s, efforts to replace traditional “vocational” categories with alternative clustering systems gained momentum as the vision for career and technical education supplanted vocational education. In 1994, the National Skills Standards Board (NSSB) was authorized by Congress to develop a voluntary national system of skills standards and a taxonomy of 15 industry sectors was created. A second cluster model was developed and promulgated by the U.S. Department of Education Office of Vocational and Adult Education (OVAE). The OVAE effort resulted in the adoption of the 16 career clusters in 1999. The cluster model encompasses various levels that can be divided into progressively specific categories, each with common knowledge and skills required for occupational specialties within the category. The skill and knowledge statements within each cluster (and the pathways within them) can be used to organize curriculum and develop assessments. The knowledge and skill statements were validated by employers and educators allowing for durable, nationally-portable competencies. The alignment of instruction to cluster knowledge and skills creates a fundamentally different type of instruction where academic and technical instruction are blended, education is put in a relevant context, and transitions among learner levels are seamless. In 2000, Iowa served as a lead state with Idaho in working with a broad-based advisory committee to identify curriculum frameworks, pathway and foundation knowledge and skills, and supporting materials for the Agriculture, Food, and Natural Resources Career Cluster. In 2001, OVAE required states to begin reporting enrollment data disaggregated by the 16 career clusters for Perkins accountability requirements. The National Association of State Directors of Career and Technical Education

Consortium (NASDCTEc) took over the career clusters effort in 2002 and renamed it the States' Career Clusters Initiative. Within the 16 career clusters, a total of 81 career pathways were developed, each with knowledge and skills statements that build on the clusters' foundational knowledge and skill requirements. Sample plans of study for each the pathways were released in December 2006.

In recent years, there has been a movement to reorganize career and technical education around the career clusters. With Perkins IV legislation, there has been considerable discussion about how the current system in Iowa might be integrated with the career clusters.

### **Iowa Career Pathways**

Sometimes referred to as career fields or as Iowa career clusters, Iowa career pathways (Iowa Code, §256.38) are a smaller set of six broad career areas developed during the late 1990s by the Iowa School-To-Work Office and the Iowa Association of Business and Industry (ABI). The career pathways were created and adopted prior to development of the national career clusters and to serve a similar purpose. The Iowa pathway effort was to identify knowledge and skills necessary for employment in a given occupational area and develop three tiers of competencies verified by employers. Iowa career pathways differ from the 81 national career cluster pathways discussed in the previous section. The 16 national career clusters can be grouped together based on commonalities and folded into the larger Iowa career pathways (which serve as super-clusters).

The six career pathways are: Business, Information Management, and Marketing; Agriscience and Natural Resources; Arts and Communications; Family, Consumer, and Human Services; Health Sciences; Engineering, Industrial, and Technology Services.

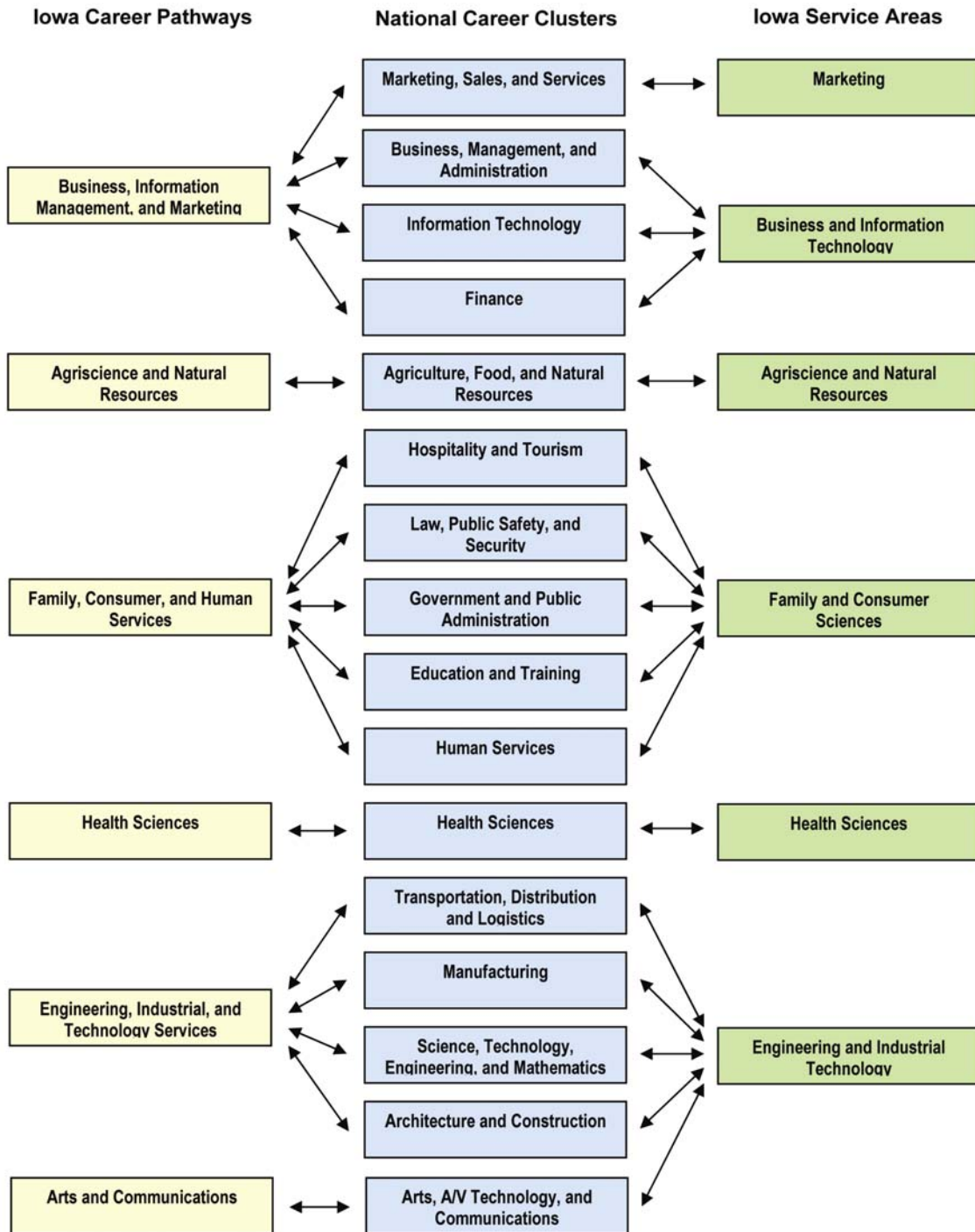
### **Traditional Service Areas**

Iowa Code §256.11(5)(h) organizes secondary and community college career and technical education (vocational technical education) into six service areas. These six areas are: Agriscience and Natural Resources (Agriculture Education); Business and Information Technology (Business and Office Education); Engineering and Industrial Technology (Industrial Education); Health Sciences (Health Occupations Education); Family and Consumer Sciences (Home Economics Education); Marketing (Marketing Education).

### **Targeted Industry Clusters**

Three targeted industry clusters were identified and supported by the Iowa Department of Economic Development because of their potential for growth and the creation of high paying jobs. Industry clusters consist of businesses enterprises and nonbusiness organizations bound together by buyer-supplier relationships, common technologies, common buyers or distribution channels, or common labor pools. Iowa's three targeted industry clusters are: Life Sciences (including production agriculture, value-added processing, pharmaceuticals, and biotechnology); Advanced Manufacturing (involving the rapid introduction of new processes including metal manufacturing and heavy machinery manufacturing) and Information Solutions (including financial services and information solutions). Industry clusters match subsets of individual career clusters. For example, the Life Sciences industry cluster would consist of subsets of the Agriculture, Food, and Natural Resources cluster, the Science, Technology, Engineering and Mathematics Cluster, and other career clusters.

The 16 career clusters can be collapsed into six (6) career pathways/fields and the six (6) service areas recognized in Iowa Code.



# Iowa Career Cluster Framework

In this section, the network systems career pathway is used as an example to explain the Iowa Career Cluster Framework and the different levels of common skills and knowledge required at each level.

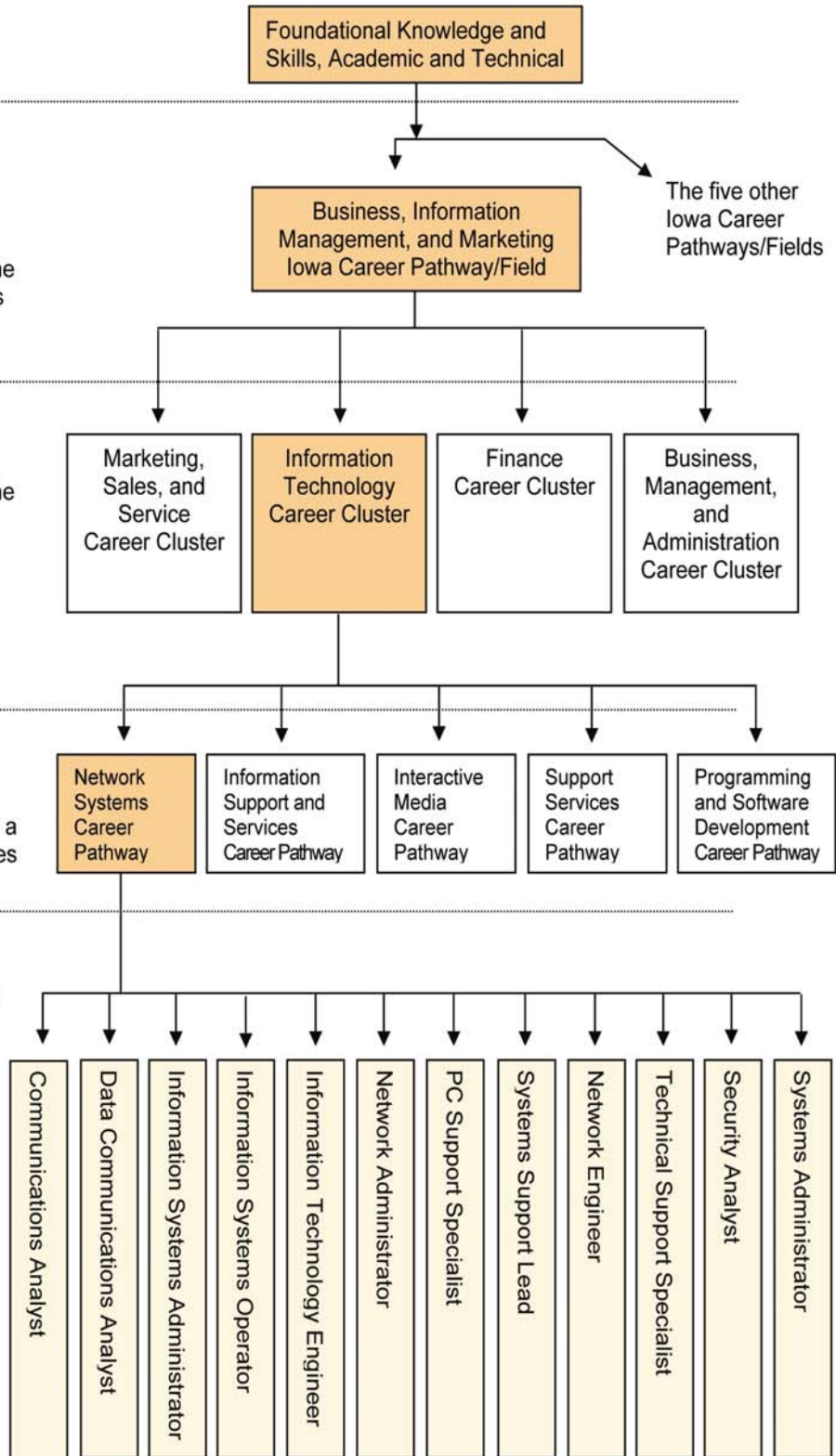
Foundational knowledge and skills form the base for all occupational areas.

