



# *Participant Workbook*

## *Integrating Career and Academic Education*

# 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](http://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](http://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.

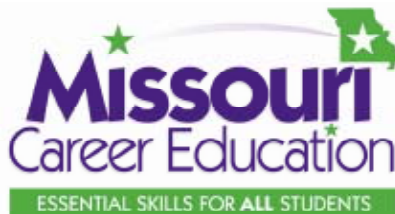
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## Module Slides




# Module Slides



## Integrating Career and Academic Education





### Table of Contents

- Answering the Question, "Why Integration?"
- Understanding How Integration Relates to the Career Clusters Framework
- Identifying and Implementing Integration Strategies
- Applying a Blueprint for Integrated Learning

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## Module Objectives

This module will help you:

- Explain the need for and benefits of integrating academic and technical skills in the workplace
- Link state academic- and industry-specific skills to career clusters knowledge and skills (K&S) statements
- Determine methods for integrating academic and career education within a plan of instruction
- Identify opportunities for integration within your district/institution





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- Answering the Question, “Why Integration?”
- Understanding how Integration Relates to the Career Clusters Framework
- Identifying and Implementing Integration Strategies
- Applying a Blueprint for Integrated Learning



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## Answering the Question, “Why Integration?”



This section covers:

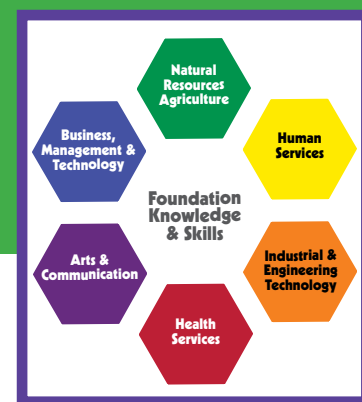
- Defining Integration
- Benefits of Integration
- Key Integration Issues
- The Need for Integration

*"The United States cannot maintain its economic leadership unless our workforce consists of people who have the knowledge and skills needed to drive innovation."*

Bill Gates,  
March 8, 2007

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[illegible]

- Promotes active learning strategies
- Creates enthusiasm for learning
- Increases critical thinking skills
- Provides real-world applications
- Increases retention of knowledge
- Replicates workplace environment

Missouri  
Career Education[illegible]

# Module Slides



## Why Integration: Key Issues



Integration issues in school systems/districts tend to be related to:

- The separation that exists between traditional academics and CTE content
- Limited enthusiasm for acquiring academic and technical knowledge that lacks rigor and relevance
- Decreased retention due to lack of relevance
- Failure to replicate workplace environments in the classroom
- Unmet employer expectations



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## Exercise 1: Integration Issues



**Objective:** Identify situations where better integration of academic and career education can enhance student success.

### Instructions:

- Read the scenario about Devin in your workbook (pages 36-37).
- Identify integration issues that impact the outcome of the story.
- List the issues you encountered on page 28 of your workbook.

### Next-Step Activity:

Share Devin's story with others with whom you interact this week. Ask them to identify the integration issues they see in the story. Discuss what integration issues exist in your district and how you might together resolve those in the coming months.



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# Module Slides



## Why Integration: Identifying Issues

In Exercise 1, you likely identified these areas where enhanced integration could change the outcome of Devin's story:

- Coordinating content between district and technical school curriculum
- Teaching broad, transferable skills
- Increasing student motivation by creating relevance in core academic subjects
- Addressing the "Why do I need to take this" question by teaching academic skills in the context of career objectives
- Connecting academia and real-world learning by targeting the knowledge and skills employers need in programs of study



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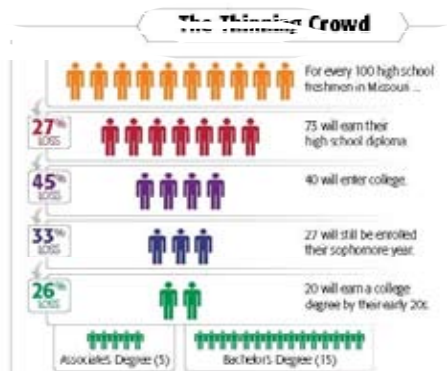
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## Why Integration: Understanding the Need



