

# What's the Plan?

Helping students explore their futures

## Career Clusters

An approach Missouri schools and communities can use for career planning, seamless transitions and Personal Plans of Study

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# Career Clusters in Missouri

## Guiding students toward college and career readiness

Today's occupational environment has changed tremendously from previous generations. No longer is a high school diploma adequate to maintain a middle-class lifestyle. Most high-wage, high-skill, and high-demand careers require some education or training beyond high school. High school graduation is essential, but not sufficient.

A recent report by Georgetown University's Center on Education and the Workforce drives home this point. The report showed that, by 2018, there will be thousands more jobs that require at least an associate's degree than there will be workers. To be competitive in the job market, students today must plan to obtain training or education beyond high school, whether an associate's degree, a bachelor's degree, a professional degree, career education, or significant on-the-job training.

For Missouri to successfully prepare the workforce of the future, all parties involved – government, education, business, and industry – must forge a unified vision of a prosperous, thriving, and internationally-competitive state. Career education plays a central role in preparing Missourians for a new knowledge-based economy. The Career Clusters framework provides a positive tool for educators, businesses, and individual students as they work together to shape the future.

Based on this framework, schools can offer Programs of Study that transition seamlessly from one educational level to another and create avenues for students to earn valuable credentials recognized by business and industry. These Programs of Study allow students to create a flexible yet rigorous Personal Plan of Study based on their individual interests, abilities, and career maturity.

Meeting the challenge of helping today's students prosper tomorrow will require significant conversation, thoughtful and collaborative work, and a degree of courage. The Career Clusters framework can help guide the conversations and shape the work.

Chris L. Nicastro  
Commissioner of Education



### **BUILDING CONNECTIONS FOR STUDENT SUCCESS**

Commissioner Chris L. Nicastro guides education in Missouri to help learners of all ages.

## **Career Clusters**

- Agriculture, Food and Natural Resources
- Architecture and Construction
- Arts, Audio-Visual Technology and Communications
- Business Management and Administration
- Education and Training
- Finance
- Government and Public Administration
- Health Science
- Hospitality and Tourism
- Human Services
- Information Technology
- Law, Public Safety, Corrections and Security
- Manufacturing
- Marketing
- Science, Technology, Engineering and Mathematics
- Transportation, Distribution and Logistics



# Paths, Clusters & Pathways

## Career Paths

Missouri has identified six Career Paths as a way to help students become aware of and explore careers in a logical and meaningful way.

## Career Clusters

Missouri uses 16 Career Clusters as a way of organizing occupations and careers to assist educators in tailoring rigorous coursework and related activities for all students. The Career Clusters include all occupations, even those not usually found in career and technical education. Career Clusters may be used beginning in grades 7, 8 or 9, and can continue as a framework for educational planning through postsecondary education.

## Career Pathways

Occupations within a Career Cluster are further grouped according to shared commonalities such as skill sets or common roles. This grouping is called a Career Pathway. Each cluster contains two to seven Career Pathways. Career Pathways assist educators in the development of a coordinated and non-duplicative sequence of courses that identifies both secondary and postsecondary education elements; includes challenging academic and career and technical education content; and culminates in one or more of the following: technical skill proficiency, a credential, a certificate, or a degree at the secondary or postsecondary level.

## Knowledge & Skill Statements

Knowledge and skill statements represent the skills and knowledge, both academic and technical, that all students should achieve for a given career area.

### Health Science

- Biotechnology Research and Development
- Therapeutic Services
- Diagnostics Services
- Health Informatics
- Support Services

### Arts, A/V Technology and Communications

- Audio and Video Technology and Film
- Printing Technology
- Visual Arts
- Performing Arts
- Journalism and Broadcasting
- Telecommunications

**Arts & Communication**  
Creative Path

### Information Technology

- Network Systems
- Information Support and Services
- Web and Digital Communications
- Programming and Software Development

**Business, Management & Technology**  
Business Path

### Business Management and Administration

- General Management
- Human Resources Management
- Business Information Management
- Operations Management
- Administrative Support

### Marketing

- Marketing Management
- Marketing Communications
- Marketing Research
- Professional Sales
- Merchandising

### Finance

- Securities and Investments
- Business Finance
- Banking Services
- Insurance
- Accounting

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## Health Services

Health Path

## Essential Knowledge & Skills

Academic Foundations  
Ethics & Legal Responsibilities  
Business Leadership & Teamwork  
Digital Technology Applications  
Employability & Career Development  
Problem Solving & Critical Thinking  
Safety, Health & Environmental  
Communications  
Technical Skills

## Natural Resources Agriculture

Nature Path

## Industrial & Engineering Technology

Building & Fixing Path

## Human Services

Helping Path

Career Path

## Agriculture, Food and Natural Resources

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

Career Cluster

Career Pathway

## Manufacturing

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

## Transportation, Distribution and Logistics

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

## Science, Technology, Engineering and Mathematics

Engineering and Technology  
Science and Math

## Architecture and Construction

Design and Pre-Construction  
Construction  
Maintenance and Operations

## Human Services

Early Childhood Development and Services  
Counseling and Mental Health Services  
Family and Community Services  
Personal Care Services  
Consumer Services

## Hospitality and Tourism

Restaurants and Food and Beverage Services  
Recreation, Amusement and Attractions  
Travel and Tourism  
Lodging

## Government and Public Administration

Public Management and Administration  
Governance  
National Security  
Foreign Service  
Planning  
Revenue and Taxation  
Regulation

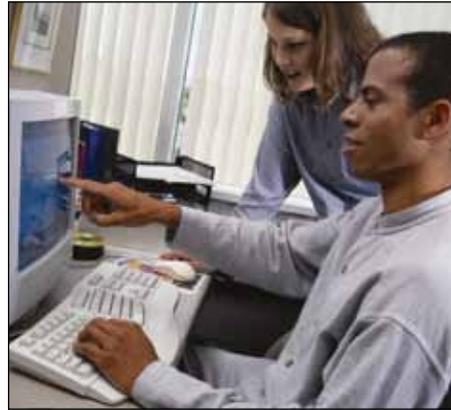
## Law, Public Safety, Corrections and Security

Correction Services  
Emergency and Fire Management Services  
Security and Protective Services  
Law Enforcement Services  
Legal Services

## Education and Training

Administration and Administrative Support  
Professional Support Services  
Teaching and Training

# Preparing Students for Success



Technological advances and global competition have transformed the nature of work. Tomorrow's jobs will require more knowledge, better skills and more flexibility than ever before. Tomorrow's workers must be prepared to change jobs and careers several times, while continually updating their knowledge and skills.

