



Participant Workbook

Understanding the Career Clusters Framework

Welcome!



The **Program of Study Implementation Toolkit** offers four, self-paced modules that provide information about the essential elements for beginning the process required under the Carl D. Perkins Act. Each module is designed to provide awareness of the specific topic while reinforcing the interrelation of all four topics and their connection to successful development of programs of study.

Module topics include:

- Facilitating Successful Student Transitions
- Understanding the Career Clusters Framework
- Infusing Rigor, Relevance, and Relationships in Academic and Career Education
- Integrating Career and Academic Education

What's in Your Toolkit

Downloadable and reproducible materials include a Participant Workbook and Participant Evaluation. It is important for you to download and print these materials to use while viewing the presentation online.

The **Participant Workbook** materials supplement the PowerPoint slides for each module. You will need to refer to your workbook throughout the module. The workbook includes note pages for the PowerPoint slides and the exercises to be completed as well as handouts related to the exercises and for further reading. **Appendices** included in the workbook provide an overall **glossary** of terms used in all four modules as well as a list of **resource links** with brief explanations as to what information each offers.

Please complete the **Participant Evaluation**, either by **downloading** the pdf version or by filling out and submitting the online version. Both can be accessed at www.mcce.org. Your feedback assists the Missouri Center for Career Education in future development of materials for educators.

Where to Find Additional Assistance

For additional assistance, contact MCCE at 660-543-8768 or www.mcce.org. MCCE Career Education Coordinators and/or Missouri Tech Prep Coordinators may be available (as their schedules permit) to present Career Clusters Framework Toolkit modules.

Other professional development services, ranging from two-hour presentations to full-day workshops to year-long residency programs, are available through MCCE for an affordable fee.

Understanding the Career Clusters Framework – Participant Workbook

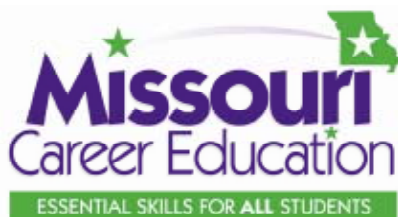
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Module Slides



Module Slides



Understanding the Career Clusters Framework







Table of Contents

- Defining Career Clusters Framework Elements
- Understanding the Need for the Career Clusters Framework
- Developing Programs of Study
- Creating Personal Plans of Study
- Implementing the Career Clusters Framework


1

Module Objectives



This module will help you:

- Clarify the purpose of the Career Cluster Framework
- Identify and define the elements of the Career Clusters Framework
- Explain the Career Cluster Framework and function
- Advise students on determining a career cluster pathway and how it applies to his/her own personal plan of study
- Help students construct personal plans of study relating to a career cluster
- Apply career cluster concepts to personal plans of study



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Module Slides



Module Overview



- Defining Career Clusters Framework Elements
- Understanding the Need for the Career Clusters Framework
- Developing Programs of Study
- Creating Personal Plans of Study
- Implementing the Career Clusters Framework



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Defining Career Clusters Framework Elements



This section covers:

- What the Career Clusters Framework Accomplishes
- Elements of the Career Clusters Framework
- Definitions and Context for the Elements of the Career Clusters Framework

"Our job at the high school level is that students are ready, at the high school level, for a high-skill job or college."

Hans Meeder
U.S. Department
of Education

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Module Slides



What the Career Clusters Framework Accomplishes



- Supports success in the workplace, education, and life
- Prepares students for a broad range of career options:
 - Employment
 - Technical and postsecondary education
 - Lifelong learning
- Increases the ability to be student-centered, industry-focused, and performance-driven



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Elements of the Career Clusters Framework



1. To meet the **career development** needs of its citizens, Missouri uses a collaborative process, which yields a **program of study** based on **16 career clusters** derived from **6 career paths**.
2. This **program of study** is used to develop an individual student's **personal plan of study**.
3. The Career Clusters Framework calls upon us to:
 - A. Integrate academic and technical **knowledge and skills** across the career development spectrum
 - B. Infuse **rigor, relevance**, and **relationships** into learning using defined **performance elements** and **measurement criteria**
 - C. Facilitate seamless **transitions** from secondary to post-secondary learning environments



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Module Slides



Definitions & Context

- **Career Development** — Self-development over the life span through the integration of life roles, settings, and events
- **Career Path** — A broad category of curricula and educational activities targeted at a student's academic and career goals
- **Career Clusters** — An organizing framework that groups occupations and careers based on common knowledge and skills
- **Career Pathway** — Listing of occupations that share advanced technical skills and/or common roles within a career cluster



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Transitions, Achievement, and the Career Clusters Framework



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- Education & Training
- Government & Public Administration
- Hospitality & Tourism
- Law, Public Safety, Corrections & Security
- Human Services



1

There are three career pathways in the Architecture/Construction career cluster that indicate groupings of occupations within a cluster: Design/Pre-Construction, Construction, Maintenance/Operations.



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Careers in developing, managing, building and maintaining the built environment:

Cluster	Occupational Skills	Related Occupations	Related Occupations
Architecture/Construction Cluster	<ul style="list-style-type: none"> Architectural Design: Develop and create architectural designs and drawings. Architectural Drafting: Create detailed technical drawings and plans for construction projects. Architectural Rendering: Create realistic visual representations of architectural designs. Architectural Site Planning: Develop site plans and layouts for buildings and infrastructure. Architectural Surveying: Measure and map land and structures for construction projects. Architectural Estimating: Calculate the costs of materials and labor for construction projects. Architectural Project Management: Manage the construction process from start to finish. Architectural Construction: Build and construct buildings and structures. Architectural Maintenance: Maintain and repair buildings and structures. Architectural Restoration: Restore and preserve historic buildings and structures. Architectural Preservation: Preserve and protect historic buildings and structures. Architectural Conservation: Conserve and protect natural and cultural resources. Architectural Planning: Plan and develop land use and infrastructure. Architectural Engineering: Apply engineering principles to architectural design and construction. Architectural Science: Apply scientific principles to architectural design and construction. Architectural Technology: Apply technology to architectural design and construction. Architectural Business: Manage the business aspects of architectural practice. Architectural Law: Apply legal principles to architectural practice. Architectural Ethics: Apply ethical principles to architectural practice. Architectural Communication: Communicate effectively with clients and stakeholders. Architectural Collaboration: Collaborate with other professionals in the industry. Architectural Leadership: Lead and inspire others in the industry. Architectural Innovation: Develop new and creative solutions to architectural problems. Architectural Sustainability: Design and construct sustainable buildings and structures. Architectural Safety: Ensure the safety of buildings and structures. Architectural Quality: Ensure the quality of buildings and structures. Architectural Professionalism: Conduct oneself professionally in the industry. Architectural Lifelong Learning: Continue to learn and grow throughout one's career. 	<ul style="list-style-type: none"> Architect Architectural Draftsperson Architectural Renderer Architectural Site Planner Architectural Surveyor Architectural Estimator Architectural Project Manager Architectural Construction Worker Architectural Maintenance Worker Architectural Restoration Worker Architectural Preservation Worker Architectural Conservation Worker Architectural Planner Architectural Engineer Architectural Scientist Architectural Technologist Architectural Business Manager Architectural Lawyer Architectural Ethicist Architectural Communicator Architectural Collaborator Architectural Leader Architectural Innovator Architectural Sustainability Specialist Architectural Safety Specialist Architectural Quality Specialist Architectural Professional Architectural Lifelong Learner 	<ul style="list-style-type: none"> Architectural Design Architectural Drafting Architectural Rendering Architectural Site Planning Architectural Surveying Architectural Estimating Architectural Project Management Architectural Construction Architectural Maintenance Architectural Restoration Architectural Preservation Architectural Conservation Architectural Planning Architectural Engineering Architectural Science Architectural Technology Architectural Business Architectural Law Architectural Ethics Architectural Communication Architectural Collaboration Architectural Leadership Architectural Innovation Architectural Sustainability Architectural Safety Architectural Quality Architectural Professionalism Architectural Lifelong Learning

These are the **occupations** of the Architecture/Construction Cluster pathway. This framework gives learners a picture of how many options are available to them within a specific career cluster.