**Iowa Career Pathway (Supercluster) Level**  
Iowa Career Pathways/Fields represent the skills and knowledge, academic and technical, that all students in the field should achieve regardless of the clusters in the Iowa Career Pathway/Field.

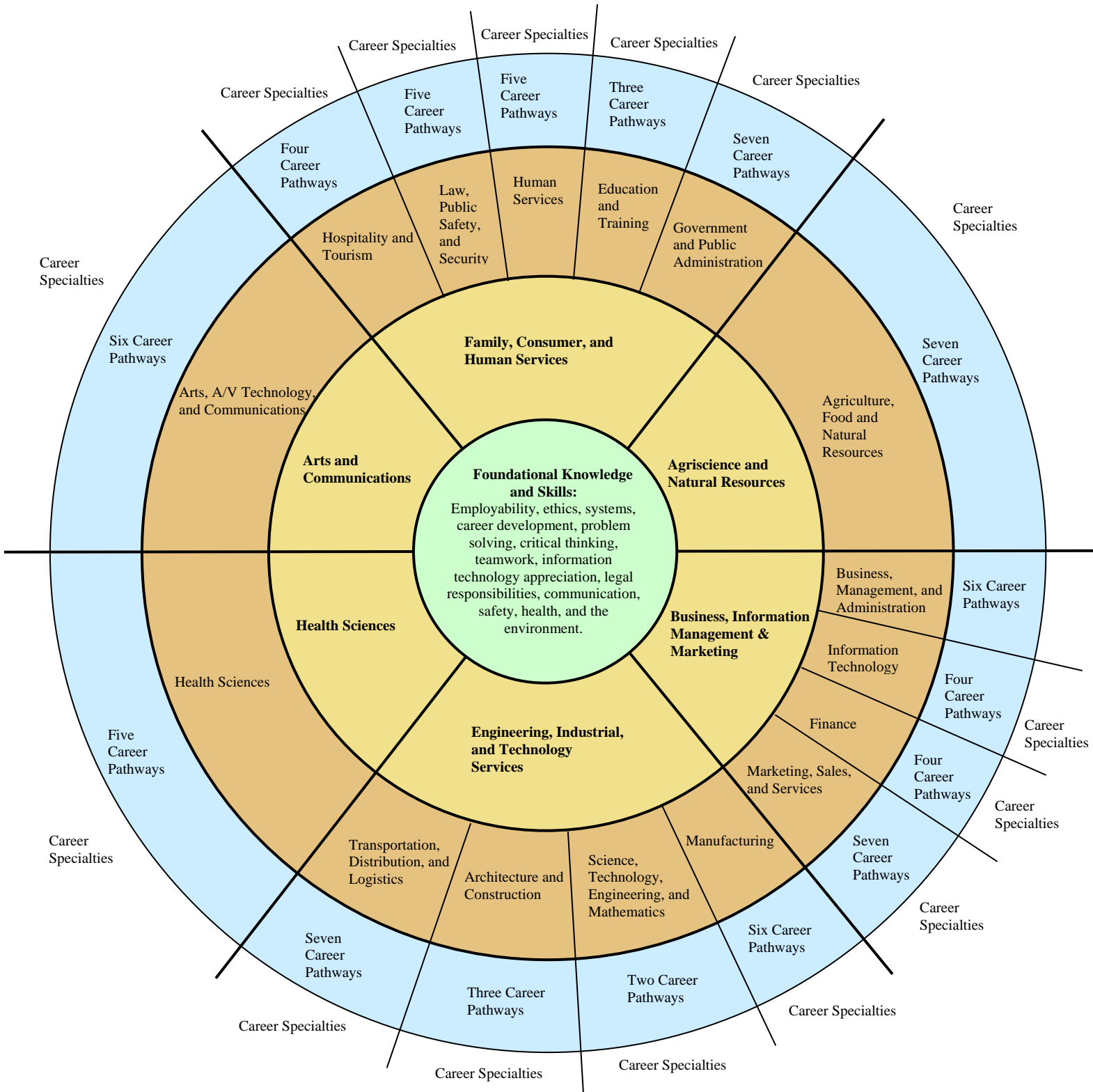
**Career Cluster Level**  
Represents the skills and knowledge, academic and technical, that all students in the cluster should achieve regardless of the career pathway selected.

**Pathway Level**  
Represents the skills and knowledge, academic and technical, necessary to pursue a full range of career opportunities within a pathway.

**Specialty Level**  
Represents the full range of career specialties/occupations at all levels of education within each pathway (not all possible job opportunities are shown in this example).



# Iowa Career Cluster Framework



The Iowa Career Cluster Framework is built on a set of progressively specific knowledge and skills. At the center are foundation knowledge and skills common to all Iowa Career Pathways/Fields and career clusters. The first ring contains the six Iowa Career Pathways which can be divided into the 16 career clusters (second ring). The third ring contains the 81 career pathways which can be further divided into numerous career specialties. For more information visit [www.careerclusters.org](http://www.careerclusters.org).



## SECTION 3

# High School Career and Technical Education Enrollment

### Total Secondary Career and Technical (Vocational) Participant Enrollment

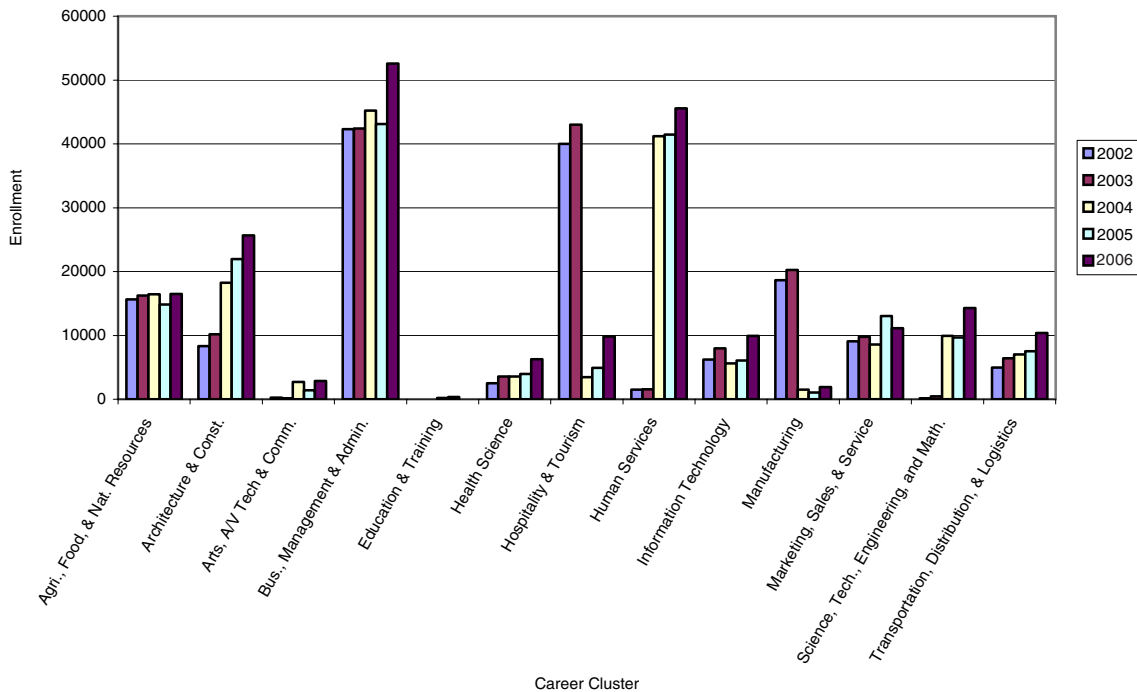
Fiscal Year	Total Enrollment	Percent Increase
2002	149,585	20.94
2003	161,971	8.28
2004	163,648	1.04
2005	169,280	3.44
2006	206,896	22.22

\*Fiscal Year 2001 Enrollment (unduplicated by program, headcount) totaled 123,686.

Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.

- Secondary career and technical (vocational) participants are students enrolled in one or more courses that are included in a program sequence as identified by their local school district as a vocational program.
- Total unduplicated (by program) headcount career and technical (vocational) participant enrollment has increased by 57,311 students (38.31 percent) from Fiscal Year 2002 to Fiscal Year 2006.
- The Hospitality and Tourism, Information Technology, and Health Science career clusters saw the most significant enrollment growth, Fiscal Year 2004 to Fiscal Year 2006.
- The Business Management and Administration career cluster had the largest enrollment (52,561) in Fiscal Year 2006.

**FIGURE 1**  
**CAREER AND TECHNICAL (VOCATIONAL) PARTICIPANT ENROLLMENT (UNDUPLICATED HEADCOUNT BY PROGRAM) BY CAREER CLUSTER, FISCAL YEAR 2004 TO FISCAL YEAR 2006**



Note: The Law, Public Safety, & Security Cluster, the Finance Cluster, and the Government and Public Administration Cluster had no enrollment during the period.

Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.



## Career and Technical (Vocational) Participant Enrollment by Career Cluster

The Business, Management, and Administration Career Cluster had the largest career and technical participant enrollment, making up 25.40 percent (52,561) of total enrollment in Fiscal Year 2006. The Human Services Cluster was second with 22.03 percent (45,575) and the Architecture and Construction Cluster was third with 12.41 percent (25,669) in Fiscal Year 2006.

**TABLE 1**  
**CAREER AND TECHNICAL (VOCATIONAL) PARTICIPANT ENROLLMENT**  
**(UNDUPLICATED HEADCOUNT BY PROGRAM) BY CAREER CLUSTER**  
**FISCAL YEAR 2004 TO FISCAL YEAR 2006**

Career Cluster	2004		Fiscal Year 2005		2006	
	N	%	N	%	N	%
Agri., Food, & Nat. Resource	16,461	10.06%	14,836	8.76%	16,512	7.98%
Architecture & Const.	18,255	11.16	21,931	12.96	25,669	12.41
Arts, A/V Tech & Comm.	2,696	1.65	1,380	0.82	2,847	1.38
Bus., Mgmt. & Admin.	45,189	27.61	43,100	25.46	52,561	25.40
Education & Training	203	0.12	333	0.20	0	0.00
Finance	0	0.00	0	0.00	0	0.00
Gov't. & Public Admin.	0	0.00	0	0.00	0	0.00
Health Science	3,546	2.17	3,972	2.35	6,248	3.02
Hospitality & Tourism	3,473	2.12	4,922	2.91	9,805	4.74
Human Services	41,189	25.17	41,461	24.49	45,575	22.03
Information Technology	5,596	3.42	6,042	3.57	9,940	4.80
Law, Public Safety/Security	0	0.00	0	0.00	0	0.00
Manufacturing	1,513	0.92	1,073	0.63	1,910	0.92
Marketing, Sales/Service	8,595	5.25	13,054	7.71	11,144	5.39
Science, Tech. Engr., & Math.	9,917	6.06	9,652	5.70	14,309	6.92
Transportation, Distribution, & Logistics	7,015	4.29	7,524	4.44	10,376	5.02
<b>Total</b>	<b>163,648</b>	<b>100.00</b>	<b>169,280</b>	<b>100.00</b>	<b>206,896</b>	<b>100.00</b>

N=Number of Students; %=Percentage of Total

Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.