Career Clusters provide a common framework for career preparation. This system is designed to make it easier for school systems and teachers to help students appropriately prepare for a career direction and for the range of occupations that might fall along that path.

To prepare today's students for tomorrow, schools are working to help them achieve in challenging subjects. One key approach to this goal is to provide students with relevant contexts for learning. The Career Clusters framework links what students learn in school with the knowledge, skills, and experiences needed for success in college and careers.

The Career Clusters framework expands upon Missouri's six Career Paths, an existing grouping of occupations. Within those paths, all 16 clusters include business-verified skills and knowledge appropriate for the broad range of careers represented in each, as well as the skills and knowledge appropriate for each of the subgroups called Career Pathways.

Guided by the seven Career Cluster core concepts (at right), schools and individual career education programs are better equipped to help students meet the needs of the competitive 21st-century workplace. Regionally, secondary and postsecondary institutions should provide seamless, integrated Programs of Study for multiple Career Clusters with clear opportunities for certificates, degrees and local employment at various levels.

Engaging instructional techniques combined with valuable content show students the relevance of their studies while pushing them to higher levels of rigor. Rigorous and relevant instruction helps improve student achievement while also preparing students for the workplace expectations of teamwork, communication skills, organization and project management.

## Missouri's 7 Core Concepts for Career Clusters

- 1 Learning should be student-centered.
- 2 Instruction should integrate academic education, career development and career and technical education.
- 3 Connections should be enhanced among secondary education, postsecondary education, business and economic development.
- 4 Rigorous and relevant academics are needed by all students, whatever their educational and career plans.
- 5 Secondary schools' instruction should prioritize foundational knowledge and skills for career preparation above job preparation.
- 6 Industry-verified standards should serve as a benchmark for career and technical education.
- 7 School reform is needed to prepare students for success in the 21st century workforce.

## Educator File

### Connecting the Core Concepts

Missouri's core concepts for Career Clusters link well with other frameworks for school reform. Listed here are other models and materials to review.

#### 15 Critical Components

[www.careerclusters.org](http://www.careerclusters.org)

#### 10 Big Ideas for Better Schools

[www.edutopia.org](http://www.edutopia.org)

#### 5 Critical Challenges of High School Reform

[www.mdrc.org](http://www.mdrc.org)

#### High Schools That Work

[www.sreb.org](http://www.sreb.org)

## Everyone Benefits

### Students Win with Career Clusters

The Career Clusters framework creates a direct link between what students are learning today and what they will do for a living tomorrow.

With the Career Clusters framework, students are more motivated because they can see the relevance of their education and their education involves rigorous academics applied to real-world situations.

Career Clusters provides a framework for all students to plan their future, whatever their interests, abilities, or desires for further education.

Work-based learning and project-based learning provide students hands-on experiences in the classroom and in the workplace.

Students learn in a variety of settings using a variety of teaching methods that match their learning styles.

The Career Clusters framework encourages high schools to give students opportunities to begin a postsecondary certification or degree program through courses taken for college credit. By earning college credit in high school, students' families can save on tuition and pursue greater opportunities in the future.

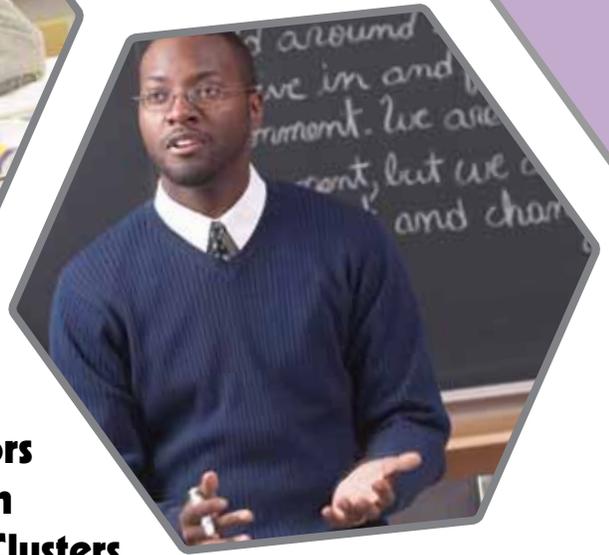
### Employers Win with Career Clusters

Today's students are tomorrow's workforce. The Career Clusters framework offers employers the opportunity to partner with educators to prepare future employees with the skills and motivation needed to succeed.

Students learn the necessity of lifelong learning and the importance of updating their skills.

Students master the foundations of their broad Career Cluster first, helping ensure that they start work ready to work.

Business and community partners receive attention and public recognition for their work with schools.



### Educators Win with Career Clusters

When students see a connection between what they are doing in the classroom and how it applies to the real world, they become enthusiastic and engaged learners.

With the Career Clusters framework, educators can feel confident they are providing students with skills for today's globally-competitive workplace.

Career Clusters provides a framework to bring the career development and instructional efforts of counselors and teachers into closer alignment.

Students who are focused on a goal and can see the connection between their coursework and career are more likely to stay in school.

A Career Clusters school structure will provide teachers targeted support for their classroom needs, industry-validated curriculum, training in instructional strategies that keep students engaged, and a connection with regional business to ensure that their instruction connects to careers locally and beyond.



## Communities Win with Career Clusters

The Career Clusters framework encourages connections among secondary education, postsecondary education and businesses.

Programs of Study target multiple opportunities for certifications or degrees connected to occupations with local demand. With Programs of Study in place, the Career Clusters framework helps ensure that community members have educational opportunities leading to occupations that offer family-supporting wages.

Career Clusters provides a common framework for many organizations and businesses in a community to partner for economic development and educational planning.