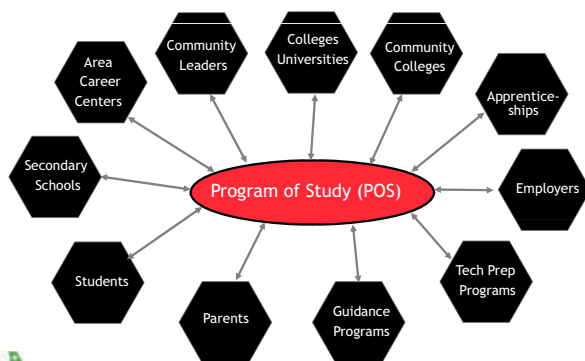
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- **Program of Study** — Coherent, rigorous, and relevant content aligned with challenging academic standards in a coordinated, non-duplicative progression of courses that align secondary education with postsecondary education
- **Personal Plan of Study** — A student’s scope and sequence of coursework and co-curricular experiences based on chosen educational and career goals; relies on the school’s implementation of a program of study

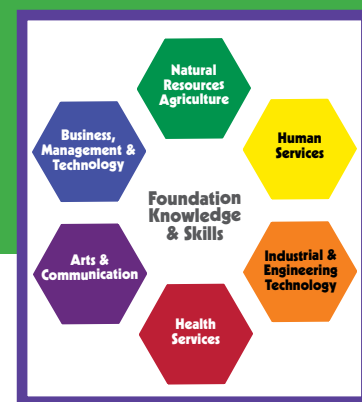


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Module Slides



Definitions & Context, Continued

- **Rigor** — Learning experiences in which students demonstrate a thorough, in-depth mastery of challenging tasks that foster cognitive skills
- **Relevance** — Learning experiences in which students apply core knowledge, concepts, or skills to solve real-world problems
- **Relationships** — Four critical learning connections formed in schools: (1) Among students, parents, peers; (2) Among staff members; (3) Among teachers with others in their profession; and (4) Between the school and the community (parents, businesses, community leaders)



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Definitions & Context, Continued

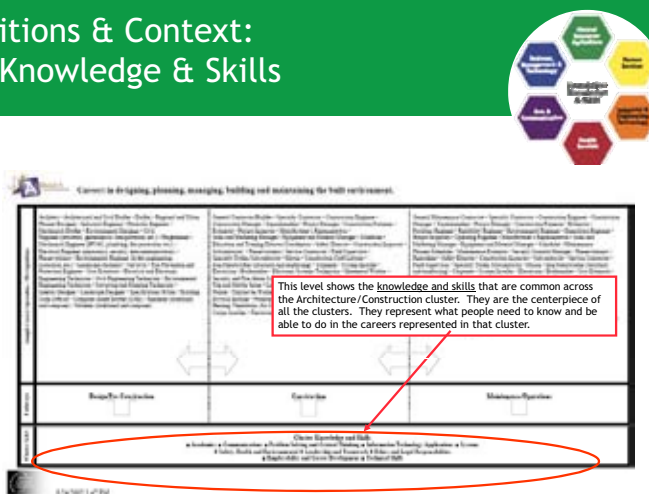
- **Knowledge and Skills** — What people need to know and be able to do in specific careers. Focused, career-based learning integrates grade-appropriate, career-based activities with classroom instruction to apply and advance their knowledge in academic areas while learning occupational skills.
- **Performance Elements** — Measurable instructional components that represent a single outcome behavior, support knowledge and skills statements, reflect high expectations/rigor, and use all levels of Bloom's Taxonomy, as appropriate
- **Measurement Criteria** — Items under each performance element that clarify what is to be measured and level of performance expected



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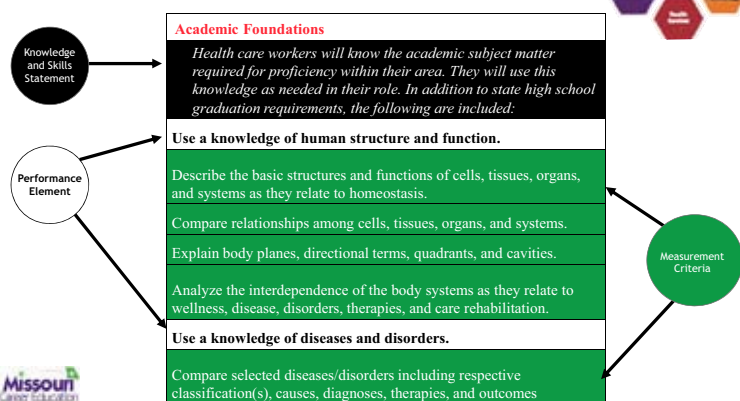
Definitions & Context: Core Knowledge & Skills



This level shows the knowledge and skills that are common across the Architecture/Construction cluster. They are the centerpiece of all the clusters. They represent what people need to know and be able to do in the careers represented in that cluster.

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Definition & Context: Performance & Measurement Criteria Sample



Module Slides



Definitions & Context, Continued



- **Transitions** — The successful advancement of students from:
 - Middle school to secondary school
 - Secondary to postsecondary education
 - Postsecondary education to the world of work



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Exercise 1: Matching Jobs to Clusters and Paths



Objective: Identify which career clusters and paths best lead a student to become eligible for one of today's "in-demand" occupations in Missouri.

Instructions: Using the handout on pages 33-41 of your workbook ("In-Demand Careers - Missouri"), select **two** occupations from the list. Now, identify the career cluster and path that matches the occupations you selected. Write your answers in the spaces provided on page 29 of your workbook.

Next-Step Activity:
Share this handout with students and/or staff with whom you interact in the next two weeks, helping them identify career clusters, paths, pathways, and knowledge/skills applicable to those occupations they select.



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"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."

- National Center for
Public Policy &
Higher Education
(2004) Missouri
Department of
Higher Education
(2006)**

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Vocational (Then)	Career/Technical (Now)
For a few students	For all students
For a few “jobs”	For all “careers”
6–7 “program areas”: programs	16 clusters-81 pathways: courses
In lieu of academics	Aligns with and supports academics
High school focused	High school and postsecondary partnership



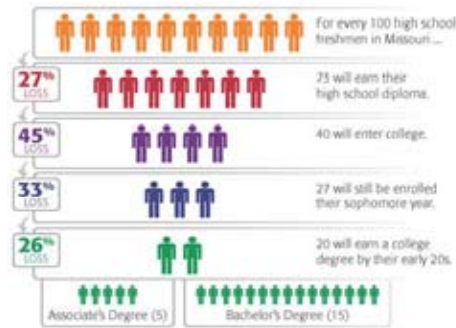
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Module Slides



Addressing Decreasing Educational Achievement

Schools must do more to help students bridge transitions between educational environments and to assist students through their first year and into their subsequent years in a new school setting.