## SECTION 4

### High School Career and Technical Education Student Demographics

#### Career and Technical (Vocational) Participant Gender, Fiscal Year 2002 to Fiscal Year 2006

Fiscal Year	Male		Female	
	N	%	N	%
2002	85,430	57.11%	64,155	42.89%
2003	91,966	56.78	70,005	43.22
2004	92,910	56.77	70,738	43.23
2005	95,269	56.28	74,011	43.72
2006	118,127	57.09	88,769	42.91

N=Students, %=Percentage of Total  
Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.

- Over the past five fiscal years, the male and female portions of the high school career and technical (vocational) participant student population have remained fairly constant.
- The Transportation, Distribution, and Logistics Career Cluster, the Architecture and Construction Cluster and the Science, Technology, Engineering, and Mathematics Cluster have disproportionately male enrollment (more than 80 percent).
- The rate of participation of racial/ethnic minorities in high school career and technical programs has risen 88 percent over the last five fiscal years.

**TABLE 2**  
**SECONDARY VOCATIONAL PARTICIPANT ENROLLMENT**  
**BY GENDER AND CAREER CLUSTER, FISCAL YEAR 2006**

Career Cluster	Gender			
	Male		Female	
	N	%	N	%
Agriculture, Food, & Natural Resources	10,812	65.48%	5,700	34.52%
Architecture & Construction	21,103	82.21	4,566	17.79
Arts, A/V Technology, & Communication	1,731	60.80	1,116	39.20
Business, Management, & Administration	27,043	51.45	25,518	48.55
Education and Training	0	--	0	--
Finance	0	--	0	--
Government & Public Administration	0	--	0	--
Health Science	2,368	37.90	3,880	62.10
Hospitality & Tourism	4,546	46.36	5,259	53.64
Human Services	17,086	37.49	28,489	62.51
Information Technology	5,516	55.49	4,424	44.51
Law, Public Safety, & Security	0	--	0	--
Manufacturing	1,687	88.32	223	11.68
Marketing, Sales, & Service	5,768	51.76	5,376	48.24
Science, Tech., Engineering, & Math.	11,649	81.41	2,660	18.59
Transportation, Distribution, & Logistics	8,818	84.98	1,558	15.02
Total	118,127	57.09	88,769	42.91

N= Students, %=Percentage of Total  
Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.

## Secondary Career and Technical (Vocational) Participant Racial/Ethnic Background

According to the 2000 Census, 7.4 percent of the general population in Iowa were members of minority racial/ethnic groups. Categories and definitions used in this section are based on the federal reporting guidelines.

**TABLE 3**  
**SECONDARY CAREER AND TECHNICAL (VOCATIONAL)**  
**PARTICIPANT RACIAL/ETHNIC BACKGROUND**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**

Ethnicity	2002		2003		Fiscal Year 2004		2005		2006	
	N	%	N	%	N	%	N	%	N	%
American Indian	550	0.37%	639	0.39%	668	0.41%	859	0.51%	1,141	0.55%
Asian	2,483	1.67	2,257	1.39	2,269	1.39	2,474	1.46	3,301	1.60
Black	4,285	2.89	5,091	3.14	4,879	2.98	6,468	3.82	8,820	4.26
Hispanic	3,875	2.61	4,467	2.76	4,812	2.94	5,844	3.45	7,819	3.78
White	137,312	92.46	148,695	91.80	150,364	91.88	153,635	90.76	185,815	89.81
Unknown	750	0.51	822	0.51	656	0.40	N/P	0.00	N/P	0.00
Total	148,505	100.00	161,971	100.00	163,648	100.00	169,280	100.00	206,896	100.00

N=Number of Students; %=Percentage of Total, NP=Not Provided  
 Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.

Minority student participation in secondary career and technical education programs rose markedly (88 percent) over the past five years.

**TABLE 4**  
**SECONDARY CAREER AND TECHNICAL (VOCATIONAL)**  
**PARTICIPANT RATE OF GROWTH OF MINORITY STUDENT POPULATIONS**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**

Minority Student Population	Fiscal Year 2002 to Fiscal Year 2006	
	Enrollment Change	Percentage Change
American Indian	591	107.45%
Asian	818	32.94
Black	4,535	105.83
Hispanic	3,944	101.78
Total Minority	9,888	88.34

Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.

## Secondary Career and Technical (Vocational) Participants Facing Educational Barriers

The categories and definitions used below are based on federal reporting guidelines. The term “nontraditional enrollees” refers to career and technical (vocational) participants in fields of work in which their gender comprises less than 25 percent of the workforce. In Fiscal Year 2006, nearly 28 percent of all career and technical (vocational) participants were from economically disadvantaged families.

**TABLE 5**  
**SECONDARY CAREER AND TECHNICAL (VOCATIONAL) PARTICIPANTS FACING EDUCATIONAL BARRIERS, FISCAL YEAR 2002 TO FISCAL YEAR 2006**

Barrier	2002		2003		Fiscal Year 2004		2005		2006	
	N	%	N	%	N	%	N	%	N	%
Individuals with Disabilities	15,348	7.42%	18,082	8.74%	18,196	8.79%	22,781	11.01%	28,119	13.59%
Economically Disadvantaged	24,677	11.93	28,672	13.86	34,945	16.89	29,719	14.36	57,056	27.58
Nontraditional Enrollees	10,269	4.96	15,715	7.60	20,844	10.07	47,159	22.79	53,464	25.84
Single Parents	2,077	1.00	1,754	0.85	1,999	0.97	2,928	1.42	1,922	0.93
Limited English Proficiency	2,480	1.20	2,994	1.45	3,025	1.46	95	0.05	3,519	1.70
Other Educational Barriers*	6,391	3.09	6,312	3.05	7,348	3.55	9,559	4.62	2,015	0.97

N=Number of Students; %=Percentage of Total

\*Includes displaced homemakers

Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.

The number of career and technical (vocational) participants that had disabilities, that were economically disadvantaged, were nontraditional enrollees, or had limited English proficiency rose substantially during the Fiscal Year 2002 to Fiscal Year 2006 period. The number of career and technical (vocational) participants that were single parents or students with other educational barriers decreased.

**TABLE 6**  
**SECONDARY CAREER AND TECHNICAL (VOCATIONAL) PARTICIPANT RATE OF CHANGE OF STUDENT POPULATIONS FACING EDUCATIONAL BARRIERS, FISCAL YEAR 2002 TO FISCAL YEAR 2006**

Barrier	Fiscal Year 2002 to Fiscal Year 2006	
	Enrollment Change	Percentage Change
Individuals with Disabilities	12,771	83.21%
Economically Disadvantaged	32,379	131.21
Nontraditional Enrollees	43,195	420.63
Single Parents	-155	-7.46
Limited English Proficiency	1,039	41.90
Other Educational Barriers*	-4,376	-68.47

\*Includes displaced homemakers

Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.



## SECTION 5

### Career Academies/Tech Prep

#### Programs of Study

In Iowa, career academies and Tech Prep are nearly synonymous. Evolving from different funding streams, both are programs of study linking secondary with postsecondary education. These programs of study combine a minimum of two years of secondary education (three units) with postsecondary programs in a non-duplicative, sequential course of study. The programs integrate academic and career and technical instruction, utilizing work-based and worksite learning where appropriate and available. Secondary programs are linked through articulation agreements with community college associate degree programs in specific career fields though other credentials (e.g. diplomas, certificates, industry-recognized credentials) may be provided as options within the post-secondary programs. The programs of study allow concurrent enrollment opportunities for high school students and lead to placement in appropriate employment or further education.

#### Definitions

The definition of Tech Prep in the federal Carl D. Perkins Act of 1998:

The term “tech-prep program” means a program of study that:

- Combines a minimum of two years of secondary education (as defined under State law) with a minimum of two years of postsecondary education in a non-duplicative, sequential course of study.
- Integrates academic with vocational and technical instruction and utilizes work-based and worksite learning where appropriate and available.
- Provides technical preparation in a career field such as engineering technology, applied science, a mechanical, industrial, or practical art or trade, agriculture, health occupations, business, or applied economics.
- Builds student competence in mathematics, science, reading, writing, communications, economics, and workplace skills through applied, contextual academics, and integrated instruction in a coherent sequence of courses.
- Leads to an associate or baccalaureate degree or a postsecondary certificate in a specific career field.
- Leads to placement in appropriate employment or further education.

The minimum requirements for career academies in the *Iowa Administrative Code* section 281-47.2 (260C):

A career academy shall meet the following requirements:

- Articulate two years of secondary education with an associate degree program, which may include a diploma or certificate.
- Ensure that the secondary and postsecondary components of the career preparatory program are non-duplicative.
- Identify a sequential course of study.
- Delineate skill standards specific to the industry.
- Integrate academic and technical instruction.

- Utilize work-based learning.
- Utilize work site learning where appropriate and available.
- Lead to an associate degree in a high-skill and rewarding career field.
- Provide for an individual career planning process, with parent and guardian involvement.
- Include articulation of a community college associate degree or, if possible, a baccalaureate degree.

### **Evolution of Tech Prep and Career Academies**

While Tech Prep and Career Academies are both programs of study articulating instruction at secondary and postsecondary institutions, they grew out of different funding streams. Tech Prep was authorized and received funding through the Carl D. Perkins Vocational and Applied Technology Education Act of 1990. Funds are distributed to 15 regional consortia that, through intergovernmental agreements, include the area education agency, community college, and K-12 districts (local education agencies). Career academies evolved out of a variety of community college efforts with similar functions as Tech Prep but with different names including career edge academies, career advantage academies, hubs, magnets, tech prep centers, and more. After some deliberation, the term “career academy” was accepted to describe these efforts. In 2003, the Iowa legislature authorized career academies through the Grow Iowa Values Fund legislation. Subsequently, career academies were defined by administrative rule (Chapter 47). While career academies and Tech Prep have different histories and funding streams, they have essentially the same structure and appear to be identical in practice.

## SECTION 6

# High School Career and Technical Education Programs

### Program Approval Process

Local school districts are not required to have their career and technical education programs reviewed and approved by the Iowa Department of Education. However, approved career and technical education programs are eligible for supplemental funding through the Iowa Department of Education (Iowa Vocational Reimbursement Fund).

Programs seeking approval must meet the following criteria:

- Contain a minimum sequence of three units of instruction responding to a minimum set of performance indicators (competencies).
- Utilize content standards and benchmarks/competency-based (performance indicators) curriculum that reflects current industry standards.
- Demonstrate responsiveness to student interests and labor market needs.
- Strengthen academic skills through the career and technical education curriculum.
- Provide articulation with a postsecondary institution.
- Assess the extent to which the performance indicators (competencies) are being mastered.
- Provide access and equity for all students.
- Utilize input from an advisory council/committee.
- Prepare students for entry level employment, self-employment, and/or postsecondary education within their chosen field.
- Provide students with leadership opportunities that are related to their chosen field of study.
- Provide students with employability skills.
- Provide students with information on new and emerging technologies.

For more information, see the secondary career and technical education program approval section of the Iowa Department of Education's website:  
<http://www.iowa.gov/educate/content/view/264/403/>



## Recently Approved Programs

Six (6) high school career and technical education programs were approved by the Director of the Iowa Department of Education in Fiscal Year 2006.