For individual educational planning, the Career Clusters framework puts individual student interests and abilities first while concurrently requiring rigorous studies of all students. This leads to more young people engaged in their schooling and motivated to pursue meaningful careers and further education. Higher levels of educational attainment contribute to increased prosperity in a community.

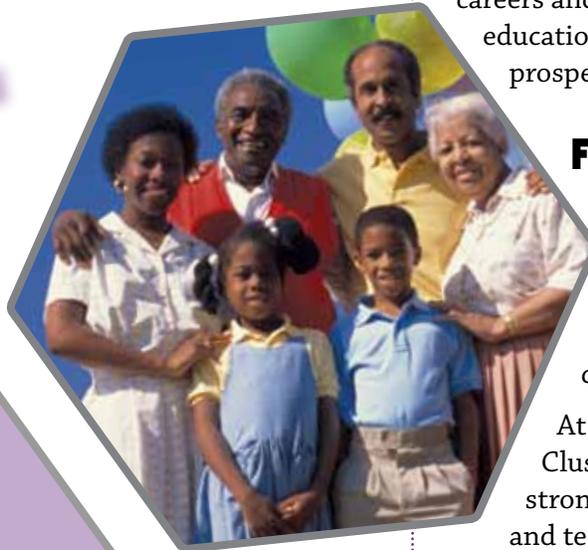
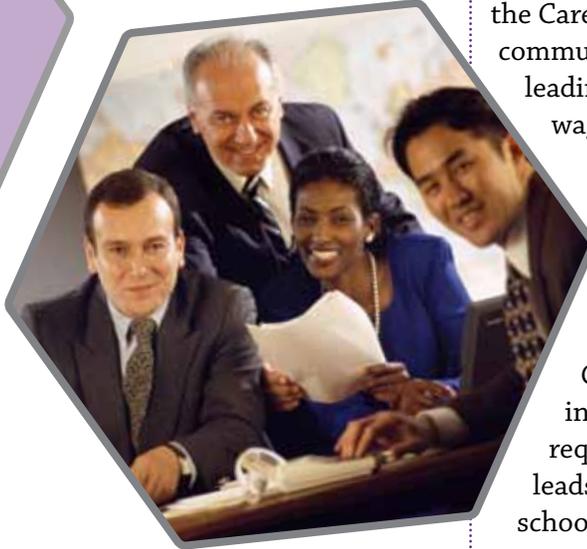
## Families Win with Career Clusters

The Career Clusters framework helps families as they assist students with courses and activities that support their career goals.

At schools that implement the Career Clusters framework, students are provided a strong foundation in academic, employability, and technical skills.

Family members have the opportunity to share career information one-on-one with the student and school counselor or as part of a group discussion in the classroom with other students.

Families can save on tuition and students can pursue additional opportunities for postsecondary education when high schools and area career centers implementing the Career Clusters framework offer courses with the option to earn college credit.



**Everyone  
Benefits with  
Career Clusters**

# Bringing Relevance to the Classroom



1 Learning should be student-centered.

2 Instruction should integrate academic education, career development and career and technical education.

Within the Career Clusters framework, business people and educators have collaborated nationwide to establish 10 foundational areas of knowledge and skills needed for success in the workplace and in life. Among these topics are problem solving and critical thinking, teamwork, ethical responsibilities, and career development.

Students must go beyond memorization and comprehension to apply what they have learned. If students are expected to learn

problem-solving skills, they have to solve challenging, real-world problems that could have multiple solutions. If students are expected to learn teamwork, they must work in teams. If students are expected to learn ethical responsibilities, they should be involved in activities that engage the community, and they should interact with adults to learn the ethical dilemmas of today's workplace.

Achieving these goals requires an investment from educators, school administrators, and the local business community in innovative instructional and assessment practices. These practices can create a value-added educational system that goes beyond lectures and paper-and-pencil tests. The educational system should also bring students and educators to the workplace and the workplace to the classroom.

The Career Clusters framework involves an environment for learning that requires more rigorous and relevant learning, with expectations that students work to find solutions to real-life problems. Instruction must move from worksheets and teacher-centered learning to student-driven learning where students actively research and synthesize multiple solutions. Findings can be presented either individually or as a team to a panel of knowledgeable community members or to the public at large. Educators may look to the *High Schools That Work* network for materials, professional development and assistance that advance these goals and practices.

Schools and communities should collaborate to incorporate service-learning activities, where students find and apply solutions to problems in their community. Through these activities, students develop a sense of their value in the community, improve problem-solving and teamwork skills, learn to care for others, and become mindful of their human and natural environments.

Project-based learning and authentic assessments with panels of knowledgeable community members play a key role in establishing the value-added education at the core of the Career Clusters framework.

## The Thinning Crowd



For every 100 high school freshmen in Missouri ...

22%  
LOSS



78 will earn their high school diploma.

40%  
LOSS



47 will enter college.

33%  
LOSS



32 will still be enrolled their sophomore year.

30%  
LOSS



22 will earn a college degree by their early 20s.



Associate's Degree (6)



Bachelor's Degree (16)

### DECREASING PYRAMID OF EDUCATIONAL ACHIEVEMENT

In Missouri, only 2 in 10 ninth-grade students will go on to complete a college degree by their early 20s (within 150% time for their degree). Income trends show that postsecondary education is needed to earn a family-supporting wage. Schools must do more to help students bridge transitions between educational environments and to assist students through their first year and into their second year in a new school setting.

The Career Clusters framework was designed to aid development of partnerships among institutions of all educational levels to create seamless transitions that improve entrance and completion rates, as well as success in the workplace.

Sources: National Center for Higher Education Management Systems (2008)

# Building Educational Partnerships

3 Connections should be enhanced among secondary education, postsecondary education, businesses and economic development.

4 Rigorous and relevant academics are needed by all students, whatever their educational and career plans.

The Career Clusters framework was designed to respond to the growing demands on employers, employees, and educational institutions in today's globally competitive environment. To meet these needs, Career Clusters provides a framework for rigorous studies for all students within Programs of Study. Multiple points of exit within a Program of Study allow students to prepare for gainful employment in their area of interest and transition seamlessly to further education in a Career Cluster or Career Pathway. These programs of study require alignment and coordination among secondary schools, two-year and four-year postsecondary institutions, and the local business community.