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Replacing Remediation with Rigor & Relevance

- **68%** of high school students graduate across the U.S.
 - **63%** take remediation courses at community colleges.
 - **50%** are less likely to graduate if in one remediation course.
 - **43%** are in remediation courses at a four-year institution.
-
- Overall, **36.4%** of Missouri students take remedial coursework in college. Of those:
 - **78.9%** are students at two-year institutions
 - **21.1%** are students at four-year institutions



(Source: Ann Benson, Career Clusters Conference, 2007)

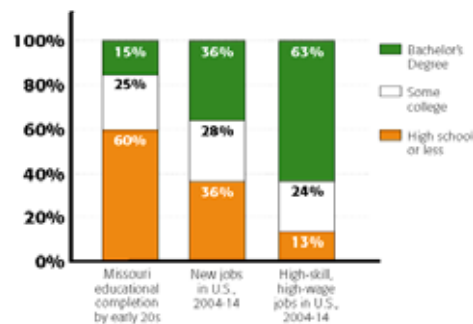
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Module Slides



Addressing Decreasing Educational Achievement

Academic and career educators must work together to help students see relevancy and connections between what they learn today and how they will earn a living in the future.



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Career Clusters Benefit Educational Systems

- Reduce the need for remedial studies in college
- Increase enrollment and persistence in postsecondary education
- Raise academic and technical achievement in high school and college
- Increase the percentages of students receiving postsecondary degrees, certificates, or other recognized credentials
- Improve students' chances of getting good jobs and pursuing further education



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Module Slides



Benefits for Educators

- More engaged learners
- Broader community support
- Structure for true integrated teaching and learning
- Enhanced achievement for all students
- Makes teaching fun by applying all knowledge – both academic and technical



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Benefits for Employers

- Seamless pipeline of well-qualified workers
- Adaptable workforce able to meet changing needs
- Meaningful engagement with the school system
- Effective framework for cross-training or re-tooling the workforce



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Module Slides





Developing Programs of Study

This section covers:


- Understanding what Constitutes a Program of Study
- Identifying Program of Study Components
- Incorporating Career-related Educational Opportunities

"For too long, educational institutions at different levels have tried to connect disparate pieces rather than create a unified whole. This band-aid approach to connecting disjointed pieces is unacceptable."

Debra Bragg
Debra Mills

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Understanding What Constitutes a Program of Study

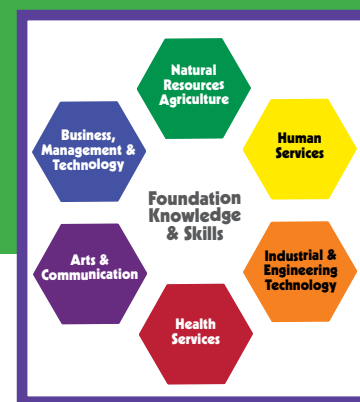


Developing the program of study results in documentation featuring:

- A **sequence of courses**, both academic and CTE/career field, that connects students' high school and postsecondary educational experiences
- A **course curriculum** for the CTE/career pathway courses based on knowledge and skill statements

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Module Slides



Identifying Program of Study Components

- Based on *Career Pathways: Education with a Purpose* by CORD
- Includes Four Components:
 1. **A 4 + (2 + 2) Articulation Model** — A curriculum framework designed for 4 years of high school, 2 years of community college, and 2 years of baccalaureate college
 2. **Secondary** — Career and technical course competency aligns with Show-Me Standards and Grade Level Expectations
 3. **Postsecondary** — Alignment and/or articulation; preparation for high-skill, high-wage, or high-demand careers with multiple exit points
 4. **Business** — Work-based learning experiences, business/industry advisory roles, teacher mentoring, etc.



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Sample Program of Study: Documenting the Process

[illegible]

34

- 

[illegible]


Instructions: Using the space provided in your workbook on page 30, complete the following:

- Next-Step Activity:**
Determine two or three people within your district/community who are involved in developing dual credit/dual enrollment programs. Discuss your list of areas where these programs need to be developed and what actions you might be able to take to support that development.


[illegible]

Module Slides





Creating Personal Plans of Study



This section covers:


- Understanding the Personal Plan of Study
- Taking Action to Develop a Personal Plan of Study

"A student's Personal Plan of Study should reflect a Program of Study, but it should also be individualized for that student's interests."

Bragg Stanley


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Understanding the Personal Plan of Study



A Personal Plan of Study:

- Is a tailored plan based on a defined Program of Study
- Represents a coherent, articulated sequence of rigorous course work
- Addresses the student's educational and career goals
- Meets state academic standards and GLEs
- Meets state graduation requirements



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Module Slides



Understanding the Personal Plan of Study



- Identify interests and abilities
- Utilize in-place programs of study to match student interest/abilities to a career pathway
- Involve counselors, educators, students, and parents in developing the plan of study
- Review the plan annually and adjust as necessary to reflect changes in a student's career plan



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Implementing the Career Clusters Framework



This section covers:

- What Research Says Career Clusters Can Do
- Recommendations for Implementation in Missouri
- Resources for Further Study

"More and more young people emerge from high school ready neither for college nor for work..."

David P. Gardner,
A Nation at Risk,
1983

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Module Slides



Understanding the Personal Plan of Study



- Identify interests and abilities
- Utilize in-place programs of study to match student interest/abilities to a career pathway
- Involve counselors, educators, students, and parents in developing the plan of study
- Review the plan annually and adjust as necessary to reflect changes in a student's career plan



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Implementing the Career Clusters Framework



This section covers:

- What Research Says Career Clusters Can Do
- Recommendations for Implementation in Missouri
- Resources for Further Study

"More and more young people emerge from high school ready neither for college nor for work.."

David P. Gardner,
A Nation at Risk,
1983

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Module Slides



What Research Says Career Clusters Can Do



- Reinforce high expectations for all students
- Provide a rigorous and relevant core curriculum to match expectations
- Personalize the school environment
- Establish partnerships with community partners, higher education, and families
- Align curricula with state content standards and benchmarks



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Recommendations for Implementation in Missouri



1. **Focus on School Career Guidance and Counseling** — Make sure all students (grades 9-16+) are following a personal plan of study.
2. **Focus on Rigor, Relevance, and Relationships in School Curricula** — Make all career-themed instruction more intellectually demanding.
3. **Focus on Student Transitions** — Link instruction to careers and postsecondary education. What will the learners need in 10-15 years?
4. **Focus on High Quality Professional Development** — Practicing educators need the knowledge, skills, and available resources to best integrate contextual learning methodology to meet the demands of today's workforce.