**TABLE 7**  
**HIGH SCHOOL CAREER AND TECHNICAL EDUCATION PROGRAMS**  
**APPROVED BY THE IOWA DEPARTMENT OF EDUCATION**  
**FISCAL YEAR 2003 TO FISCAL YEAR 2006**

School/College	Program
<b>Fiscal Year 2004</b>	
Eddyville-Blakesburg CSD	Business Education
Huxley CSD	Information Technology
Madrid CSD	General Business
New London CSD	Health and Medical Administrative Services
North Polk CSD	General Business
Riceville CSD	Business Education
	Construction Trades
	Family and Consumer Sciences
Sioux Central CSD	Construction Trades
	Manufacturing
Twin Cedars CSD	Construction Trades
<b>Fiscal Year 2005</b>	
Charles City CSD	General Business
Grundy Center CSD	General Business
	Precision Machining
Hudson CSD	Family and Consumer Sciences
Manning CSD	General Business
Maple Valley CSD	Construction Trades
	Family and Consumer Sciences
North Scott CSD	Family and Consumer Sciences
Ogden CSD	General Business
Rudd-Rockford-Marble Rock CSD	Family and Consumer Sciences
Winterset CSD	Construction Trades
Woodward Granger CSD	Construction Trades
<b>Fiscal Year 2006</b>	
Andrew CSD	General Business
	Marketing
Center Point-Urbana CSD	Family and Consumer Sciences
Northwood Kensett CSD	General Business
Pleasant Valley CSD	Manufacturing
West Harrison CSD	Engineer Related-Project Lead The Way®

CSD=Consolidated School District

Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.

## Project Lead The Way®

The Iowa Department of Education Division of Community Colleges and Workforce Preparation has developed a statewide Project Lead The Way® (PLTW) system to foster the implementation and growth of the Project Lead The Way® pre-engineering educational program. The system promotes the integration of academics into career and technical education and creates a seamless transition for students moving from secondary to postsecondary institutions.

PLTW is a 501(c)3 not-for-profit corporation that promotes pre-engineering education for middle and high school students. It incorporates the integration of academics and technical education through curriculum that addresses national math and science standards along with national industry skill standards. Utilizing cutting edge technology and training institutes to prepare teachers, PLTW is supported by strong partnerships between public schools, community colleges, Regent universities, and private businesses.

Teachers in Iowa first began to receive PLTW training in Fiscal Year 2005 and in Fiscal Year 2006, six sites had already begun offering PLTW courses to 234 students. The number of middle and high school sites implementing PLTW is expected to continue growing as additional teachers complete training institutes and the University of Iowa and Iowa State University begin to offer training institutes in the summer of 2007. In Fiscal Year 2006, six high school sites were certified by PLTW (middle school sites are not certified by PLTW) making college credit opportunities available to students that meet certain performance requirements.

**TABLE 8**  
**NUMBER OF SITES IMPLEMENTING PLTW COURSES**  
**FISCAL YEAR 2005 AND FISCAL YEAR 2006**

Fiscal Year	Number of Sites
2005	12
2006	24

Note: Implementing is defined as participating schools where one or more teachers received or were receiving training and equipment to offer PLTW courses.

**TABLE 9**  
**NUMBER OF PLTW SITES BY COMMUNITY COLLEGE AREA**  
**FISCAL YEAR 2006**

Community College	Number of Sites
NICC-01	3
NIACC-02	1
HCC-07	1
EICCD-9	5
KCC-10	6
DMAcc-11	2
WITCC-12	3
WCC-13	3
Total	24



## SECTION 7

### Performance Indicators

#### Secondary Career and Technical Education Performance Indicators

Performance indicators are used to assess the performance of secondary career and technical education in Iowa as required by federal Carl Perkins legislation. The multi-year performance ratings are compared to targets negotiated with the U.S. Department of Education (based on three-year rolling averages of actual performance).

The four core indicators and key subindicators are:

1. Student attainment of challenging academic and vocational/technical skill proficiencies (Academic Skill Attainment and Occupational Skill Attainment).
2. Student attainment of a diploma or its recognized equivalent or a proficiency credential in conjunction with a diploma (Completion).
3. Placement in postsecondary education, advanced training, military service, or employment (Total Placement).
4. Student participation in, and completion of vocational and technical education programs that lead to nontraditional training and employment (Nontraditional Participation and Nontraditional Completion).

The state performance measures for core indicators were developed by an accountability work team of stakeholders. The team included: consultants from the Department of Education who had expertise in assessment, data collection, and administration; the Division administrator for elementary and secondary education who is responsible for the establishment of performance indicators for the school improvement process; a local education agency superintendent; the fiscal agent for a Carl Perkins consortium; an Area Education Agency consultant; a community college associate dean; a former community college associate dean for vocational and technical education; a representative from Iowa Workforce Development with responsibility for establishing performance measures for the Workforce Investment Act Plan. The recommendations for the measures of core indicators were determined in the context of utilizing data already collected, to the greatest extent possible. A more complete discussion of the “Performance Levels and Standards” may be found in the “Iowa State Plan for Implementation of the Carl Perkins Vocational and Technical Education Act of 1998” located on the Iowa Department of Education webpage ([www.iowa.gov/educate](http://www.iowa.gov/educate)).

In Fiscal Year 2006, the state exceeded target performance levels for academic attainment, completion, total placement, and nontraditional participation. The state failed to meet targeted levels for occupational skill attainment and nontraditional completion because of a data reporting system modification resulting in districts failing to identify program completers who were proficient.

**TABLE 10**  
**ACADEMIC SKILL ATTAINMENT**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**

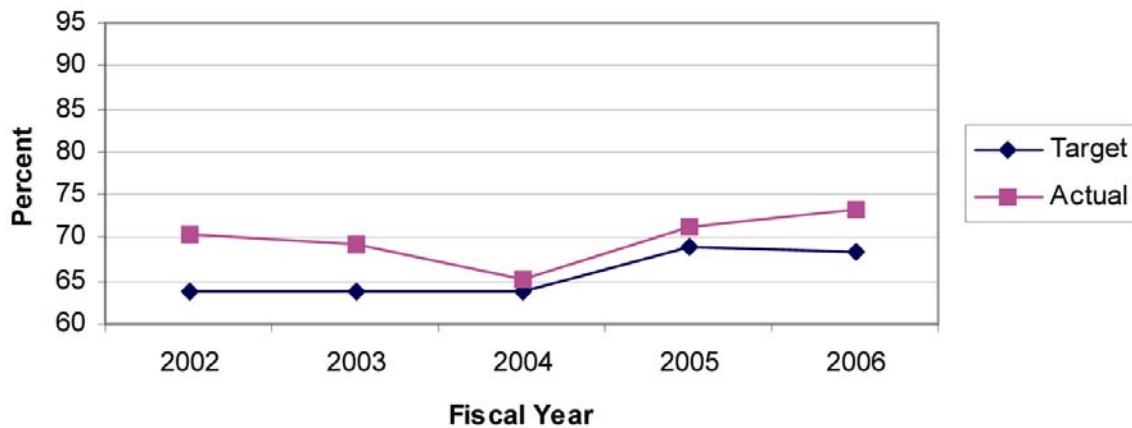
	Fiscal Year				
	2002	2003	2004	2005	2006
Target	63.67	63.72	63.77	69.00	68.25
Actual	70.35	69.15	65.26	71.21	73.24
	E	E	E	E	E

Legend: D=Did not meet target, E=Exceeds target, M=Met target.

Definition: Academic Skill Attainment is defined as the number of eleventh grade students with a combination of at least two completed or enrolled vocational units in the program, rated proficient (41<sup>st</sup> percentile) or higher on national norms of the Iowa Test of Educational Development (reported for math and reading) divided by the number of eleventh grade students with a combination of at least two completed or enrolled vocational units in the program (assessed).

Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.

**FIGURE 2**  
**ACADEMIC SKILL ATTAINMENT AND TARGETS**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**



**TABLE 11**  
**OCCUPATIONAL SKILL ATTAINMENT**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**

	Fiscal Year				
	2002	2003	2004	2005	2006
Target	69.75	70.00	70.25	70.50	82.32
Actual	81.51	79.09	86.09	83.69	77.90*
	E	E	E	E	D

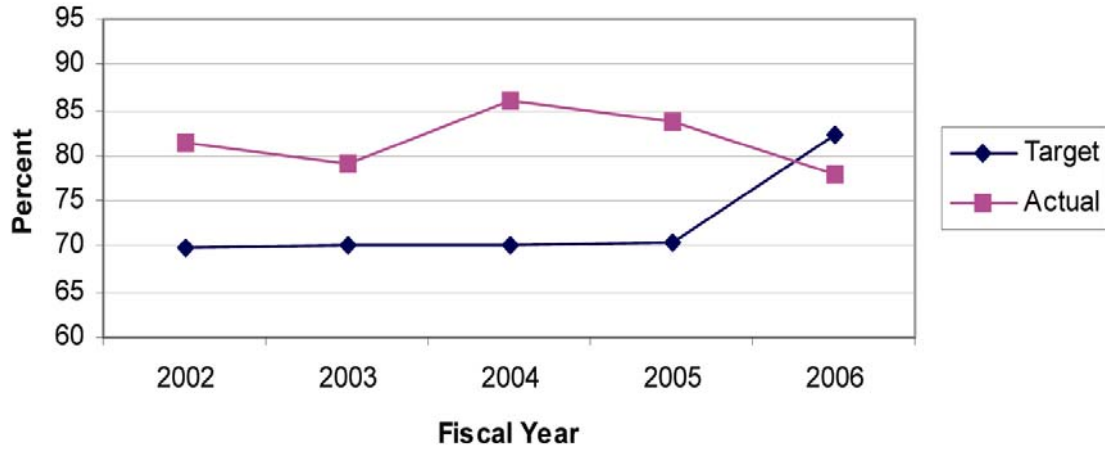
Legend: D=Did not meet target, E=Exceeds target, M=Met target.

Definition: Occupational Skill Attainment is defined as the number of program completers rated proficient (attained 90 percent) or higher on program occupational competencies or a passing score on a certificate or license test divided by the number of program completers.

\*The State did not meet targeted levels because of a data reporting system modification resulting in a number of districts failing to identify program completers who were proficient.

Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.

**FIGURE 3**  
**OCCUPATIONAL SKILL ATTAINMENT AND TARGETS**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**



**TABLE 12**  
**COMPLETION (DIPLOMA/CREDENTIAL) AND TARGETS**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**

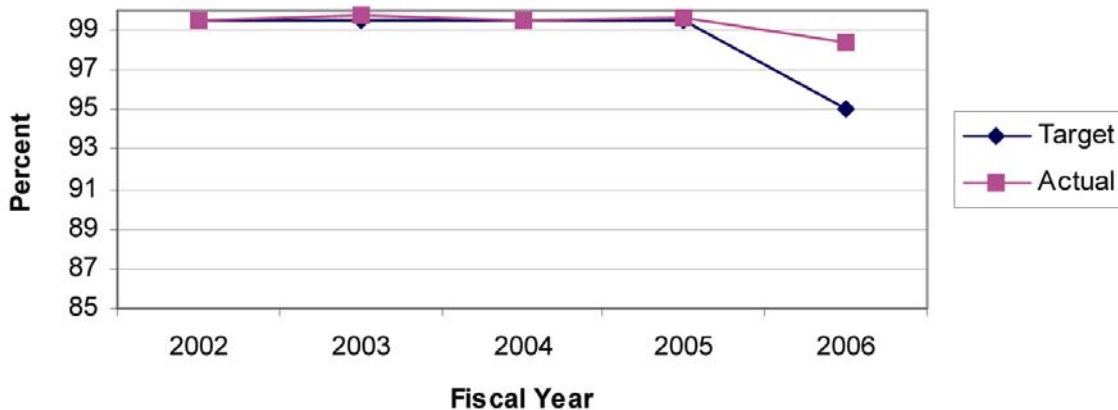
	Fiscal Year				
	2002	2003	2004	2005	2006
Target	99.55	99.55	99.55	99.55	95.00
Actual	99.55	99.75	99.56	99.67	98.43
	M	E	E	E	E

Legend: D=Did not meet target, E=Exceeds target, M=Met target.