In the Career Clusters framework, Programs of Study emphasize alignment among three educational levels: four years at the secondary level to build foundational knowledge and skills; apprenticeships and one- and two-year postsecondary programs aligned with business-verified certificates or credentials; and the option to bridge seamlessly into a four-year baccalaureate program without duplication of coursework.

High schools and area career centers must ensure that course competencies are aligned to the Missouri Show-Me Standards and course level expectations. Students at high schools and area career centers should have opportunities to earn college credit through dual credit or articulated credit programs, pursue an industry-recognized credential or certificate, participate in career and technical student organizations, and take part in work-based learning experiences as early as the ninth grade.

Postsecondary institutions can further this alignment by designing programs that target employment in high-skill, high-wage, or high-demand careers. Postsecondary programs, high schools and area career centers should work together for alignment of learning. Programs for one-year certificates, two-year degrees, and baccalaureate studies should also be aligned.

Since the spring of 2007, educators around Missouri collaborated across institutions and across content areas to develop cluster- and pathway-specific Programs of Study. This work resulted in smoother student transitions and more

opportunities to earn college credit in high school. The Missouri Center for Career Education provides information and assistance on Programs of Study.

The *High Schools That Work* network provides schools an excellent resource to deepen community ties, get the most out of a school advisory committee, build advisement programs, and integrate work-based learning and rigorous studies.

Schools that implement the Career Clusters framework can be recognized by partnerships to identify and address gaps in and among programs, involvement of student-centered guidance and counseling techniques, and development of a culture focused on continuous improvement.



## Family File

### Why should my child create an 8-year Personal Plan of Study in the 6th grade?

It is important to remember that the creation of an eight-year Personal Plan of Study in the sixth grade is one point in a process of student career development that begins with awareness in elementary schools and continues into high school and throughout life.

The Personal Plan of Study is an opportunity for students to look at their future courses and experiences in light of their career and academic expectations. Each year, students review their Personal Plan of Study, and the plan is revised as necessary to match student goals.

# From Partnerships to Student Plans

1 Learning should be student-centered.

2 Instruction should integrate academic education, career development and career and technical education.



Programs of study and personal plans of study are related but are not the same. Students' programs of study are a result of collaborative efforts among schools and colleges to seamlessly coordinate classroom instruction, student guidance and counseling, career and technical student organizations, career development and community participation for a particular Career Cluster. Students' personal plans of study should reflect programs of study, but should also be individualized based on their interests and needs.

Personal Plans of Study are more than just a listing of courses taken in high school. School organizations and community activities incorporated in personal plans of study give students practical experience to hone skills learned in the classroom and to develop personal qualities such as leadership and teamwork.

These types of activities along with other age appropriate career exploration activities are incorporated into personal plans of study. Personal plans of study are reviewed at least annually and revised as necessary to reflect any changes in students' career and educational goals. Students and their families play a central role in the development of personal plans of study, but school counselors and teachers also have an important role to play. School Counselors work closely with students and their parents to develop personal plans of study that reflect individual students' secondary and postsecondary aspirations.

Teachers should be cognizant of their students' personal plans of study when developing coursework to ensure that classroom projects and activities have relevance for them. Families should be aware of the role their child's activities can have for career development, and they should look for opportunities such as job shadowing, mentoring and internships so that students can gain real-world experience and can test career possibilities while still in school.

Individual student planning is a core component of every school's comprehensive guidance and counseling program and is the vehicle through which students' personal plans of study are developed and monitored. The process begins in elementary school with age appropriate career awareness activities, continues through middle school with more in-depth career and personal exploration, culminating in the development of students' personal plans of study by the end of 8th grade.

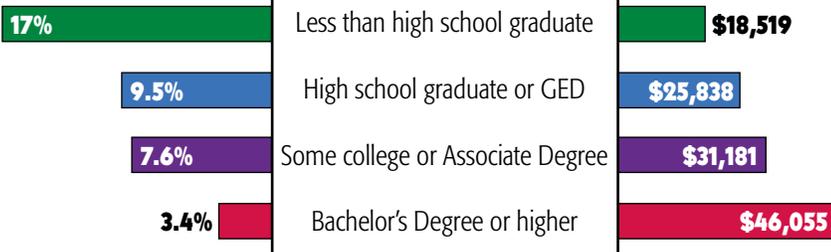
Students who have clear goals and see relevance in their school work and who are actively involved in positive activities outside of the classroom invariably do better in school. It is vital that every school have a strong individual student planning process in place as part of the comprehensive guidance and counseling programs in order to help ensure that all students are benefitting from their personal plans of study.

### Education Pays in Missouri

#### Unemployment Rates, 2009

#### Educational Attainment

#### Median Earnings in the Last 12 Months



**THE ROAD TO RICHES IS PAVED BY EDUCATION** — The more education you have, the more money you are likely to make and the less likely you are to be unemployed, or so the data suggest. In 2009, Missouri workers age 25 to 64 with a high school diploma earned an average of \$25,838 per year, while those with a bachelor's degree earned an average of \$42,305 per year and those with a graduate or professional degree earned an annual average of \$52,551. Unemployment was nearly twice as high for Missourians who did not complete high school than for those with a high school diploma or GED® credential.

Source: U.S. Census Bureau, American Community Survey (2009)

Note: Earnings represented in 2009 inflation-adjusted dollars

### Family File

**This seems early for my child to make career decisions. Will Career Clusters pigeonhole my child?**

No. In fact, students attending schools that implement the Career Clusters framework should be better prepared for many careers beyond their career focus. Each personal plan of study involves a rigorous academic core. The student's chosen focus provides a context and direction for coursework – a best practice for student motivation.

## Career Development Flowchart

This flowchart offers students, educators, families and community members a sampling of recommended activities for career development. These activities are aligned with the Missouri Guidance and Counseling Grade Level Expectations and recommendations of the Career Clusters framework.