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Module Slides



Resources for Further Study



- www.missouriconnections.org
- www.Careerclusters.org
- www.MCCE.org
- www.going2college.org
- www.acrnetwork.org
- www.DESE.mo.gov
- www.edutopia.org
- www.missourieconomy.org
- www.thefutureschannel.com



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Exercise 3: Developing a Personal Action Plan



Objective: Identifying “next steps” in a specific district or community for implementing the Career Clusters Framework.

Instructions: Using the space provided in your workbook on page 31, complete the following:

1. For a specific career cluster, think of possible opportunities in your area for gaining direct occupational exposure for you and secondary students.
2. List at least three businesses, institutions, or individuals to contact about gaining that exposure.
3. Identify within that cluster three ways current academic instruction might best incorporate problem-based learning in real-world environments.



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Next-Step Activity:

Identify those in your district or community also involved in career education (e.g., parents, educators, counselors, business leaders). Arrange an informal gathering with those you identified to get feedback on the ideas you developed in Exercise 3 and to brainstorm additional ideas for implementation.

Module Slides



Understanding the Career Clusters Framework: Module Review



- The Career Clusters Framework is a national program, adopted by the state of Missouri, to facilitate student transitions to their next level of education and/or to a chosen career.
- For every 100 high school freshmen in Missouri, 27 percent will not graduate, and only 20 percent will go on to earn a college degree by their early 20s. Yet through 2014, 63 percent of high-growth, high-wage jobs are expected to be filled by workers with a bachelor's degree or higher.
- The Career Clusters Framework is designed to improve students' chances of getting good jobs and pursuing further education by raising academic and technical achievement in high school and college.
- The Career Clusters Framework benefits educators through broader community support, more engaged learners, and a structure for true integrated teaching and learning. Furthermore, it makes teaching fun as teachers apply both academic and technical knowledge.



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Understanding the Career Clusters Framework: Module Review, Continued



- Employers benefit from a better pipeline of qualified workers able to adapt to the changing needs of the workplace. Employer collaboration with the school system also provides a framework for cross-training or re-tooling the workforce.
- The Career Clusters Framework produces more focused and engaged students who see the relevance of courses that are aligned with careers that interest them. This makes parents happy, too.
- The Career Clusters Framework is designed around core academic and technical skills that are foundational to all six career paths. Within each career path are clusters of career categories that enable student research and planning. Each cluster breaks down into occupations, each with its own set of knowledge and skill requirements.



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Module Slides



Understanding the Career Clusters Framework: Module Review, Continued



- A program of study is coherent, rigorous, and relevant content aligned with challenging academic standards in a coordinated, non-duplicative progression of courses that align secondary education with post-secondary education.
- A personal plan of study outlines a student's scope and sequence of coursework and co-curricular experiences based on chosen educational and career goals. Each student's personal plan of study is reviewed annually and adjusted as needed to reflect changes in the student's career goals.
- As Missouri implements the Career Clusters Framework, school systems are asked to focus on the following: (1) school career guidance and counseling, using personal plans of study; (2) rigor, relevance, and relationships in school curricula; (3) seamless student transitions, linking instruction to postsecondary education and careers; and (4) high-quality professional development for educators.



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"All faculty members must join the guidance counselor....guidance cannot do this alone."



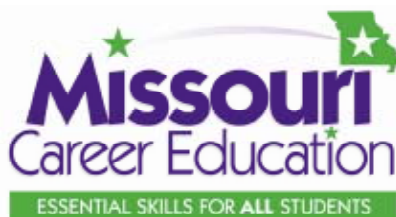
Ann Benson
Career Cluster's Conference
2007



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Module Exercises



Exercise 1: Matching Jobs to Clusters and Paths



Objective:

Identify which career clusters and paths best lead a student to become eligible for one of today's "in-demand" occupations in Missouri.

Instructions:

- Review the handout, "In-Demand Careers - Missouri" included on pages xx-xx.
- Select two occupations from the list.
- Identify the career cluster and path that matches the occupations you selected.
- Write your answers below.

Occupation	Career Cluster	Career Path

Next-Step Activity:

Share the "in-demand" occupations handout with students and/or staff with whom you interact in the next two weeks, helping them identify career clusters, paths, pathways, and knowledge/skills applicable to those occupations they select. Complete the following:

I used the "in-demand" occupations handout to discuss applicable career clusters, paths, pathways, and knowledge/skills with:

Contact 1: _____

Contact 2: _____

Exercise 2: Identifying Goals for Programs of Study



Objective:

To identify what secondary and postsecondary elements currently exist among institutions in a community/district for developing a specific career cluster program of study.

Instructions:

Using the space provided below, complete the following:

1. Select a career cluster popular with the students and/or staff members you interact with on a regular basis that leads to an industry-recognized credential, certificate, or degree.
2. Identify what articulated credit programs currently exist for secondary students to acquire postsecondary credits for that career cluster.
3. List areas where these programs need to be developed.

Selected Career Cluster: _____	
Existing Articulated Credit Programs	Articulated Credit Programs to be Developed

Next-Step Activity:

Determine two or three people within your district/community who are involved in developing articulated credit programs. Discuss your list of areas where these programs need to be developed and what actions you might be able to take to support that development.

I discussed existing and potential articulated credit programs with:

Contact 1: _____

Contact 2: _____

Contact 3: _____

Exercise 3: Developing a Personal Action Plan



Objective:

Identifying “next steps” in a specific district or community for implementing the Career Clusters Framework.

Instructions:

Using the space provided below, complete the following:

1. For a specific career cluster, think of possible opportunities in your area for gaining direct occupational exposure for you and secondary students.
2. List at least three businesses, institutions, or individuals to contact about gaining that exposure.
3. Identify within that cluster three ways current academic instruction might best incorporate problem-based learning in real-world environments.

Selected Career Cluster: _____	
Opportunities for Direct Occupational Exposure	Resources for Gaining Exposure
Strategies for Incorporating Problem-based Learning in Real-world Environments	
1. _____	
2. _____	
3. _____	

Next-Step Activity:

Identify those in your district or community also involved in career education (e.g., parents, educators, counselors, business leaders). Arrange an informal gathering with those you identified to get feedback on the ideas you developed in this exercise and to brainstorm additional ideas for implementation.

I obtained feedback from and brainstormed with:

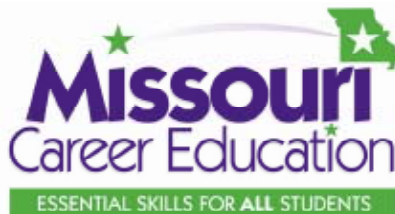
Contact 1: _____

Contact 2: _____

Contact 3: _____



Handouts



Missouri In-Demand Occupations



Occupation	Projected Need 2002-2012	Projected Growth	Annual Average Job Openings	Typical Education or Training
Registered nurses	12,010	0.24	2,250	Associate Degree
Customer service representatives	8,430	0.19	1,490	Moderate-Term On-The-Job Training
Truck drivers, heavy and tractor-trailer	7,470	0.17	1,480	Moderate-Term On-The-Job Training
General and operations managers	6,740	0.15	1,540	Bachelors or Higher Degree
Elementary school teachers, except special education	4,940	0.15	1,240	Bachelors or Higher Degree
Secondary school teachers, except special and vocational education	4,300	0.17	1,120	Bachelors or Higher Degree
Maintenance and repair workers, general	3,980	0.15	910	Moderate-Term On-The-Job Training
Medical assistants	3,940	0.58	520	Moderate-Term On-The-Job Training
Sales representatives, wholesale and manufacturing, except technical and scientific products	3,590	0.14	1,050	Moderate-Term On-The-Job Training
Carpenters	3,520	0.12	830	Long-term On-The-Job Training
Police and sheriff's patrol officers	3,390	0.29	640	Long-term On-The-Job Training
Cooks, restaurant	2,820	0.18	760	Long-term On-The-Job Training
Preschool teachers, except special education	2,690	0.24	400	License/Certification