Definition: Completion is defined as the number of students completing high school and two or more vocational units in the program (receiving a diploma or equivalent) divided by the number of students completing high school and two or more vocational units in the program.

Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.

**FIGURE 4**  
**COMPLETION (DIPLOMA/CREDENTIAL) AND TARGETS**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**



**TABLE 13**  
**TOTAL PLACEMENT AND TARGETS**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**

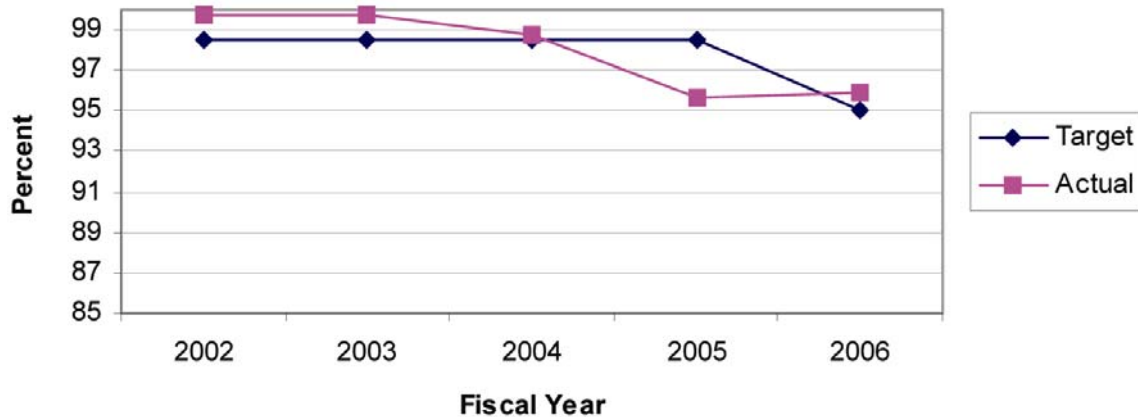
	Fiscal Year				
	2002	2003	2004	2005	2006
Target	98.54	98.54	98.54	98.54	95.00
Actual	99.80	99.70	98.81	95.62	95.86
	E	E	E	D	E

Legend: D=Did not meet target, E=Exceeds target, M=Met target.

Definition: Total placement is defined as the number of program completers placed in continuing education, non-military employment and the military divided by the number of program completers completing high school.

Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.

**FIGURE 5**  
**TOTAL PLACEMENT AND TARGETS**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**



**TABLE 14**  
**NONTRADITIONAL PARTICIPATION AND TARGETS**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**

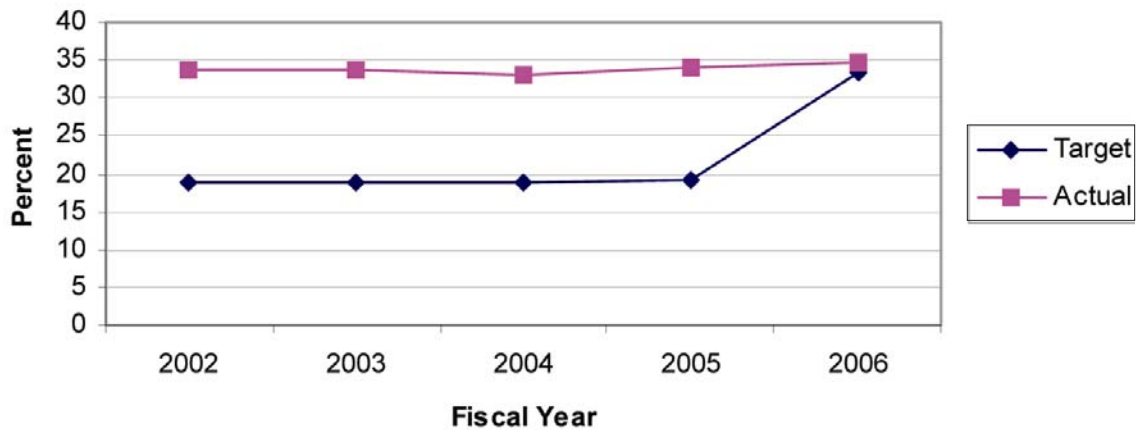
	Fiscal Year				
	2002	2003	2004	2005	2006
Target	18.74	18.86	18.98	19.03	33.52
Actual	33.61	33.85	33.10	34.00	34.77
	E	E	E	E	E

Legend: D=Did not meet target, E=Exceeds target, M=Met target.

Definition: Nontraditional participation is defined as the number of students in underrepresented groups enrolled in programs for nontraditional occupations divided by the number of students enrolled in programs for nontraditional occupations.

Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.

**FIGURE 6**  
**NONTRADITIONAL PARTICIPATION AND TARGETS**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**



**TABLE 15**  
**NONTRADITIONAL COMPLETION AND TARGETS**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**

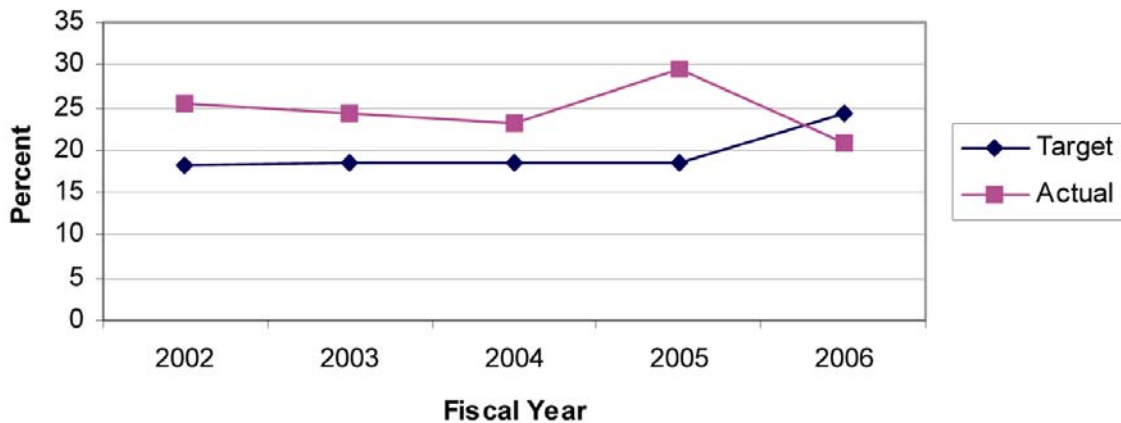
	Fiscal Year				
	2002	2003	2004	2005	2006
Target	18.33	18.43	18.53	18.63	24.27
Actual	25.31	24.38	23.13	29.61	20.88*
	E	E	E	E	D

Legend: D=Did not meet target, E=Exceeds target, M=Met target.

Definition: \*The State did not meet targeted levels because of a data reporting system modification resulting in a number of districts failing to identify program completers who were proficient.

Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.

**FIGURE 7**  
**NONTRADITIONAL COMPLETION AND TARGETS**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**







## SECTION 8

# High School Career and Technical Education Human Resources

**Number of Full-Time High School  
Career and Technical Education Teachers**

Fiscal Year	Teachers
2002	1,837
2003	1,790
2004	1,750
2005	1,725
2006	1,761
Change FY 2002-2006	-76

Source: Iowa Department of Education, Bureau of Planning, Research, and Evaluation.

- The number of full-time career and technical education teachers for grades 9-12 declined by 76 (4.2 percent) during the Fiscal Year 2002 to Fiscal Year 2006 period.
- The percentage of career and technical education teachers for grades 9-12 that were members of minority racial/ethnic groups was small - below the proportion of the general population that belonged to those groups in Iowa. School districts with enrollment over 7,500 have a larger percentage of minority instructors than smaller districts.

- The average age of high school career and technical education teachers has remained nearly constant (46 years old) since Fiscal Year 2002.
- The percentage of career and technical education teachers that are female has increased from 44.3 percent in Fiscal Year 2002 to 46.2 percent in Fiscal Year 2006.
- The career and technical education teachers at larger districts are more likely to have advanced degrees than those in smaller districts.

### Teacher Characteristics

Information on licensed staff is collected from schools through the Licensed Staff Detail report on the Basic Educational Data Survey (BEDS) at the beginning of each school year. A maximum of ten positions and ten assignments can be reported for each staff member to accurately reflect their duties. In this section, data on full-time career and technical education teachers for grades 9-12 are reported (included are teachers with a least one teaching position code, a full-time contract, regular salary of at least \$24,500, and at least 180 contract days). Community college instructors teaching courses to high school career and technical education students are not included. Salary is not reported separately for each position and assignment, thus the reported salary for teachers may be impacted by additional duties (e.g. administrative, student support services).

**TABLE 16**  
**NUMBER OF FULL-TIME PUBLIC SCHOOL TEACHERS AND CAREER AND**  
**TECHNICAL EDUCATION TEACHERS**  
**FISCAL YEAR 2006**

	2002	2003	Fiscal Year		2006
			2004	2005	
CTE Teachers	1,837	1,790	1,750	1,725	1,761
Total Teachers	33,878	33,425	33,688	33,661	34,175
Percent CTE	5.42%	5.36%	5.19%	5.12%	5.15%

Source: Iowa Department of Education, Bureau of Planning, Research, and Evaluation, Basic Educational Data Survey, Staff and Curriculum Files; Division of Financial and Information Services, Certified Enrollment File.

Full-time public school career and technical education teachers in larger school districts are more likely to have advanced degrees and higher salaries than those in smaller districts. Teachers in districts with enrollment over 7,500 were far more likely to be members of minority racial/ethnic groups.

**TABLE 17**  
**CHARACTERISTICS OF IOWA FULL-TIME PUBLIC SCHOOL CAREER**  
**AND TECHNICAL EDUCATION TEACHERS BY ENROLLMENT CATEGORY**  
**FISCAL YEAR 2006**

School District Enrollment Category	Number of Full-Time Teachers	Percent with Advanced Degree	Percent Female	Percent Minority	Average Years Total Experience	Average Years District Experience	Average Age	Average Total Salary
<250	27	7.4%	55.6%	0.0%	15.6	12.3	46.8	\$33,329
250-399	125	14.4	50.4	0.0	15.1	12.1	45.7	36,832
400-599	226	11.9	47.3	0.4	16.2	13.1	44.7	39,096
600-999	387	17.8	44.4	0.5	16.9	13.0	45.2	41,711
1000-2499	485	26.0	43.3	0.2	17.9	13.1	46.0	45,071
2500-7499	223	37.2	45.7	0.0	17.2	13.1	45.5	46,044
7500+	288	42.0	50.3	4.2	17.6	12.8	47.3	48,178
Total	1,761	25.3	46.2	0.9	17.0	13.0	45.8	\$43,432

Source: Iowa Department of Education, Bureau of Planning, Research, and Evaluation, Basic Educational Data Survey, Staff and Curriculum Files; Division of Financial and Information Services, Certified Enrollment File.

Full-time public school career and technical education teachers in the Agriscience and Natural Resources and Engineering and Industrial Technology service areas were disproportionately male while teachers in the Family, Consumer, and Human Services and Health Sciences service areas were disproportionately female.