Sources:

- National Center for Public Policy and Higher Education (2004)
- Missouri Department of Higher Education



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- How Career Clusters Knowledge and Skills Relate to Integration
- How Programs of Study Support Integration

*The Career Clusters framework reinforces schools' fundamental objectives of academic accountability and improved achievement for all students.*

*Student Pathways to Success,*  
Missouri Department of  
Elementary and Secondary  
Education (Division of  
Career Education),  
July 2007

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- Providing organizational and curricular tools to develop Programs of Study
- Strengthening transitions from secondary to postsecondary education.
- Creating a framework for standards-based, rigorous studies for students within programs of study



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# Module Slides



## How Programs of Study Support Integration: Definitions



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 postsecondary education.



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## How Programs of Study Support Integration: Student Success and Transitions



Programs of Study:

- Incorporate secondary education and postsecondary education elements
- Include academic, career, and technical content in a coordinated, non-duplicative progression of courses
- Lead to an industry-recognized credential or certificate at the postsecondary level or an associate or bachelor's degree



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# Module Slides



## How Programs of Study Support Integration: Rigor and Relevance



Programs of Study ensure:

- Secondary education instruction that includes rigorous and coherent content in academic, career, and technical education
- Meeting state standards, graduation requirements, and college entrance requirements
- Preparation for postsecondary programs that lead to high skill, high-wage, and high-demand occupations



Carl D. Perkins Act, 2006

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## How Programs of Study Support Integration: Benefits of an Integrated Curriculum



The integrated curriculum:

- Provides a complete teaching resource
- Helps students through the learning process
- Integrates knowledge and skills from more than one subject
- Applies a contextual, problem-based learning approach



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# Module Slides





## Identifying and Implementing Integration Strategies



**This section covers:**

- Determining Desired Results within Curricular Area(s) to be Integrated
- Connecting Career Clusters Knowledge and Skills Statements Needed for Success in Career Paths
- Matching **Performance Standards** with Appropriate **Academic Standards**

*"The foundation of a quality curriculum is the combination of rigorous academics and meaningful, career-based learning for all students. The curriculum must be relevant to the lives of students and prepare them for current and future career opportunities."*

Student Pathways to Success, Missouri Department of Elementary and Secondary Education (Division of Career Education), July 2007

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## Determining Desired Results: Current Conditions



Evaluate current conditions by asking:

- How is the curricular content intertwined?
- Where do areas of commonality exist?
- Why is the content important/relevant?
- How will the content be covered in a timely, related fashion?



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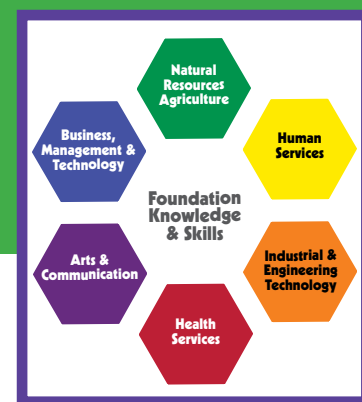
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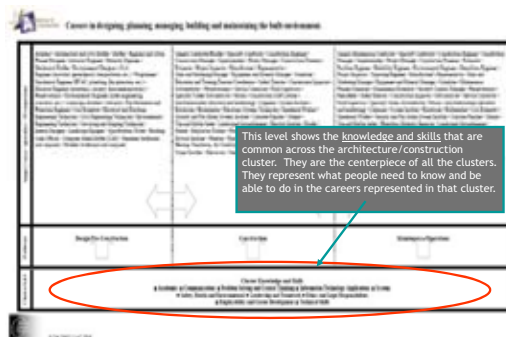
- Integration of traditional academics and CTE content
- The ability to replicate workplace environments in the classroom
- Increased enthusiasm for acquiring academic and technical knowledge
- Increased retention
- Knowledge and skills that meet employer expectations