Missouri In-Demand Occupations, Continued



Occupation	Projected Need 2002-2012	Projected Growth	Annual Average Job Openings	Typical Education or Training
First-line supervisors/managers of transportation and material-moving machine and vehicle operators	300	0.08	110	Work Experience
Telecommunications line installers and repairers	280	0.08	120	Long-term On-The-Job Training
Inspectors, testers, sorters, samplers, and weighers	250	0.03	240	Moderate-Term On-The-Job Training
Extruding and drawing machine setters, operators, and tenders, metal and plastic	240	0.1	100	Moderate-Term On-The-Job Training
Cabinetmakers and bench carpenters	240	0.06	130	Long-term On-The-Job Training
Insurance claims and policy processing clerks	230	0.04	120	Moderate-Term On-The-Job Training
Mechanical engineers	190	0.06	100	Bachelors or Higher Degree
Electrical power-line installers and repairers	160	0.06	100	Long-term On-The-Job Training
Payroll and timekeeping clerks	120	0.03	120	Moderate-Term On-The-Job Training
First-line supervisors/managers of non-retail sales workers	100	0.01	180	Work Experience

Missouri In-Demand Occupations, Continued



Occupation	Projected Need 2002-2012	Projected Growth	Annual Average Job Openings	Typical Education or Training
Accountants and auditors	2,650	0.12	670	Bachelors or Higher Degree
Construction laborers	2,590	0.15	490	Moderate-Term On-The-Job Training
Social and human service assistants	2,580	0.48	350	Moderate-Term On-The-Job Training
Computer systems analysts	2,490	0.24	370	Bachelors or Higher Degree
First-line supervisors/managers of retail sales workers	2,490	0.06	990	Work Experience
Dental assistants	2,460	0.47	390	Moderate-Term On-The-Job Training
Chief executives	2,420	0.15	550	Bachelors or Higher Degree
Licensed practical and licensed vocational nurses	2,420	0.13	640	License/Certification
First-line supervisors/managers of food preparation and serving workers	2,380	0.15	610	Work Experience
Electricians	2,230	0.19	460	Long-term On-The-Job Training
Computer support specialists	2,220	0.22	350	Associate Degree
Automotive service technicians and mechanics	2,200	0.12	710	License/Certification
Computer software engineers, applications	2,090	0.32	270	Bachelors or Higher Degree
Lawyers	2,080	0.18	360	Bachelors or Higher Degree
Network systems and data communications analysts	1,920	0.47	240	Bachelors or Higher Degree

Missouri In-Demand Occupations, Continued



Occupation	Projected Need 2002-2012	Projected Growth	Annual Average Job Openings	Typical Education or Training
Financial managers	1,910	0.16	370	Bachelors or Higher Degree
Sales managers	1,900	0.24	340	Bachelors or Higher Degree
First-line supervisors/managers of construction trades and extraction workers	1,800	0.17	360	Work Experience
Computer and information systems managers	1,750	0.29	280	Bachelors or Higher Degree
Medical records and health information technicians	1,710	0.39	230	Associate Degree
Network and computer systems administrators	1,620	0.3	220	Bachelors or Higher Degree
Fire fighters	1,600	0.26	340	Long-term On-The-Job Training
First-line supervisors/managers of production and operating workers	1,590	0.1	490	Work Experience
Personal financial advisors	1,530	0.52	190	Bachelors or Higher Degree
Medical and health services managers	1,480	0.27	250	Bachelors or Higher Degree
Emergency medical technicians and paramedics	1,470	0.28	210	License/Certification
Pharmacy technicians	1,420	0.27	210	Moderate-Term On-The-Job Training
Child, family, and school social workers	1,380	0.21	250	Bachelors or Higher Degree
First-line supervisors/managers of mechanics, installers, and repairers	1,360	0.13	390	Work Experience
Pharmacists	1,360	0.28	230	Bachelors or Higher Degree

Missouri In-Demand Occupations, Continued



Occupation	Projected Need 2002-2012	Projected Growth	Annual Average Job Openings	Typical Education or Training
Plumbers, pipefitters, and steamfitters	1,350	0.14	360	Long-term On-The-Job Training
Operating engineers and other construction equipment operators	1,340	0.15	360	Moderate-Term On-The-Job Training
Loan officers	1,310	0.2	240	Bachelors or Higher Degree
Recreation workers	1,300	0.21	270	Bachelors or Higher Degree
Middle school teachers, except special and vocational education	1,250	0.08	450	Bachelors or Higher Degree
Sales representatives, wholesale and manufacturing, technical and scientific products	1,200	0.15	330	Moderate-Term On-The-Job Training
Computer software engineers, systems software	1,180	0.36	150	Bachelors or Higher Degree
Executive secretaries and administrative assistants	1,150	0.04	610	Moderate-Term On-The-Job Training
Welders, cutters, solderers, and brazers	1,130	0.12	370	Long-term On-The-Job Training
First-line supervisors/managers of office and administrative support workers	1,130	0.04	790	Work Experience
Construction managers	1,120	0.15	250	Bachelors or Higher Degree
Self-enrichment education teachers	1,120	0.34	150	Work Experience
Heating, air conditioning, and refrigeration mechanics and installers	1,100	0.26	170	Long-term On-The-Job Training
Kindergarten teachers, except special education	1,090	0.26	160	Bachelors or Higher Degree

Missouri In-Demand Occupations, Continued



Occupation	Projected Need 2002-2012	Projected Growth	Annual Average Job Openings	Typical Education or Training
Management analysts	1,070	0.15	210	Bachelors or Higher Degree
Property, real estate, and community association managers	1,000	0.2	190	Bachelors or Higher Degree
Coaches and scouts	990	0.18	210	Long-term On-The-Job Training
Administrative services managers	960	0.15	220	Bachelors or Higher Degree
Dental hygienists	960	0.47	110	Associate Degree
Education administrators, elementary and secondary school	950	0.2	210	Bachelors or Higher Degree
Radiologic technologists and technicians	930	0.25	170	Associate Degree
Training and development specialists	920	0.2	160	Bachelors or Higher Degree
Paralegals and legal assistants	920	0.28	120	Associate Degree
Painters, construction and maintenance	910	0.11	210	Moderate-Term On-The-Job Training
Fitness trainers and aerobics instructors	910	0.26	170	License/Certification
Cement masons and concrete finishers	900	0.26	160	Moderate-Term On-The-Job Training
Clergy	840	0.14	210	Bachelors or Higher Degree
Securities, commodities, and financial services sales agents	840	0.16	140	Bachelors or Higher Degree
Physical therapists	810	0.28	110	Bachelors or Higher Degree
Bus and truck mechanics and diesel engine specialists	800	0.13	240	License/Certification