**TABLE 18**  
**CHARACTERISTICS OF FULL-TIME PUBLIC SCHOOL CAREER**  
**AND TECHNICAL EDUCATION TEACHERS BY AREA**  
**FISCAL YEAR 2006**

Service Area	Number of Teachers	Percent with Advanced Degree	Percent Female	Percent Minority	Average Years Total Experience	Average Years District Experience	Average Age	Average Total Salary
Agriscience and Natural Resources	205	18.5%	16.1%	0.0%	14.4	12.1	40.6	\$45,560
Business and Information Technology	641	27.6	54.6	0.8	16.5	12.8	45.2	\$42,518
Engineering and Industrial Technology	477	24.5	9.6	0.8	18.1	13.9	46.6	\$43,769
Family, Consumer, and Human Services	360	21.9	98.3	1.1	19.2	13.9	49.9	\$43,081
Health Sciences	13	7.7	92.3	0.0	20.2	11.8	50.2	\$40,460
Marketing	101	23.8	51.5	2.0	16.3	12.4	43.7	\$43,518
Other	348	32.8	30.7	1.7	17.5	13.2	46.1	\$44,875

Source: Iowa Department of Education, Bureau of Planning, Research, and Evaluation, Basic Educational Data Survey, Staff and Curriculum Files.

Note: Teachers may be included in multiple service areas. Assignment codes used for each service area include: Agriscience and Natural Resources: 0101-0199; Business and Information Technology: 0201-0299, 0301-0399; Engineering and Industrial Technology: 0401-0499, 0701-0799, 0901-0999, 1601-1699; Health Sciences: 1501-1599; Family and Human Services: 0502-0599, 2901-2999; Marketing: 1801-1899; Other: All other Secondary assignment codes.

**TABLE 19**  
**PERCENTAGE CHANGE IN CHARACTERISTICS OF FULL-TIME PUBLIC**  
**SCHOOL CAREER AND TECHNICAL EDUCATION TEACHERS BY SERVICE AREA**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**

Service Area	Number of Teachers	Average Years Total Experience	Average Years District Experience	Average Age	Average Total Salary
Natural Resources	-0.97%	8.07%	12.01%	2.98%	10.46%
Business and Information Technology	-7.10	-5.50	-7.20	-0.06	8.05
Engineering and Industrial Technology	-11.83	-1.43	-3.45	0.00	9.13
Family, Consumer, and Human Services	-5.01	9.01	1.90	3.06	10.98
Health Sciences	62.50	75.25	49.45	-3.08	26.01
Marketing	8.60	-4.26	-10.21	-3.48	10.87
Other	3.57	-2.95	-7.64	0.57	12.95

Source: Iowa Department of Education, Bureau of Planning, Research, and Evaluation, Basic Educational Data Survey, Staff and Curriculum Files.

Note: Teachers may be included in multiple service areas. Assignment codes used for each service area include: Agriscience and Natural Resources: 0101-0199; Business and Information Technology: 0201-0299, 0301-0399; Engineering and Industrial Technology: 0401-0499, 0701-0799, 0901-0999, 1601-1699; Health Sciences: 1501-1599; Family and Human Services: 0502-0599, 2901-2999; Marketing: 1801-1899; Other: All other Secondary assignment codes.

The percentage of career and technical education teachers that were female increased during the Fiscal Year 2002 to Fiscal Year 2006 period in nearly all service areas. The percent of teachers that were members of racial/ethnic minority groups rose slightly in most service areas but remained small and the percentage of teachers with advanced degrees declined in most service areas.

**TABLE 20**  
**CHARACTERISTICS OF FULL-TIME PUBLIC SCHOOL CAREER AND**  
**TECHNICAL EDUCATION TEACHERS BY SERVICE AREA**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**

Service Area	Percent Female		Percent Minority		Percent with Advanced Degrees	
	Fiscal Year	Fiscal Year	Fiscal Year	Fiscal Year	Fiscal Year	Fiscal Year
	2002	2006	2002	2006	2002	2006
Agriscience and Natural Resources	11.6%	16.1%	0.0%	0.0%	19.3%	18.5%
Business and Information Technology	53.3	54.6	0.6	0.8	29.7	27.6
Engineering and Industrial Technology	9.1	9.6	0.7	0.8	26.8	24.5
Family and Human Services	97.4	98.3	0.5	1.1	22.4	21.9
Health Sciences	87.5	92.3	0.0	0.0	12.5	7.7
Marketing	51.6	51.5	1.1	2.0	29.0	23.8
Other	28.0	30.7	1.2	1.7	26.5	32.8

Source: Iowa Department of Education, Bureau of Planning, Research, and Evaluation, Basic Educational Data Survey, Staff and Curriculum Files.

Note: Teachers may be included in multiple service areas. Assignment codes used for each service area include: Agriscience and Natural Resources: 0101-0199; Business and Information Technology: 0201-0299, 0301-0399; Engineering and Industrial Technology: 0401-0499, 0701-0799, 0901-0999, 1601-1699; Health Sciences: 1501-1599; Family and Human Services: 0502-0599, 2901-2999; Marketing: 1801-1899; Other: All other Secondary assignment codes.

**TABLE 21**  
**FULL-TIME PUBLIC SCHOOL CAREER AND TECHNICAL EDUCATION TEACHER GENDER**  
**FISCAL YEAR 2001 TO FISCAL YEAR 2006**

Gender	Fiscal Year				
	2002	2003	2004	2005	2006
Female	44.3%	44.6%	44.9%	45.9%	46.2%
Male	55.7%	55.4%	55.1%	54.1%	53.8%

Source: Iowa Department of Education, Bureau of Planning, Research, and Evaluation, Basic Educational Data Survey, Staff and Curriculum Files; Division of Financial and Information Services, Certified Enrollment File.

**TABLE 22**  
**FULL-TIME PUBLIC SCHOOL CAREER AND TECHNICAL EDUCATION**  
**TEACHER BY MINORITY AND NON-MINORITY GROUPS**  
**FISCAL YEAR 2001 TO FISCAL YEAR 2006**

	Fiscal Year				
	2002	2003	2004	2005	2006
Minority	0.7%	0.8%	0.7%	0.7%	0.9%
Non-minority	99.3%	99.2%	99.3%	99.3%	99.1%

Source: Iowa Department of Education, Bureau of Planning, Research, and Evaluation, Basic Educational Data Survey, Staff and Curriculum Files; Division of Financial and Information Services, Certified Enrollment File.

**TABLE 23**  
**FULL-TIME PUBLIC SCHOOL CAREER AND TECHNICAL EDUCATION**  
**TEACHER AVERAGE AGE, FISCAL YEAR 2001 TO FISCAL YEAR 2006**

	Fiscal Year				
	2002	2003	2004	2005	2006
	45.5	45.6	45.7	45.7	45.8

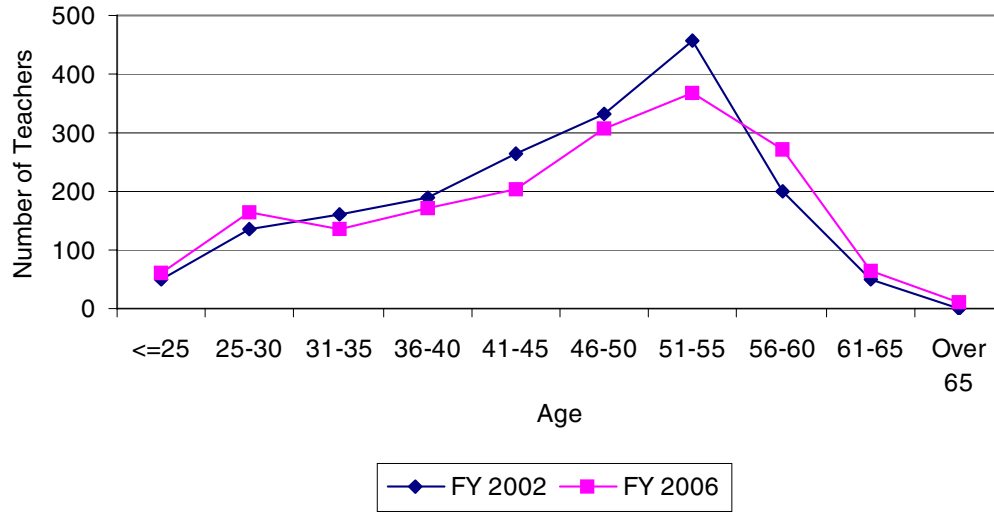
Source: Iowa Department of Education, Bureau of Planning, Research, and Evaluation, Basic Educational Data Survey, Staff and Curriculum Files; Division of Financial and Information Services, Certified Enrollment File.

**TABLE 24**  
**FULL-TIME PUBLIC SCHOOL CAREER AND TECHNICAL EDUCATION**  
**TEACHER AGE DISTRIBUTIONS, FISCAL YEAR 2001 AND FISCAL YEAR 2006**

Age Interval	2001				2006			
	Number	Cumulative Total	Cumulative Percent	Cumulative Percent	Number	Cumulative Total	Cumulative Percent	Cumulative Percent
<=25	50	50	2.7%	2.7%	62	62	3.5%	3.5%
25-30	134	184	7.3	10.0	164	226	9.3	12.8
31-35	162	346	8.8	18.8	137	363	7.8	20.6
36-40	190	536	10.3	29.2	172	535	9.8	30.4
41-45	263	799	14.3	43.5	204	739	11.6	42.0
46-50	332	1,131	18.1	61.6	307	1,046	17.4	59.4
51-55	456	1,587	24.8	86.4	368	1,414	20.9	80.3
56-60	199	1,786	10.8	97.2	272	1,686	15.4	95.7
61-65	50	1,836	2.7	99.9	65	1,751	3.7	99.4
Over 65	1	1,837	0.1	100.0	10	1,761	0.6	100.0

Source: Iowa Department of Education, Bureau of Planning, Research, and Evaluation, Basic Educational Data Survey, Staff and Curriculum Files; Division of Financial and Information Services, Certified Enrollment File.

**FIGURE 8**  
**FULL-TIME PUBLIC SCHOOL CAREER AND TECHNICAL EDUCATION**  
**TEACHER AGE DISTRIBUTIONS, FISCAL YEAR 2002 TO FISCAL YEAR 2006**



Source: Iowa Department of Education, Bureau of Planning, Research, and Evaluation, Basic Educational Data Survey, Staff and Curriculum Files; Division of Financial and Information Services, Certified Enrollment File.

**TABLE 25**  
**PERCENTAGE OF FULL-TIME PUBLIC SCHOOL TEACHERS AND CAREER AND**  
**TECHNICAL EDUCATION TEACHERS WITH ADVANCED DEGREES**  
**FISCAL YEAR 2001 TO FISCAL YEAR 2006**

	Fiscal Year				
	2002	2003	2004	2005	2006
Career and Technical	26.0%	25.0%	24.6%	25.2%	25.3%
Total Teachers	26.8%	26.7%	26.9%	27.1%	27.2%

Source: Iowa Department of Education, Bureau of Planning, Research, and Evaluation, Basic Educational Data Survey, Staff and Curriculum Files; Division of Financial and Information Services, Certified Enrollment File.

The average years of district and total experience did not change significantly from Fiscal Year 2002 to Fiscal Year 2006. Career and technical education teachers averaged more years of district and total experience than was reported for all teachers.



**TABLE 26**  
**FULL-TIME PUBLIC SCHOOL TEACHER AND CAREER AND**  
**TECHNICAL EDUCATION TEACHER EXPERIENCE**  
**FISCAL YEAR 2001 TO FISCAL YEAR 2006**

	Fiscal Year				
	2002	2003	2004	2005	2006
Average District Experience - CTE	13	14	13	13	13
Average District Experience - All Teachers	12	12	12	12	12
Average Total Experience - CTE	17	17	17	17	17
Average Total Experience - All Teachers	15	15	15	15	15

Source: Iowa Department of Education, Bureau of Planning, Research, and Evaluation, Basic Educational Data Survey, Staff and Curriculum Files; Division of Financial and Information Services, Certified Enrollment File.