	Student Actions*	Family Actions	Community Actions
<b>K-2</b>	<ul style="list-style-type: none"> <li>- Recognize personal character traits.</li> <li>- Learn the Career Paths and identify the roles and importance of jobs and workers in the community.</li> <li>- Develop individual work and study habits.</li> </ul>	<ul style="list-style-type: none"> <li>- Review your child's interests and skills.</li> <li>- Talk about work in the community reflecting his or her interests and skills.</li> </ul>	<ul style="list-style-type: none"> <li>- Participate in school career fairs and classroom visits to help students become aware of various careers.</li> </ul>
<b>3-5</b>	<ul style="list-style-type: none"> <li>- Relate learning to the six Career Paths.</li> <li>- Learn the aspects of a portfolio.</li> <li>- Develop a respect for all work.</li> </ul>	<ul style="list-style-type: none"> <li>- Help your child explore and experience many kinds of work.</li> <li>- Talk with your child about what you do at work and the skills you need.</li> </ul>	<ul style="list-style-type: none"> <li>- Participate in school and community career exploration programs and activities.</li> <li>- Host field trips at your workplace.</li> </ul>
<b>6</b>	<ul style="list-style-type: none"> <li>- Use the Career Paths as a tool for career exploration and planning.</li> <li>- Develop a "résumé" of work experiences for home and school.</li> <li>- Create an eight-year Personal Plan of Study.</li> </ul>	<ul style="list-style-type: none"> <li>- Look at the Career Paths with your child and explore multiple career areas.</li> <li>- Cooperatively create a career folder of your child's interests.</li> </ul>	<ul style="list-style-type: none"> <li>- Coordinate with teachers and counselors to talk to students about application and educational expectations from your workplace.</li> </ul>
<b>7</b>	<ul style="list-style-type: none"> <li>- Develop teamwork knowledge and skills.</li> <li>- Relate personal interests, strengths and limitations to educational and career plans.</li> <li>- Use various resources to explore career and educational options.</li> <li>- Develop interview and presentation skills.</li> </ul>	<ul style="list-style-type: none"> <li>- Explore and arrange job shadowing or mentoring activities for your child.</li> <li>- With your child, explore the Missouri Connections website.</li> <li>- Help your child understand how a career differs from a job.</li> </ul>	<ul style="list-style-type: none"> <li>- Participate in a job shadowing or mentoring program for children.</li> <li>- Participate in mock interviews and judge student presentations.</li> <li>- Host workplace experiences for teachers.</li> </ul>
<b>8</b>	<ul style="list-style-type: none"> <li>- Develop a portfolio to reflect career and educational plans.</li> </ul>	<ul style="list-style-type: none"> <li>- Participate in your child's creation of a personal plan of study.</li> <li>- Arrange for your child to observe people working in careers of interest.</li> </ul>	<ul style="list-style-type: none"> <li>- Help students and educators become familiar with educational programs in the area for your career field.</li> </ul>
<b>9</b>	<ul style="list-style-type: none"> <li>- Analyze school and community resources that support the personal plan of study.</li> <li>- Apply for a part-time or volunteer job to explore personal career interests.</li> </ul>	<ul style="list-style-type: none"> <li>- Ask at school what is done to help with the career planning process.</li> <li>- Explore and help arrange service-learning opportunities for your child.</li> </ul>	<ul style="list-style-type: none"> <li>- Participate in career and technical education or guidance advisory committees at your local school.</li> <li>- Present school leadership with opportunities for possible student service-learning activities.</li> </ul>
<b>10</b>	<ul style="list-style-type: none"> <li>- Participate in activities as a contributing member of a global community.</li> <li>- Use various resources to explore career and educational options.</li> <li>- Pursue job shadowing or work-based learning related to the career field of interest. (10-12)</li> </ul>	<ul style="list-style-type: none"> <li>- Suggest and support career decisions, allowing your child flexibility to explore and change.</li> <li>- Explore and help arrange job shadowing, mentoring and internship opportunities for your child.</li> </ul>	<ul style="list-style-type: none"> <li>- Provide work-based learning, including internship and job shadowing.</li> <li>- Share opportunities and challenges of job and career transitions during job fairs and classroom visits.</li> </ul>
<b>11</b>	<ul style="list-style-type: none"> <li>- Balance school, family, and community roles.</li> <li>- Research postsecondary options related to the personal plan of study.</li> </ul>	<ul style="list-style-type: none"> <li>- Review your child's personal plan of study and opportunities for further postsecondary training or education.</li> </ul>	<ul style="list-style-type: none"> <li>- Talk with students about balancing family, work and community roles.</li> <li>- Provide job shadowing and internship opportunities to educators.</li> </ul>
<b>12</b>	<ul style="list-style-type: none"> <li>- Respect all work as important and valuable.</li> <li>- Understand levels of available education related to the personal plan of study.</li> </ul>	<ul style="list-style-type: none"> <li>- Help your child understand the resources and skills needed to fulfill his or her career and life goals.</li> </ul>	<ul style="list-style-type: none"> <li>- Serve as a workplace mentor for students.</li> </ul>
<b>13</b>	<ul style="list-style-type: none"> <li>- Pursue career and life goals through appropriate education and training.</li> </ul>	<ul style="list-style-type: none"> <li>- Identify resources to help your student pursue his or her career and life goals.</li> </ul>	<ul style="list-style-type: none"> <li>- Participate in activities that help schools and businesses align graduate expectations and outcomes.</li> </ul>
<b>14</b>	<ul style="list-style-type: none"> <li>- Continue to update career portfolio based on postsecondary activities.</li> <li>- Participate in an internship or other volunteer service related to the chosen field of study.</li> </ul>	<ul style="list-style-type: none"> <li>- Provide understanding feedback as your child navigates the challenges of postsecondary studies and a career.</li> </ul>	<ul style="list-style-type: none"> <li>- Provide internship opportunities for postsecondary students in related fields of study.</li> <li>- Participate in career fairs at local community colleges and universities.</li> </ul>