Missouri In-Demand Occupations, Continued



Occupation	Projected Need 2002-2012	Projected Growth	Annual Average Job Openings	Typical Education or Training
First-line supervisors/managers of housekeeping and janitorial workers	780	0.14	210	Work Experience
Legal secretaries	770	0.18	160	License/Certification
Medical secretaries	760	0.11	200	License/Certification
Public relations specialists	760	0.27	120	Bachelors or Higher Degree
Sheet metal workers	750	0.15	190	Moderate-Term On-The-Job Training
Food service managers	750	0.11	180	Work Experience
Claims adjusters, examiners, and investigators	750	0.14	140	Long-term On-The-Job Training
Database administrators	740	0.35	100	Bachelors or Higher Degree
Cost estimators	720	0.16	170	Work Experience
Mental health and substance abuse social workers	710	0.32	110	Bachelors or Higher Degree
Medical and public health social workers	680	0.25	110	Bachelors or Higher Degree
Machinists	670	0.07	280	Long-term On-The-Job Training
Medical transcriptionists	670	0.27	110	License/Certification
Medical and clinical laboratory technicians	650	0.15	180	Associate Degree
Respiratory therapists	640	0.32	130	Associate Degree
Insurance sales agents	640	0.07	270	Bachelors or Higher Degree
Marketing managers	630	0.14	140	Bachelors or Higher Degree
Social and community service managers	630	0.19	130	Bachelors or Higher Degree
Roofers	610	0.15	160	Moderate-Term On-The-Job Training

Missouri In-Demand Occupations, Continued



Occupation	Projected Need 2002-2012	Projected Growth	Annual Average Job Openings	Typical Education or Training
Medical and clinical laboratory technologists	610	0.18	160	Bachelors or Higher Degree
Musicians and singers	590	0.17	130	Long-term On-The-Job Training
Drywall and ceiling tile installers	580	0.22	120	Moderate-Term On-The-Job Training
Chefs and head cooks	580	0.15	170	Work Experience
Automotive body and related repairers	580	0.12	160	Long-term On-The-Job Training
Employment, recruitment, and placement specialists	570	0.14	120	Bachelors or Higher Degree
Educational, vocational, and school counselors	550	0.12	160	Bachelors or Higher Degree
Graphic designers	520	0.12	110	Bachelors or Higher Degree
Brickmasons and block-masons	500	0.11	120	Long-term On-The-Job Training
Structural iron and steel workers	500	0.17	110	Long-term On-The-Job Training
Computer programmers	480	0.04	330	Bachelors or Higher Degree
Dispatchers, except police, fire, and ambulance	470	0.1	150	Moderate-Term On-The-Job Training
Demonstrators and product promoters	470	0.16	110	Moderate-Term On-The-Job Training
Rehabilitation counselors	460	0.13	130	Bachelors or Higher Degree
Purchasing agents, except wholesale, retail, and farm products	420	0.1	150	Work Experience
Billing and posting clerks and machine operators	420	0.04	230	Moderate-Term On-The-Job Training
Industrial machinery mechanics	400	0.13	100	Long-term On-The-Job Training

Missouri In-Demand Occupations, Continued



Occupation	Projected Need 2002-2012	Projected Growth	Annual Average Job Openings	Typical Education or Training
Laundry and dry-cleaning workers	400	0.06	210	Moderate-Term On-The-Job Training
Industrial production managers	390	0.1	120	Bachelors or Higher Degree
Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	380	0.05	200	Moderate-Term On-The-Job Training
First-line supervisors/managers of police and detectives	380	0.18	110	Work Experience
Civil engineers	380	0.11	100	Bachelors or Higher Degree
Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic	370	0.1	130	Moderate-Term On-The-Job Training
Industrial engineers	360	0.1	120	Bachelors or Higher Degree
Slaughterers and meat packers	330	0.1	110	Moderate-Term On-The-Job Training
Engineering managers	330	0.09	100	Bachelors or Higher Degree
Bakers	320	0.1	110	Long-term On-The-Job Training
Vocational education teachers, secondary school	310	0.09	130	Bachelors or Higher Degree
First-line supervisors/managers of helpers, laborers, and material movers, hand	300	0.09	110	Work Experience
Librarians	300	0.08	120	Bachelors or Higher Degree

The diagram illustrates the six domains of the Foundation Knowledge & Skills framework, arranged in a circular pattern around a central hub. The central hub is labeled "Foundation Knowledge & Skills". The six domains are represented by colored hexagons:

- Natural Resources Agriculture** (Green hexagon, top)
- Human Services** (Yellow hexagon, top-right)
- Industrial & Engineering Technology** (Orange hexagon, bottom-right)
- Health Services** (Red hexagon, bottom)
- Arts & Communication** (Purple hexagon, bottom-left)
- Business, Management & Technology** (Blue hexagon, top-left)



Agriculture, Food & Natural Resources

Career Pathway Plan of Study for **▶ Learners** **▶ Parents** **▶ Counselors** **▶ Teachers/Faculty**

EDUCATION LEVELS	GRADE	English/ Language Arts	Math	Science	Social Studies/ Sciences	Other Required Courses Other Electives Recommended Electives Learner Activities	*Career and Technical Courses and/or Degree Major Courses for Agriculture Systems Pathway	SAMPLE Occupations Relating to This Pathway
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Interest Inventory Administered and Plan of Study Initiated for all Learners								
SECONDARY	9	English/ Language Arts I	Algebra I	Earth or Environmental Science	State History Civics	All plans of study should meet local and state high school graduation requirements and college entrance requirements. Supervised Agricultural Experience (SAE) and participation in appropriate FFA activities support and reinforce classroom and laboratory learning and should be a requirement for all students.	<ul style="list-style-type: none">• Introduction to Agriculture, Food and Natural Resources	Occupations Requiring Postsecondary Education <ul style="list-style-type: none">► Agricultural Chemical Dealer► Agricultural Products Buyer-Distributor► Bank/Loan Office► Dairy Herd Supervisor► Entrepreneur► Farm Manager► Farmer-Rancher-Feedlot Operator► Feed-Supply Store Manager► Field Representatives for Bank, Insurance Company or Government Program► Livestock Manager► Sales Manager► Salesperson
	10	English/ Language Arts II	Geometry	Biology	U.S. History		<ul style="list-style-type: none">• Introduction to Agricultural Marketing, Business and Entrepreneurship• Accounting• Agricultural Business Management	
	11	English/ Language Arts III	Algebra II or other math course	Chemistry or other science course	World History		<ul style="list-style-type: none">• Agricultural Economics• Internship in Agribusiness	
	College Placement Assessments Academic/Career Achievement Provided							
	12	English/ Language Arts IV	Statistics or other math course					
Articulation/Dual Credit Transcribed-Postsecondary courses may be taken/moved to the secondary level for articulation/dual credit purposes.								
POSTSECONDARY	Year 13	English Composition	Algebra	Chemistry	American Government	All plans of study need to meet learners' career goals with regard to required degrees, licenses, certifications or journey worker status. Certain local student organization activities may also be important to include.	<ul style="list-style-type: none">• Introduction to Agribusiness• Principles of Agribusiness• Agricultural Economics	Occupations Requiring Baccalaureate Degree <ul style="list-style-type: none">► Agricultural Commodity Broker► Agricultural Economist► Agricultural Educator► Agricultural Lender► Banker/Loan Officer► Farm Investment Manager► Produce Commission Manager
	Year 14	Speech/ Oral Communication		Biological Science or Botany	American History Geography		<ul style="list-style-type: none">• Agricultural Salesmanship• Agricultural Finance• Agricultural Advertising/Merchandising	
	Year 15	Technical Writing	Statistics		Psychology		<ul style="list-style-type: none">• Continue Courses in the Area of Specialization	
	Year 16		Continue courses in the area of specialization.				<ul style="list-style-type: none">• Complete Agribusiness Systems Major (4-Year Degree Program)	