**TABLE 27**  
**FULL-TIME PUBLIC SCHOOL CAREER AND TECHNICAL EDUCATION TEACHER**  
**TOTAL AVERAGE SALARY VS. ALL FULL-TIME PUBLIC SCHOOL TEACHER AVERAGE TOTAL SALARY**  
**FISCAL YEAR 2001 TO FISCAL YEAR 2006**

	Fiscal Year					Percent Change
	2002	2003	2004	2005	2006	
CTE Teachers	\$39,586	\$40,562	\$40,813	\$41,874	\$43,432	9.72%
All Teachers	38,230	39,059	39,432	40,344	41,996	9.85%
Difference	3.43%	3.68%	3.38%	3.65%	3.31%	

Source: Iowa Department of Education, Bureau of Planning, Research, and Evaluation, Basic Educational Data Survey, Staff and Curriculum Files; Division of Financial and Information Services, Certified Enrollment File.

## SECTION 9

### Fiscal Year High School Career and Technical Education Finances

<b>Career and Technical Education Expenditures</b>	
Fiscal Year	Expenditures
2001	101,268,307
2002	101,998,464
2003	101,872,733
2004	103,953,581
2005	107,717,330
Change FY 2001-2005	6.37%

Source: Iowa Department of Education, Bureau of Community Colleges and Career and Technical Education.

- State support for high school career and technical education offerings has decreased in recent years in absolute terms and in terms of the direct instructional costs of those offerings.
- The percentage of direct instructional costs reimbursed through state vocational and appropriations has fallen from 10.18 percent in Fiscal Year 1992 to 5.08 percent in Fiscal Year 2006.
- Total expenditures on high school career and technical education totaled \$107.7 million in Fiscal Year 2005.
- In Fiscal Year 2005, 86.54 percent of total career and technical education expenditures were for salaries or benefits.

#### **State Vocational Aid Appropriation to Secondary Schools**

The state vocational aid appropriation is the only categorical state funding targeted specifically toward the career and technical education offerings of Iowa's secondary schools. The amount of direct instructional costs being reimbursed by the state is steadily declining as costs rise and state appropriations decline. The reimbursement rate in Fiscal Year 2006 is less than half of what it was in Fiscal Year 1992.

**TABLE 28**  
**STATE VOCATIONAL REIMBURSEMENT**

Fiscal Year	State Appropriation	% Change from Previous Year	Direct Instructional Costs	% Change from Previous Year	Reimbursement Rate
1992	\$3,308,850	-6.73%	\$32,513,693	10.28%	10.18
1997	3,308,850	0.00	36,779,507	8.00	9.00
2002	3,134,903	-5.26	48,305,631	11.18	6.49
2003	2,936,305	-6.34	51,361,750	6.33	5.72
2004	2,877,909	-1.99	50,340,356	-1.99	5.72
2005	2,936,904	2.05	55,364,319	9.98	5.30
2006	2,936,904	0.00	57,812,423	4.42	5.08

%=Percent

Source: Iowa Department of Education, Bureau of Career and Technical Education Information System.

**TABLE 29**  
**TOTAL HIGH SCHOOL CAREER AND TECHNICAL EDUCATION**  
**EXPENDITURE BY OBJECT CATEGORY**  
**FISCAL YEAR 2001 TO FISCAL YEAR 2005**

Career and Technical Education Object Category	2001	2002	Fiscal Year 2003	2004	2005
Salaries	\$68,323,369	\$69,749,462	\$69,345,712	\$70,681,324	\$72,874,643
Benefits	16,836,817	17,712,992	18,334,579	19,374,498	20,345,335
Purchased Services	4,249,877	4,102,254	3,699,782	3,799,873	3,660,840
Supplies	6,677,746	6,096,205	6,292,946	6,176,130	6,762,048
Property	5,047,635	4,216,111	4,050,579	3,756,813	3,914,104
Other Objects	121,614	102,784	128,415	138,387	139,884
Other Uses	11,249	18,656	20,720	26,556	20,476
Total Expenditures	101,268,307	101,998,464	101,872,733	103,953,581	107,717,330

Source: Aid and Levy State Total; DOM Budget Summary; Certified Annual Report.

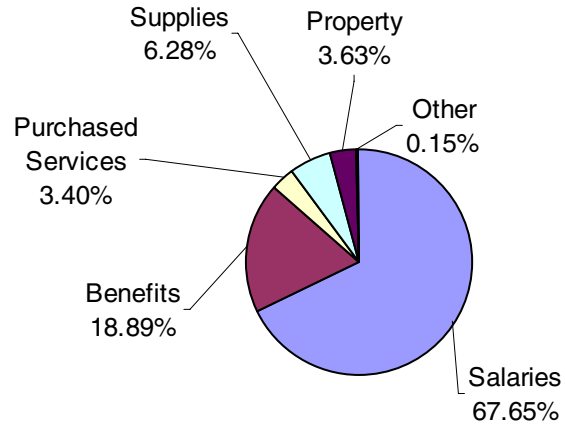
**TABLE 30**  
**OBJECT CATEGORY EXPENDITURES AS A PERCENTAGE OF TOTAL HIGH SCHOOL**  
**CAREER AND TECHNICAL EDUCATION EXPENDITURES**  
**FISCAL YEAR 2001 TO FISCAL YEAR 2005**

Career and Technical Education Object Category	2001	2002	Fiscal Year 2003	2004	2005
Salaries	67.47%	68.38%	68.07%	67.99%	67.65%
Benefits	16.63	17.37	18.00	18.64	18.89
Purchased Services	4.20	4.02	3.63	3.66	3.40
Supplies	6.59	5.98	6.18	5.94	6.28
Property	4.98	4.13	3.98	3.61	3.63
Other Objects	0.12	0.10	0.13	0.13	0.13
Other Uses	0.01	0.02	0.02	0.03	0.02

Source: Aid and Levy State Total; DOM Budget Summary; Certified Annual Report.

**FIGURE 9**  
**OBJECT CATEGORY EXPENDITURES AS A PERCENTAGE OF TOTAL HIGH SCHOOL**  
**CAREER AND TECHNICAL EDUCATION AND EXPENDITURES**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**

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Source: Aid and Levy State Total; DOM Budget Summary; Certified Annual Report.



## SECTION 10

### Career and Technical Student Organizations

#### Secondary and Postsecondary Career and Technical Student Organizations (CTSOs)

Career and technical student organizations (CTSOs) provide a unique program of career and leadership development, motivation and recognition for youth and adult students in secondary and postsecondary education that are or were enrolled in career and technical education programs.

Career and technical student organizations are not “clubs” to which few students are members, but rather are a powerful instructional tool that works best when it is integrated into the curriculum and classroom by instructors who are committed to the development of the total person. They are referred to “co-curricular,” not “extracurricular” activities. Career and technical student organizations provide instructional strategies for students to develop, improve and expand occupational competencies related to a particular career interest. Other integration activities include serving as an extension of the classroom/laboratory instructional program which enriches and enhances classroom/laboratory learning.

These organizations present organized activities for students to gain personal and leadership skills making the student more employable and preparing them to become productive employees/employers, citizens and family members. They not only have local, district and state events, but offer national and international networking options and experiences as well.

#### CTSOs in Iowa

Iowa’s career and technical student organizations have thousands of members at both the secondary and postsecondary levels. Organizations active in the state include:

- Iowa Association of FFA
- Postsecondary Agriculture Students (PAS), postsecondary
- Business Professionals of America (BPA), secondary
- Business Professionals of America (BPA), postsecondary
- Family, Career, and Community Leaders of America (FCCLA)
- Health Occupations Student Association (HOSA)
- Future Business Leaders of America (FBLA), secondary
- Phi Beta Lambda (PBL), postsecondary
- DECA, secondary
- Delta Epsilon Chi, postsecondary
- Iowa Association of Skills USA, secondary
- Iowa Association of Skills USA, postsecondary
- Technology Student Association (TSA), secondary

## **CTSO Participant Outcomes**

Students participating in career and technical student organizations have the opportunity to develop and enhance their leadership and citizenship skills within the context of career and program interests, which also enhances their occupational skills and future employability. These organizations provide students opportunities in a caring, secure environment to participate in leadership initiatives, and to enhance their awareness of the role of community service and responsibility to governmental affairs.

Activities are designed to provide opportunities for student achievement in sound decision-making, positive professional appearances, and skill attainment. These experiences are enhanced through involvement of business, industry, and labor in a climate of positive interaction and cooperation. For many students, this is the only leadership opportunity they will experience during their educational careers. Communities, states, and the nation benefit, as well as the individual and their families.

## **Role of the Iowa Department of Education related to CTSOs**

The Iowa Department of Education is responsible for identifying the appropriate staffing and staff functions in order to meet national guidelines for CTSO affiliation and state plan objectives for CTSOs. To facilitate the integration of CTSO activities into local career and technical education programs, the Iowa Department of Education provides the following types of support:

- Guidance in the implementation of CTSOs in all career and technical education programs.
- Administrative support to the state associations of each CTSO.
- Provide a state advisor to manage and facilitate each state association.
- Financial support for state association administrative costs, including: telephone, travel, postage, printing, office space, and clerical support.
- Meeting rooms, storage space, and interdepartmental support services.
- Administrative support that enables state associations and state advisors to operate according to the state and national constitutions and by-laws and within state policies and guidelines.
- Development and printing of handbooks and newsletters that communicate the policies and guidelines of local, state, and national organizations.
- Sponsorship for local, district, and state meetings/conferences.
- Development, financial support, and administration of inservice training for chapter advisors.
- Development and delivery of officer training workshops for local, district and state officers.
- Technical assistance for development and implementation of fiscal management policies and guidelines to ensure compliance with accepted accounting practices and sound association management.
- Coordination with local vocational administrators and instructors to gain the most from vocational programs.
- Encouragement and motivation for vocational teacher educators to conduct preservice and inservice courses to increase the effectiveness of the CTOSs when integrated into the vocational education classroom.
- Coordination with the national CTSO in developing and completing a meaningful program-of-work for the organization at local, state, regional, national and international levels.

## CTSO Participant Outcomes

Students participating in career and technical student organizations have the opportunity to develop and enhance their leadership and citizenship skills within the context of career and program interests, which also enhances their occupational skills and future employability. These organizations provide students opportunities in a caring, secure environment to participate in leadership initiatives, and to enhance their awareness of the role of community service and responsibility to governmental affairs.

Activities are designed to provide opportunities for student achievement in sound decision-making, positive professional appearances, and skill attainment. These experiences are enhanced through involvement of business, industry, and labor in a climate of positive interaction and cooperation. For many students, this is the only leadership opportunity they will experience during their educational careers. Communities, states, and the nation benefit, as well as the individual and their families.

## Growth of CTSOs in Iowa

Career and technical student organizations have experienced growth in recent years. The total number of CTSO chapters rose and membership increased by 484 (2.46 percent) to 20,147 students during the Fiscal Year 2002 to Fiscal Year 2005 period.