Career Fairs & Field Trips

Job Shadowing & Mentoring

Service Learning

Internships & Apprenticeships

\*Based on the Missouri Guidance and Counseling Grade Level Expectations

# Personal Plan of Study

**SAMPLE**

**Name:** Michael Turner

**School:** Anywhere High School

**Postsecondary Goal:** Associate's Degree in Nursing with possible study toward a bachelor's or graduate degree

**Career Path:** Health Services

**Career Cluster:** Health Science

**Career Pathway:** Therapeutic Services

	English	Math	Science	Social Studies	Career Education	Other Courses	Work-Based Learning	Additional Activities
<b>7</b>	Reading Language Arts	Math 7	Life Science	Social Studies	Industrial Technology	Music Exploratory Courses	Job Shadowing Volunteer	4-H
<b>8</b>	Language Arts	Math 8 Probability & Statistics	Earth Science	American History	Family & Consumer Science Career Exploration	Music Art Computer Applications	Volunteer	4-H
<b>9</b>	English I	Algebra	Physical Science	Geography / State History	Career & Family Leadership	Health / P.E.	Job Shadowing Volunteer	Family, Career & Community Leaders of America
<b>10</b>	English II	Geometry	Biology I	World History	Nutrition & Wellness	Health / P.E. Fine Arts	Service Learning After-School Employment Volunteer	Family, Career & Community Leaders of America
<b>11</b>	English III	Algebra II	Chemistry	U.S. History	Health Occupations	Personal Finance	Internship Volunteer	Health Occupations Students of America SkillsUSA
<b>12</b>	English IV	Statistics	Anatomy & Physiology	Economics / Psychology	Health Occupations	Foreign Language	Internship Volunteer	Health Occupations Students of America SkillsUSA

## Postsecondary Options

Area Career Center	Community College or Technical School	Four-Year College or University	Others
Certified Nursing Assistant	Associate's Degree in Nursing	Nursing	Apprenticeship
Licensed Practical Nurse	Dental Hygienist	Athletic Trainer	Military
Dental Assisting	Occupational Therapy Assistant	Dentist	On-the-Job Training
Emergency Medical Technician	Paramedic	Dietetics	
Medical Laboratory Technician	Physical Therapy Assistant	Healthcare Administration	
	Respiratory Care	Physical Therapy	
		Physician	

# Personal Plan of Study

**SAMPLE**

**Name:** Michelle Smith

**School:** Anywhere High School

**Postsecondary Goal:** Associate's Degree in Sustainable Agriculture, with possible study toward a bachelor's or graduate degree

**Career Path:** Natural Resources Agriculture

**Career Cluster:** Agriculture, Food and Natural Resources

**Career Pathway:** Plant Systems

	English	Math	Science	Social Studies	Career Education	Other Courses	Work-Based Learning	Additional Activities
<b>7</b>	Reading Language Arts	Math 7	Life Science	Social Studies	Industrial Technology	Music Exploratory Courses	Job Shadowing Volunteer	Girl Scouts
<b>8</b>	Language Arts	Math 8 Probability & Statistics	Earth Science	American History	Family & Consumer Science Career Exploration	Music Art Computer Applications	Volunteer Home Gardening	Girl Scouts
<b>9</b>	English I	Algebra	Physical Science	Geography / State History	Agricultural Science I	Health / P.E.	Job Shadowing Volunteer	FFA Other HS Activities
<b>10</b>	English II	Geometry	Biology I	World History	Agricultural Science II	Health / P.E. Fine Arts	Service Learning After-School Employment Volunteer	FFA Other HS Activities
<b>11</b>	English III	Algebra II	Chemistry	U.S. History	Agricultural Communications Conservation of Natural Resources	Personal Finance	Internship Volunteer	FFA Other HS Activities
<b>12</b>	English IV	Trigonometry or Pre-Calculus	Environmental Science	Economics / Government	Forestry Management Agricultural Cooperative Education Experience	Foreign Language	Supervised Agricultural Experience Internship Volunteer	FFA Other HS Activities

## Postsecondary Options

Area Career Center	Community College or Technical School	Four-Year College or University	Others
Farm Diesel Equipment	Agricultural Business	Agricultural Business Management	Apprenticeship
Horticulture	Agricultural Mechanics	Agricultural Education	Military
	Custom Application Technology	Food Science and Nutrition	On-the-Job Training
	Farm Management	Forestry	
	Horticulture		
	Sustainable Agriculture		

# Connecting What, How and Who

5 Secondary schools' instruction should prioritize foundation knowledge and skills for career preparation above job preparation.

6 Industry-verified standards should serve as a benchmark for career and technical education.

The Career Clusters framework is about making connections, with more interaction among state agencies, local schools, colleges, technical centers and businesses. In fact, at its core, the Career Clusters framework is based on connections among what, how and who. The Career Clusters framework seeks to join what should be taught with how it should be taught with the student who is learning in the classroom.

### What Should Be Taught

Local control in education is very important to Missourians, and it is an important aspect of the Career Clusters framework. Initiated at the national level, the Career Clusters framework provides a wealth of information about educational opportunities and foundational knowledge and skills for more than 80 different groups of occupations. These nationally-validated knowledge and skill statements provide a powerful tool for educators and business people. However, what suits the nation as a whole might not necessarily fit the state of Missouri or local school systems. The Career Clusters framework establishes a common framework but also allows and assumes local customization.

In addition to specific technical skills, the Career Clusters framework establishes a broad range of foundational knowledge and skills that are important for each group of occupations. Each occupational group includes statements of essential knowledge and skills within key topics that are consistently noted as important by business people and educators.

These foundation knowledge and skill topics include academic foundations; technical skills; problem solving and critical thinking; communications; information technology applications; ethics and legal responsibilities; leadership and teamwork; safety, health and environment; employability and career development; and systems. In today's workplace, workers must have skills and knowledge across these broad areas to remain successful.

### Family File

**My son loves working with his hands, but I have always planned for him to attend a four-year university. What should I do?**

Career exploration and planning are very important for personal fulfillment. Many occupations involve work that is hands-on and requires a four-year degree. Explore with your son the many postsecondary options open to him for hands-on careers that offer excellent pay, benefits and advancement opportunities. Parents should suggest ideas and support their child's career decisions, while allowing flexibility for further exploration and change.



### How It Should Be Taught

Research has shown that the instructional strategies teachers use can have a powerful impact on students retaining and applying the knowledge and skills learned in class.

The Career Clusters framework emphasizes the importance of students learning in context. Contextual teaching and learning is believed to improve student engagement, motivation and retention.