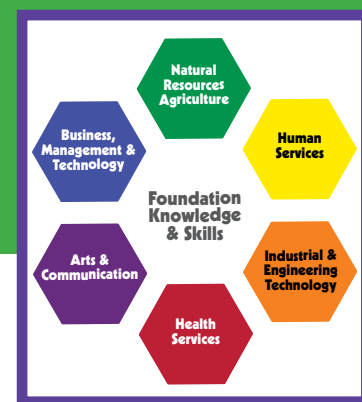
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What people  
need to know  
and be able  
to do in  
specific  
careers



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- Academic standards — State the understanding and competency students should attain
- Performance standards — Identify what a student needs to do to demonstrate the knowledge and skills required to meet achievement indicators



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1. Missouri Show-Me-Standards. (Both process standards and content standards appropriate)
2. Missouri academic Grade Level Expectations (GLEs)
3. Missouri guidance and placement Grade Level Expectations (GLEs)
4. Subject matter competencies
5. Industry-developed competencies (occupation-specific or based on a given credential)
6. Graduate Profile Objectives
7. Secretary's Commission on Achieving Necessary Skills (SCANS)
8. National Career Development Standards (NCDS)
9. Career clusters knowledge and skills statements
10. Any combination of the above examples



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# Module Slides



## Matching Performance Standards with Academic Standards: Evaluating Good Standards



### Good standards are:

- Comprehensive
- Clear
- Measurable
- Rigorous and relevant



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## Matching Performance Standards with Academic Standards: Standards are Not the End



Standards ≠ Curriculum  
Curriculum ≠ Instruction  
Assessment ≠ End



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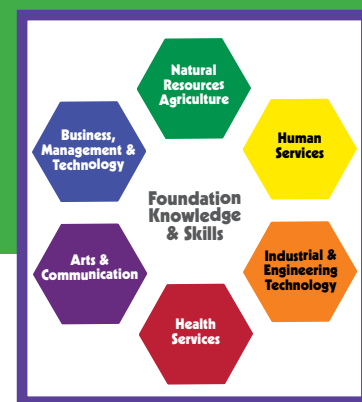
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*"Integrated instruction is particularly useful because it tends to create a contextual learning environment where students can see why they are learning things."*

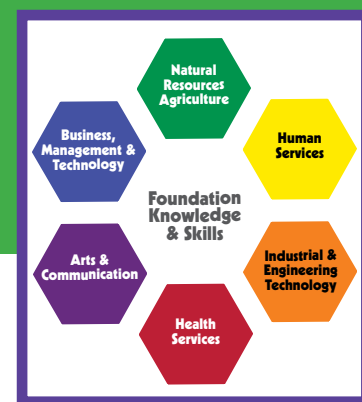
- The Blueprint for  
Integrated Learning,  
Missouri Center for  
Career Education,  
2007*

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- Missouri
- 
- Career Education

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# Module Slides



## Applying the Blueprint: An Example of an Unpacked Standard



Example of an unpacked standard:

## STANDARD

Develop skills to locate, evaluate, and interpret career information.

**STUDENT UNDERSTANDINGS (KEY VERBS AND ACTIONS)**

- Locate career information
- Evaluate career information
- Interpret career information

**STUDENT OUTCOMES / MEASURABLE LEARNER OUTCOMES  
(UNPACKED KEY VERBS AND UNDERSTANDINGS)**

Locate career information: What are sources of career information and how are they found?

Evaluate career information: How do we judge the value or worth of career information?

Interpret career information: What do these circumstances tell us about this career?



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## Applying the Blueprint: Example Standards to Unpack (from the Health Science Cluster)



1. **National Health Standard: 8.12.4** — Adapt health messages and communication techniques to a specific target audience.
2. **Health Sciences Cluster Knowledge and Skill Statement: Communications** — Health care workers will know the various methods of giving and obtaining information. They will communicate effectively, both orally and in writing.
3. **Missouri Show-Me Standards: Communication Arts** — Students in Missouri public schools will acquire a solid foundation which includes knowledge of and proficiency in participating in formal and informal presentations and discussions of issues and ideas.
4. **Missouri Health GLE: ME1D912** — Analyze present fitness levels to create a personal fitness plan which meets current and future needs necessary for the maintenance of total fitness.