**TABLE 31**  
**IOWA CAREER AND TECHNICAL STUDENT ORGANIZATION MEMBERSHIP**  
**FISCAL YEAR 2002 TO FISCAL YEAR 2006**

CTSO	Fiscal Year					% $\Delta$ '02-'06
	2002	2003	2004	2005	2006	
FFA	11,379	11,605	11,909	12,145	12,255	7.70%
PAS	737	816	1,056	664	721	-2.17
BPA (Secondary)	638	641	606	627	597	-6.43
BPA (Postsecondary)	336	412	411	434	403	19.94
FCCLA	2,369	2,320	2,153	2,304	2,380	0.46
HOSA	262	262	228	264	293	12.21
FBLA	666	840	840	851	802	20.42
PBL	266	228	228	212	213	-19.92
DECA	658	653	495	614	570	-13.37
Delta Epsilon Chi	219	221	225	423	416	89.95
Skills USA (Secondary)	309	262	385	362	1,035	234.95
Skills USA (Postsecondary)	259	232	472	276	329	27.03
TSA	1,565	2,491	2,928	2,098	2,162	38.15
Total	19,663	20,983	21,936	21,274	20,147	2.46

%  $\Delta$  =Percent Change

Source: Iowa Department of Education, Bureau of Career and Technical Education, Individual CTSOs.



**TABLE 32**  
**IOWA CAREER AND TECHNICAL STUDENT ORGANIZATION CHAPTERS**  
**FISCAL YEAR 2006**

CTSO	Number of Chapters
FFA	230
PAS	7
BPA (Secondary)	19
BPA (Postsecondary)	17
FCCLA	110
HOSA	9
FBLA	24
PBL	14
DECA	29
Delta Epsilon Chi	5
Skills USA (Secondary)	50
Skills USA (Postsecondary)	10
TSA	25
Total	549

Source: Iowa Department of Education, Bureau of Career and Technical Education, Individual CTSOs.

## SECTION 11

# Career Planning and Exploration

Career planning and exploration is an essential component of students' educational experience, pre-Kindergarten through adulthood. Career education involves the identification and development of students' personal interests, preferences, and skills, which connect instruction to future careers.

The middle and high school years are a critical time that can shape the career opportunities available and the choices made by students. Each spring, students make very important career choices when they register for the next year's courses. The courses selected provide students with the educational foundation to build occupational or career opportunities. Each time a student selects a subject, they could be opening a door to a career opportunity. Each time they do not take a subject, they could be closing a door. In 2006, legislation was passed requiring schools to help eight grade students develop an educational plan guided toward the goal of successfully completing, at a minimum, the model core curriculum developed by the State Board of Education.

The Iowa Department of Education, in partnership with a variety of entities, has developed and made available resources to assist students with career exploration and planning.

### **The Iowa Career Resource Guide**

The Iowa Career Resource Guide is a classroom text developed through a partnership between the Iowa Department of Education and the Iowa Workforce Development. The guide provides up-to-date labor market information for careers in Iowa including average hourly wages by amount of experience and projected job growth over a ten-year period. It also provides the national job outlook for each of the 16 career clusters. Approximately 70,000 guides are in the process of being distributed throughout the state as classroom sets for middle and high school students as well as resources for One-Stop Centers and community colleges.

### **Iowa's Career Information and Decision-Making System**

Iowa's Career Information and Decision-Making System (CIDS) is made available to middle and high school students through a partnership between the Iowa College Student Aid Commission (ICSAC), the College Planning Center (a division of the Iowa Student Loan Liquidity Corporation), and the Iowa Department of Education. Iowa Choices, developed by the vendor Bridges, is designated as the CIDS for the State of Iowa though some local institutions have adopted other systems.

Iowa Choices is designed to equip professionals with the knowledge and skills needed to assist students and parents with career and educational exploration and information. It includes occupational and educational information that is customized to Iowa and updated at least once a year. The system involves the creation of an online portfolio that follows students from middle school to college. The system includes lesson plans, activities, parent/student guides, and reporting features. Choices Explorer targets middle and high school students, expanding student awareness and enthusiasm for career and educational possibilities. Choices Planner targets high school students, defining the relevancy of education planning to careers and personalizing planning for more meaningful results.

In the fall of 2005, the ICSAC and the College Planning Center funded free access to Iowa Choices products for many institutions. Free access to Choices Explorer was granted to every middle school and access to Choices Planner was granted to every high school. Combined schools, serving grades 6-12 in a single building, received access to both products. Every postsecondary institution in Iowa was granted free access to Choices Planner. Iowa users receive free training and technical support from the ICSAC and the College Planning Center.

A total of 836 schools were provided with free access to Choices in Fiscal Year 2006.

**TABLE 33**  
**NUMBER OF INSTITUTIONS WITH FREE ACCESS TO IOWA CHOICES**  
**FISCAL YEAR 2006**

Institutions	Number
Middle Schools	312
High Schools	524
Colleges and Universities	132

Source: Iowa College Student Aid Commission.

**TABLE 34**  
**NUMBER OF INSTITUTIONS INDEPENDENTLY ORDERING IOWA CHOICES**  
**FISCAL YEAR 2006**

Institutions	Number
Elementary Schools	4
Special Education Schools	1
Workforce Development Centers	13
Jobs Training Partnership	6
State Agencies	4
Prisons	5
Private Agencies	1

Source: Iowa College Student Aid Commission.

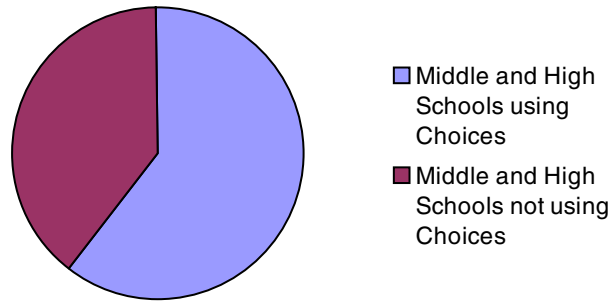
Iowa Choices was utilized by 60 percent of middle and high schools and 40 percent of colleges and universities.

**TABLE 35**  
**UTILIZATION OF IOWA CHOICES**  
**FISCAL YEAR 2006**

Institution	Using Choices	Have Access to Choices	Percent Utilizing Choices
Middle Schools and High Schools	503	836	60.17%
Colleges and Universities	52	132	39.39%

Source: Iowa College Student Aid Commission.

**FIGURE 10**  
**UTILIZATION OF CHOICES BY IOWA MIDDLE AND HIGH SCHOOLS**  
**FISCAL YEAR 2006**



Source: Iowa College Student Aid Commission.

Note: N=All middle and high schools.

**TABLE 36**  
**UTILIZATION OF IOWA CHOICES BY IOWA SCHOOL DISTRICTS SERVING GRADES 7-12**  
**FISCAL YEAR 2006**

Districts Using Choices	Districts Not Using Choices	Percent Utilizing Choices
272	82	76.84%

Definition: Districts using Choices were defined as school districts where the number of Choices portfolios represents at least 5 percent of total enrollment for grades 7-12.

Source: Iowa College Student Aid Commission.

Nearly 50,000 portfolios were created by middle and high school students and more than 63,000 portfolios were active on the Choices system during Fiscal Year 2006. Iowa Choices has seen significant growth in the number of profiles created in August to October 2006 over the same months in 2005.

**TABLE 37**  
**IOWA CHOICES PORTFOLIOS CREATED AND TOTAL NUMBER ACTIVE**  
**FISCAL YEAR 2006**

Institution	Portfolios Created	Total Active Portfolios
Middle Schools and High Schools	49,945	63,711
Colleges and Universities	2,379	2,902

Source: Iowa College Student Aid Commission.

**TABLE 38**  
**GROWTH IN NUMBER OF IOWA CHOICES PORTFOLIOS CREATED**  
**FISCAL YEAR 2006**

Institution	Aug-Oct 2005	Aug-Oct 2006	Percent Increase
Middle Schools and High Schools	8,392	18,625	121.94%
Colleges and Universities	717	1,026	43.10

Source: Iowa College Student Aid Commission.

## SECTION 12

### Glossary

#### **Advisory Committee/Councils**

Groups designed to assist career and technical education planning and evaluation composed of public members with emphasis on person representing business, agriculture, industry, and labor (organized).

#### **Articulation**

A process of mutually agreeing upon courses and programs earned at a sending institution for credit or advanced placement at a receiving institution. Often courses and programs are transferable either from secondary to postsecondary institutions or between postsecondary institutions.

#### **Career and Technical (Vocational) Completer**

A high school student that has completed a vocational program sequence as identified by the school district (three or more sequential units).

#### **Career and Technical (Vocational) Concentrator**

A high school student that has a combination of completed and presently enrolled vocational units totaling at least two vocational units (two years) in the vocational program being reported.

#### **Career and Technical (Vocational) Program Participant**

A high school student that are enrolled in one or more courses that are included in a program sequence as identified by their local school district as a career and technical (vocational) program.

#### **Headcount**

The actual number of students enrolled in a given instructional category or unit during a given period of time. Unduplicated headcount by program means that a person is counted only once during the reporting period for each program (students may be enrolled in multiple programs and would be counted multiple times).

#### **Nontraditional Enrollees**

Career and technical (vocational) participants in fields of work in which their gender comprises less than 25 percent of the workforce.

#### **Tech Prep Student**

A high school student enrolled in one or more technical courses that are included in the Tech-Prep program sequence as identified in the written agreement between the cooperating institutions.

#### **Unit**

A course which meets one of the following criteria: it is taught for at least 200 minutes per week for 36 weeks; it is taught for the equivalent of 120 hours of instruction.



## APPENDIX

### The 16 Career Clusters

Career Clusters provide a way for schools to organize instruction and student experiences around sixteen broad categories that encompass virtually all occupations from entry through professional levels. Resources are available for each of the sixteen clusters. For additional information, visit the States' Career Clusters website: [www.careerclusters.org](http://www.careerclusters.org). The sixteen clusters and their descriptions are listed below.

	<p>The production, processing, marketing, distribution, financing, and development of agricultural commodities and resources including food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources.</p>
	<p>Careers in designing, planning, managing, building and maintaining the built environment.</p>
	<p>Designing, producing, exhibiting, performing, writing, and publishing multimedia content including visual and performing arts and design, journalism, and entertainment services.</p>
	<p>Business Management and Administration careers encompass planning, organizing, directing and evaluating business functions essential to efficient and productive business operations. Business Management and Administration career opportunities are available in every sector of the economy.</p>
	<p>Planning, managing and providing education and training services, and related learning support services.</p>
	<p>Planning, services for financial and investment planning, banking, insurance, and business financial management.</p>
	<p>Executing governmental functions to include Governance; National Security; Foreign Service; Planning; Revenue and Taxation; Regulation; and Management and Administration at the local, state, and federal levels.</p>
	<p>Planning, managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development.</p>
	<p>Hospitality &amp; Tourism encompasses the management, marketing and operations of restaurants and other foodservices, lodging, attractions, recreation events and travel related services.</p>



	<p>Preparing individuals for employment in career pathways that relate to families and human needs.</p>
	<p>Building Linkages in IT Occupations Framework: For Entry Level, Technical, and Professional Careers Related to the Design, Development, Support and Management of Hardware, Software, Multimedia, and Systems Integration Services.</p>
	<p>Planning, managing, and providing legal, public safety, protective services and homeland security, including professional and technical support services.</p>
	<p>Planning, managing and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance and manufacturing/process engineering.</p>
	<p>Planning, managing, and performing marketing activities to reach organizational objectives.</p>
	<p>Planning, managing, and providing scientific research and professional and technical services (e.g., physical science, social science, engineering) including laboratory and testing services, and research and development services.</p>
	<p>Planning, management, and movement of people, materials, and goods by road, pipeline, air, rail and water and related professional and technical support services such as transportation infrastructure planning and management, logistics services, mobile equipment and facility maintenance.</p>