Several instructional strategies are available for teachers to infuse contextual teaching and learning into their classrooms, and relationships with local partners can quickly create exciting new hands-on opportunities for students to learn. In fact, some instructional strategies are well-suited to help students understand and master particular areas within the foundation knowledge and skill topics. Some important instructional strategies encouraged through the Career Clusters framework are listed on page 12.

### Who Is Being Taught

The Career Clusters framework values instruction that is personally meaningful to each individual student. To achieve this, the system involves a strong, escalating career development component with deep ties to classroom instruction. Career development should not be a once-a-year visit from the school counselor, but a collaborative, ongoing process among teachers, counselors, students and families.

Students should see a connection between what they are learning and their future lives. Also, students and their teachers should not only have a picture of what the students should learn, but they should also know the ways that students learn best. Each person favors certain learning styles: visual, auditory, kinesthetic or others. The Career Clusters framework emphasizes professional development for educators, both within a content specialty and in teaching strategies. It is important for teachers to understand the role of learning styles and ways to broaden instruction so all learners benefit.

# Essential Knowledge and Skills

3 Connections should be enhanced among secondary education, postsecondary education, businesses and economic development.

4 Rigorous and relevant academics are needed by all students, whatever their educational and career plans.

In addition to a general framework for collaboration and coordination, the Career Clusters framework provides educators with a set of essential knowledge and skills common to all occupational areas.

After business and educator groups met to develop the foundational knowledge and skills for each Career Cluster and subset Career Pathways, several common knowledge and skills were identified across all of the 16 clusters. These common knowledge and skills were later organized under ten key topic areas as the essential knowledge and skills.

The purpose of the essential knowledge and skills is to identify for educators and students the most important competencies needed across all occupations and career fields. These standards provide a second layer of expectations for all students, after individual state and local school district academic standards.

The essential knowledge and skill topics are academic foundations; technical skills; problem solving and critical thinking; communications; information technology applications; ethics and legal responsibilities; leadership and teamwork; safety, health and environment; employability and career development; and systems.

The Career Cluster framework is one among a number of national efforts spearheaded by the states to identify the skills and knowledge needed of high school graduates for college and career readiness. Another such effort is the Common Core State Standards Initiative to align math and language arts standards with college and career readiness goals among many of the states. Missouri's Show-Me Standards align closely with the Common Core standards.

Because the essential knowledge and skills statements were developed to layer on top of existing state academic standards, they mesh well with the implementation of Missouri's existing Show-Me Standards.

The individual Career Cluster knowledge and skill statements provide an additional, more focused layer on top of the essential skills and state and local standards.

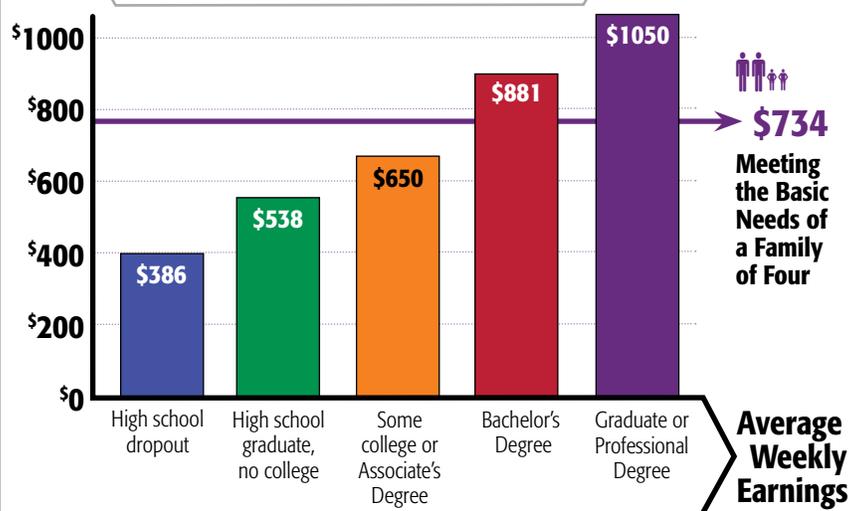
Following this, the Career Pathway knowledge and skills statements represent an additional higher, more specific layer of standards for education based on workplace needs.

Many of the essential skills represent problem solving, critical thinking, listening, presentation, teamwork and information technology knowledge and skills widely valued by employers.

These knowledge and skills statements represent a solid benchmark for educators who plan and develop curriculum, to guarantee that college and career readiness goes beyond the raw academics of mathematics and communication arts to encompass skills routinely cited by employers as essential.



## What's a Week Worth?



**PLANNING FOR THE FUTURE.** You need to think about what you expect your life to be like in 10 to 15 years. Does your chosen career path and potential job prospects match those expectations? Many young people expect to get married and raise their own family. When you think about your future career, think about the life that you want to go along with it and whether your career plans will match your expected financial needs and desires. Dig into the data. What do you expect as a starting job when you finish your education, and where do you hope to wind up in your career?

The data for the needs of a family of four comes from MERIC's Self-Sufficiency data for Moniteau County, a median county for the state of Missouri in 2009. Weekly income data is based on annual income divided into 12 four-week months.

Sources: U.S. Census Bureau, American Community Survey (2009) and Missouri Department of Economic Development (2009)

# Bridging School and Work

3 Connections should be enhanced among secondary education, postsecondary education, businesses, and economic development.

7 School reform is needed to prepare students for success in the 21st-century workplace.



Communities and local businesses not only have an important role to play for schools implementing the Career Clusters framework, they are needed to make it work. A primary mission of any school implementing the Career Clusters framework is to better prepare students for their future lives, including their careers.

Career development must transform from a once-a-year event paired with course scheduling to a yearlong process of discovery and investigation to which academic and career and technical instruction are applied. Students and educators need to have first-hand observation and participation in the workplace, as well as feedback on student outcomes from the community and business people.

## Family File

**My 7th-grade daughter does well in school, but she has no interest in thinking about future careers. How do I stimulate interest?**

Start by showing her the relationship between her favorite classes and possible careers. This might also be a good time to introduce work-based learning activities, such as workplace visits and job shadowing.

Fostering interest and understanding of various careers can be an important role for community and business people. While students take many cues for career development from their family, it can be very helpful to create opportunities for them to learn from other caring adults in their career fields of interest.