Project funded by the U.S. Department of Education (V051B020001)



Sample Personal Plan of Study

PERSONAL PLAN OF STUDY

Career Path: Natural Resources/ Agriculture

Career Cluster: Agriculture, Food & Natural Resources

Career Pathway:

Date:	
Student Name:	
Student Signature:	
Advisor Signature:	
Parent/Guardian Signature (if required):	

High School					
9 th Grade	10 th Grade	11 th Grade	12 th Grade*		
English I	English II	English III	English IV		
Algebra I or Geometry	Geometry or Algebra II	Algebra II, Trigonometry or Pre-Calculus	Trigonometry, Pre-Calculus or Calculus		
Physical Science or Biology I	Biology I or Chemistry I	Chemistry I, Physics, or Environmental Science	Physics, AP Biology or Environmental Science		
Geography/State History	World History	American History	Economics/Government		
PE/Health or Fine Arts	PE/Health or Fine Arts		Personal Finance		
			Practical Art (if needed)		
Career Pathway Elective(s) Agricultural Science I Additional Coursework Foreign Language or Computer Technology	Career Pathway Elective(s) Agricultural Science II Additional Coursework Foreign Language or Computer Technology	Career Pathway Coursework: Agricultural Sales/Marketing/Management Agricultural Construction Agricultural Machinery Agricultural Management & Economics Agricultural Power I Agricultural Power II Agricultural Structures Animal Science Conservation of Natural Resources Crop Science			
		Career Pathway Coursework: Floriculture Food Science and Technology Forest Management Fruit and Vegetable Production Greenhouse Operation & Management Landscaping Nursery Operation & Management Processing/Marketing Forestry Products Supervised Agricultural Experience Co-op Turf Management			



The diagram illustrates the six pillars of the National Curriculum Framework for School Education, arranged around a central core. The central core is labeled "Foundation Knowledge & Skills". The six pillars are represented by colored hexagons:

- Natural Resources** (Green hexagon, top)
- Agriculture** (Green hexagon, top-left)
- Human Services** (Yellow hexagon, top-right)
- Industrial & Engineering Technology** (Orange hexagon, bottom-right)
- Health Services** (Red hexagon, bottom)
- Arts & Communication** (Purple hexagon, bottom-left)

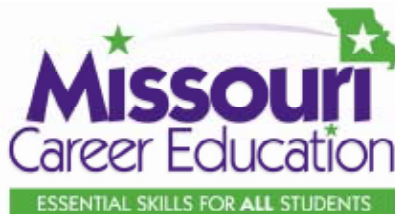
Business, Management & Technology is also listed as a pillar but is not represented by a hexagon in the diagram.

Adapted from National Career Cluster

Note: All Career and Technical Education courses count as a practical arts credit.



Participant Evaluation



Participant Evaluation



Understanding the Career Clusters Framework

Date: _____ **Your School District:** _____

Your Job Title: ☐ Administrator ☐ Teacher ☐ Counselor ☐ Other _____

Institution Type: ☐ Elementary ☐ Middle School ☐ Comprehensive High School
☐ Career Center ☐ Community College ☐ 4-Year College/University

Please rate each of the following statements.	Agree	Neutral	Disagree
1. The content was valuable and appropriate.			
2. The materials were sufficient to support the learning tasks and understanding of the topic.			
3. The content of this module will increase my knowledge and skills in my educational role.			

Complete the following statements.

4. With what I've learned from this module, I can help impact student achievement in my educational setting by:

5. I now have a better understanding of:

6. The knowledge or skill(s) I gained from this presentation will enable me to:

7. I would be interested in (mark all that apply):

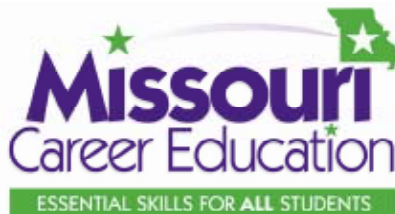
- ☐ Additional information about the content of this module.
☐ Follow-up training in respect to the content of this module.
☐ On-going technical implementation support in respect to the content of this module.

Please contact me at: _____

Comments:



Appendices



Appendix A: Glossary



- **Academic Standards** — Standards that address the understanding and competency students should attain
- **Active Learning Instructional Strategies** — Teacher facilitation of relevant learning tasks that challenge students to discover content in-depth and to apply facts, concepts, and procedures while analyzing, evaluating, and creating
- **Advanced Placement** — Rigorous courses designed to provide college-level coursework to secondary students; exemplary scores on the standardized Advanced Placement assessment may be awarded postsecondary credit
- **Articulation Agreements** — A written agreement between educational institutions that specifies the process by which a student may receive course credit or advanced standing for knowledge, skills, and abilities previously mastered at the sending institution as a result of aligned curriculum
- **Articulation Model** — An example of a standardized agreement between educational institutions where the receiving institution grants a student credit or advanced standing for knowledge, skills, and abilities previously mastered at the sending institution as a result of aligned curriculum
- **Capstone Experience** — A learning task in which students must integrate special studies with a major area of emphasis and extend, critique, and apply knowledge gained in the major
- **Career Clusters** — An organizing framework that groups occupations and careers based on common knowledge and skills
- **Career Development** — Self-development over the life span through the integration of life roles, settings, and events
- **Career Path** — A broad category of curricula and educational activities targeted at a student's academic and career goals
- **Career Pathway** — Listing of occupations that share advanced technical skills and/or common roles within a career cluster
- **Career-based Learning** — Structured learning experiences that integrate grade-appropriate, career-based activities with classroom instruction.
- **Character Education** — Educational programming that targets the development of positive human qualities in an individual that are good for both the individual and for society

Glossary, Continued



- **Dual Credit** — College-level courses taught on the high school campus by qualified instructors
- **Dual Enrollment** — College courses taken by high school students who must travel to the college campus for instruction
- **Emotional Intelligence** — The ability to perceive and express emotion, assimilate emotion in thought, understand and reason with emotion, and regulate emotion in the self and others (Mayer & Salovey, 1997)
- **High Schools That Work (HSTW)** — The first SREB school-improvement initiative, where Goals and Key Practices emphasize the importance of relationships for student success
- **Integration** — The process of combining rigorous academic content and real world applications in a seamless and meaningful way
- **International Baccalaureate** — A program offering rigorous curriculum that emphasizes development of inquiry, knowledge, and intercultural understanding and respect and allowing secondary IB students completing a two-year program of studies to qualify for a prestigious IB diploma recognized by universities worldwide
- **Internship** — Any formal program (with or without course credit) that provides practical experience for beginners in an occupation or profession; courses that often provide specific training plans and assignments to enhance the practical experience and are supervised by a trained, certificated instructor and an employer
- **Job Shadowing** — The act of observing a person engaged in everyday on-the-job activities to learn about the person's career choice and if it is appealing to the observer; typically a short-term experience, which sometimes involves the observer in some job tasks
- **Knowledge and Skills** — What people need to know and be able to do in specific careers, which integrates grade-appropriate, career-based activities with classroom instruction to apply and advance student knowledge in academic areas while learning occupational skills
- **Making Middle Grades Work** — A middle school initiative of the Southern Regional Education Board (SREB)
- **Measurement Criteria** — Items under each Performance Element that clarify what is to be measured and level of performance expected
- **Mentoring** — A formal process through which an experienced person (mentor) provides support and guidance to a less experienced colleague (mentee/protégé)