Community members, business people and school leaders looking to foster community ties to improve education should keep in mind a few guiding principles as they consider the possibilities.

### 1. Don't wait to be asked!

Community members and business people interested in offering job shadowing, mentoring or curriculum advisement should contact their local school and ask to participate.

### 2. It takes more than just parents.

Family participation in school activities is vital, but volunteers who do not have children in school send a strong message about how they, and the community at large, value education and today's students.

### 3. There are many ways to get involved.

Community and business members can participate in many ways, depending on their interests and time available. Activities include job shadowing, mentoring, internships, speakers for career fairs, field studies at local businesses, educational advisory committees, panels to assess student projects, student organization chaperones and assistants, and more.

### 4. Everyone has an important story to tell to help students with career exploration and planning.

Many people may be surprised how their personal story of career transitions and decisions can be an inspiration or lesson to today's students. Share your story! You could help a student make a plan to realize his or her dreams, and you might learn something about yourself in the process.

Business people are essential in making sure tomorrow's workers understand the needs of the workplace. Equally important, business people can show students how to effectively balance their future roles related to work, family and community. For their time invested with students, employers can expect a better prepared, more productive workforce in return.

# Important Ideas for Career Clusters

**Career Clusters:** Missouri uses 16 Career Clusters as a way of organizing occupations and careers to assist educators in tailoring rigorous coursework and related activities for all students. Instruction and other learning experiences organized by Career Clusters offer students core academics and other activities that match student skills and interests. All occupations are included in the Career Clusters framework, even those not usually found in career and technical education. Career Clusters may be used beginning in grades 7, 8 or 9, and can continue as a framework for educational planning through postsecondary education.

**Career Pathways:** Occupations within a Career Cluster are further arranged according to shared commonalities such as skill sets or common roles. This arrangement is called a Career Pathway. Each cluster contains two to seven Career Pathways. Career Pathways assist educators in the development of a coordinated and non-duplicative sequence of courses that identifies both secondary and postsecondary education elements.

**Contextual Learning:** Contextual learning occurs in close relationship with actual experience. Contextual learning enables students to test theories with tangible, real-world applications.

**Career Paths:** Missouri has identified six Career Paths to help elementary and middle school students become aware of and explore careers in a logical and meaningful way. As students become more vocationally mature, they have the opportunity to further their exploration through one or more of the Career Clusters which are incorporated into the Career Paths.

**Knowledge and Skill Statements:** Knowledge and skill statements represent the knowledge and skills, both academic and technical, that all students should achieve for a given career area. There are knowledge and skill statements for both the broad Career Clusters and the narrower Career Pathways. Career Pathway knowledge and skill statements represent the knowledge and skills, both academic and technical, necessary to pursue a full range of career opportunities within a Career Pathway.

**Personal Plan of Study:** A personal plan of study is a student's scope and sequence of coursework from sixth grade through two years of postsecondary education or training. It related activities based upon the student's chosen Career Path or Career Cluster. The foundation of the personal plan of study is the school-approved program of study for the student's Career Cluster. It is a map that includes graduation requirements, approved coursework for the student's educational and career goals, and developmentally-appropriate, work-based learning experiences. A personal plan of study is developed cooperatively with the student and the student's counselor, teachers and family. The plan is reviewed at least annually and is revised as needed.

**Portfolio:** A portfolio is a purposeful selection of completed work that highlights a student's educational and career performance and interests over time. Instructors report that the portfolio process can increase collaboration with students, provide an alternative means of observing student progress, drive program improvement, and help teachers manage curricula.

**Program of Study:** A program of study is the full range of activities, documents and processes that make up a seamless educational program from school to school within a given cluster or pathway. Each program of study should include a three-part curriculum framework extending from secondary to two-year and four-year postsecondary education.

**Service Learning:** With the teacher as facilitator, students use knowledge and skills learned in school to find and apply solutions to real community problems. This requires students to plan, complete, reflect and celebrate what they have learned and how they used what they learned to improve their community.

**Work-Based Learning:** Work-based learning experiences include career fairs, job shadowing, workplace or career mentoring, field studies, on-the-job learning, clinical rotations, clinical experiences, internships, apprenticeships, and externships.

## For More Information:

Missouri Department of Elementary  
and Secondary Education  
Office of College and Career Readiness  
P.O. Box 480  
Jefferson City, MO 65102-0480  
ph (573)751-2660 • fax (573)526-4261  
[www.dese.mo.gov](http://www.dese.mo.gov)

Missouri Center for Career Education  
University of Central Missouri  
T.R. Gaines 302  
Warrensburg, MO 64093  
(660)543-8768  
[www.mcce.org](http://www.mcce.org)



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Missouri's Career Clusters framework is based on the States' Career Clusters Initiative. For more information on this national career development effort, visit the website at [www.careerclusters.org](http://www.careerclusters.org). This booklet was prepared for the Department of Elementary and Secondary Education by the Missouri Center for Career Education.



# MissouriConnections.org

Connect to Your Future



## MissouriConnections.org is an Internet-based one-stop shop for:

- Self-awareness assessments
- Career assessment and awareness
- Educational and occupational exploration
- Postsecondary planning
- Career preparation and management
- Job placement

## Missouri Connections provides:

- Interactive career exploration features
- Awareness of the 6 Career Paths and 16 Career Clusters
- Tools for creating a plan of study based on Missouri courses and requirements
- Expanded information on educational options and degree choices after high school
- Information on postsecondary education and career options
- Administrative options for schools to upload course lists and customized career plans of study
- Parents section to answer questions on career planning, preview the system's features, learn about career exploration, and more

## Sponsored by the Missouri Department of Elementary and Secondary Education.

## For more information, contact:

- State Trainer – Jackie Coleman, [jcoleman@motrainer.com](mailto:jcoleman@motrainer.com), (573)634-0043
- Program Management – Tom Schlimpert, [Tom.schlimpert@dese.mo.gov](mailto:Tom.schlimpert@dese.mo.gov), (573)751-6875
- Technical Support – [cishelp@uoregon.edu](mailto:cishelp@uoregon.edu), (800)553-2252



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