Glossary, Continued



- **Model Schools Initiative** — A program that furthers the aim of increasing rigor, relevance, and relationships in educational institutions with member schools demonstrating student success
- **Performance Elements** — Measurable instructional components that represent a single outcome behavior, support knowledge and skills statements, reflect high expectations/rigor, and use all levels of Bloom's Taxonomy, as appropriate
- **Performance Standards** — Standards that identify what a student needs to do to demonstrate the knowledge and skills required to meet achievement indicators
- **Personal Plan of Study** — A student's scope and sequence of coursework and co-curricular experiences based on chosen educational and career goals; relies on the school's implementation of a Program of Study
- **Problem-based Learning (PBL)** — Focused, experiential learning (minds-on, hands-on) organized around the investigation and resolution of messy, real-world problems; curriculum that provides authentic experiences fostering active learning, supporting knowledge construction, naturally integrating school learning and real life, addressing state and national standards, and integrating disciplines
- **Professional Learning Communities** — Faculty organized into learning teams focused on student achievement
- **Program of Study** — Coherent, rigorous, and relevant content aligned with challenging academic standards in a coordinated, non-duplicative progression of courses and co-curricular experiences that align secondary education with postsecondary education
- **Project Lead the Way** — A program that promotes engineering careers through the relationship of partner institutions: middle schools, high schools, higher education, and the private sector
- **Project-based Learning** -- A process in which students investigate rich and challenging issues and topics, often in the context of real-world problems, integrating subjects such as science, mathematics, history, and the arts (Edutopia, 2002, p.3)
- **Relationships** — Four critical learning connections formed in schools: (1) Among students, parents, peers; (2) Among staff members; (3) Among teachers with others in their profession; and (4) Between the school and the community (parents, businesses, community leaders)
- **Relevance** — Learning experiences in which students apply core knowledge, concepts, or skills to solve real-world problems

Glossary, Continued



- **Remediation** — The correction or strengthening of skills, especially academic skills required for post-secondary success, through programs designed to target specific deficits by offering instruction to increase skill attainment and boost student achievement
- **Rigor** — Learning experiences that foster cognitive skills in which students demonstrate a thorough, in-depth mastery of challenging tasks
- **Service Learning** — An educational experience in which students participate in community-based, volunteer projects that strengthen the understanding of course content and reinforce the development of citizenship and civic responsibility
- **Small Learning Communities** — A structure that fosters relationships among students and staff and encourages personal interactions not possible in larger settings
- **Summer Bridge Programs** — Programs designed to ease the ninth grade transition into high school; experiences may include academic remediation/enhancement and high school orientation activities
- **Tech Prep** — A non-duplicative, sequential course of study that combines a minimum of two years of secondary education with a minimum of two years of postsecondary education or an apprenticeship program of not less than two years following secondary education; also integrates academic and career and technical education instruction, and utilizes work-based and worksite learning experiences, where appropriate and available
- **Technology Centers That Work (TCTW)** — An enhancement of the HSTW framework that focuses on literacy and student readiness for work and postsecondary education with each TCTW site developing a close relationship with a partner HSTW site
- **Transitions** — The successful advancement of students from middle school to secondary school, secondary to postsecondary education, and from postsecondary education to the world of work
- **Work-based Learning** — An instructional approach that offers a range of experiences, such as job shadowing, internships, and other similar arrangements between schools, students, and employers to provide students with connections between classroom learning and the workplace
- **Work-site Learning** — An educational approach that uses the actual worksite to provide students with a context for connecting classroom-taught knowledge and skills to real-life work experiences

Appendix B: Resource Links



- **Achieve (www.achieve.org)** was created by the nation's governors and business leaders, to help states raise academic standards and achievement so that all students graduate ready for college, careers, and citizenship.
- **College Access (www.going2college.org)** is a Web site where students may find state-specific information about planning for college and careers; supported by the Missouri Department of Higher Education.
- **Career Clusters (www.careerclusters.org)** is the Web site for the States' Career Clusters Initiative (SCCI), features research, products, and services.
- **Career and College Transition Initiative (www.league.org/league/projects/ccti/purpose.html)** is a key resource is the League for Innovation in the Community College (<http://www.league.org>), an international organization serving community colleges. Among the League's projects is the Career and College Transition Initiative (CCTI), which is a federally funded project in cooperation with several nationally recognized partner organizations.
- **Career One Stop (www.careeronestop.org)** is a site sponsored by the US Department of Labor that offers career resources and workforce information for students and job seekers.
- **College Access (www.going2college.org)** is a Web site where students may find state-specific information about planning for college and careers; supported by the Missouri Department of Higher Education.
- **Department of Elementary and Secondary Education (www.DESE.mo.gov)** offers downloadable booklets and other information about career clusters and career pathways.
- **Edutopia (www.edutopia.org)**, sponsored by the George Lucas Foundation, provides inspiring articles about innovative teaching in K-12 schools.
- **High Schools That Work (www.sreb.org/Programs/hstw/hstwindex.asp)** is the largest and oldest of the Southern Regional Education Board's (SREB) school improvement initiatives for high school and middle grades leaders and teacher. The site allows users to register for conferences and workshops, obtain copies of publications, read about exemplary school and classroom practices, find a schedule for technical assistance visits to member schools, and learn how SREB collects data on students' academic achievement.
- **Missouri Center for Career Education (www.MCCE.org)** offers curriculum, professional training, and other resources for schools, teachers, and staff.
- **Missouri Connections (www.missouriconnections.org)** is a Web-based education and career planning system available at no charge to all public middle and secondary schools. Using the Career Clusters Framework, it allows students to explore career options and develop personal plans of study as well as electronic portfolios.

Resource Links, Continued



- **Missouri Economic Research and Information Center** (www.missourieconomy.org) provides a student edition of the Missouri Career Guide, along with information and projections about in-demand occupations.
- **Model Schools Initiative, a program of the International Center for Leadership in Education** (www.leadered.com), offers a wealth of information related to rigor and relevance in learning.
- **Project Lead the Way** (www.pltw.org) is a not-for-profit organization that promotes pre-engineering courses for middle and high school students. PLTW forms partnerships with public schools, higher education institutions and the private sector to increase the quantity and quality of engineers and engineering technologists graduating from our educational system. The site offers resources for school certification, assessment, and program evaluation.
- **The Futures Channel** (www.thefutureschannel.com) connects learning with the real world through stories and short movies about people who are innovating in various fields of work.