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# Module Slides



## Applying the Blueprint: Example Standards to Unpack, Continued



1. **National Health Standard: 8.12.4** — **Adapt** health messages and communication techniques to a specific target audience.
2. **Health Sciences Cluster Knowledge and Skill Statement: Communications** — Health care workers will know the various methods of giving and obtaining information. They will **communicate effectively**, both orally and in writing.
3. **Missouri Show-Me Standards: Communication Arts** — Students in Missouri public schools will acquire a solid foundation which includes knowledge of and proficiency in **participating in formal and informal presentations** and discussions of issues and ideas.
4. **Missouri Health GLE: ME1D912** — Analyze present fitness levels to **create a personal fitness plan**, which meets current and future needs necessary for the maintenance of total fitness.



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## Applying the Blueprint: What will be Learned (Measurable Learner Outcomes)



Student Understandings (Key Verbs & Actions)	Measurable Student Outcomes
<b>Adapt Communication Techniques</b>	Explore various message delivery methods. Apply appropriate delivery methods to meet the expectations of targeted audiences.
<b>Communicate Effectively</b>	Identify sources of information. Access information. Apply written and oral skills as appropriate.
<b>Deliver Proficient Presentations</b>	Acquire knowledge of presentations. Identify information to prepare a presentation. Differentiate between formal and informal presentations. Develop presentation and discussion skills.
<b>Create a Personal Fitness Plan</b>	Analyze present personal fitness level. Understand current and future fitness needs. Define total fitness. Determine actions required to achieve fitness goals.



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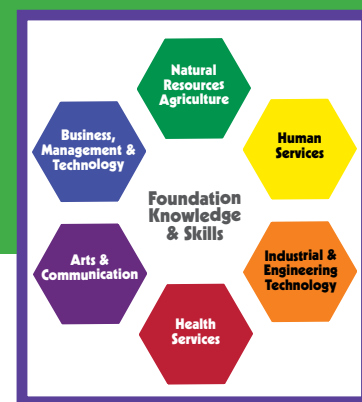
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- Aligning standards with each other
- Determining if standards have shared or unshared outcomes
- Pairing standards that possess shared outcomes
- Evaluating standards with unshared outcomes
- Sequencing instruction effectively

- The desired results arising from agreed-upon outcomes
- What the outcome requires a student to know and be able to do
- Transferable concepts, skills, and ideas students take with them
- Whether identified outcomes are suitable for integration



3.

[illegible]

- Connections can be made among shared understandings
- Mutually agreed upon and measurable outcomes can be developed
- Outcomes can lend themselves to rigorous learning experiences
- Authentic assessment plans can be aligned with outcomes



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# Module Slides



## Applying the Blueprint: Connections Example



Ask yourself for each shared understanding, “What are the desired results or measurable outcomes of this understanding?”

**Example:** Students will:

1. Identify and access sources of information
2. Apply written and oral skills during presentations and discussions
3. Deliver proficient informal and formal presentations that meet the needs of targeted audiences



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## Applying the Blueprint: Connections Example, Continued



What should students know and be able to do?

**Example:** Students should be able to:

1. Identify the type(s) of information needed to complete a task, including:
  - Knowing how to locate and acquire information as needed
  - Using various media to access information (e.g., library, Internet, newspapers, etc.)
2. Demonstrate appropriate verbal and written skills during presentations and discussions
3. Deliver proficient formal and informal presentations



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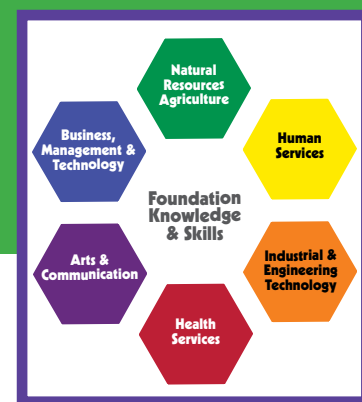
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The diagram shows a central circle labeled "ECHO Program in HESSE" surrounded by seven colored hexagons, each representing a domain of the program:

- Clinical Application** (Green)
- Patient Learning** (Yellow)
- Research** (Orange)
- Health Services** (Red)
- Work & Communication** (Purple)
- Systems Improvement** (Blue)
- Social Engagement** (Dark Blue)

1. What is the transferable concept, skill, or idea that students must be able to take away from this experience?

2. Is this idea deep enough for an integrated project?

Do the identified student understandings and outcomes constitute a rigorous experience that would align well with lesson plans for an integrated project?



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- Developing tangible products or solutions
- Applying skills/knowledge to a situation
- Interpreting results of their work
- Explaining processes used
- Reflecting on challenges and alternatives discovered as a result of their work

For the health sciences example, students could develop a bibliography of Web-based resources for patients seeking accurate health information.



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# Module Slides



## Applying the Blueprint: What is the Scenario?



### Problem-based learning scenarios:

- Involve unpredictable situations that may have multiple solutions coupled with real-world applications
- Help ensure rigor and relevance, offering the opportunity to move into higher levels of knowledge acquisition



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## Applying the Blueprint: Problem-based Scenario Criteria



1. Does the scenario address real-life situations?
2. Are student outcomes apparent?
3. Does the scenario contain a problem or challenge?
4. Does the scenario allow for multiple solutions?
5. Is the problem or challenge of interest to students?
6. Will students assume a real-world role?
7. Will a tangible product or solution be produced?
8. Will solutions have written/oral components?
9. Will there be an audience evaluation?



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# Module Slides



## Applying the Blueprint: What is the Plan for Instruction?



### Develop a plan for instruction by:

- Specifying tangible products or solutions
- Identifying measurable outcomes
- Determining appropriate instructional methods
- Establishing an instructional calendar or timeline
- Creating individual lesson plans for integrated activities
- Identifying needed equipment, resources, and available assistance



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## Applying the Blueprint: Example Plan of Instruction



**Outcome:** Develop a bibliography of Web-based health information.

### Students will:

1. **Identify** credible sources of information using an appropriate Internet search engine, hardware/software, and established criteria for evaluating Web info credibility
2. **Apply** APA or MLA standards for bibliographical format and style
3. **Verify** correct spelling, punctuation, and format of final document



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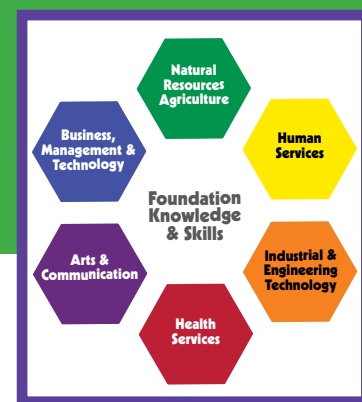
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- Resources required (time, materials, people) \_\_\_\_\_
- How to acquire those resources
- How to use those resources most effectively

- Access to appropriate hardware, software, search engine, and high-speed Internet connection
- APA and MLA style guides
- AMA or other industry guidelines for evaluating Web information credibility



4.

[illegible]

In your workbook on pages 29-32, complete the first three steps of the Blueprint for Integrated Learning activity using the example presented. These steps are the ones that have to do with “unpacking” standards to determine shared and unshared understandings.

In the next week, complete the rest of the Blueprint for Integrated Learning steps 4-7 for this same example. Use the worksheets found on pages 47, 49, 50, and 51 of your workbook. Share your completed example with your colleagues.



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# Module Slides



## Additional Resources

- Career Clusters [www.careerclusters.org](http://www.careerclusters.org)
- High Schools That Work [www.sreb.org/Programs/hstw/hstwindex.asp](http://www.sreb.org/Programs/hstw/hstwindex.asp)
- Model Schools Initiative (International Center for Leadership in Education) [www.leadered.com](http://www.leadered.com)
- Project Lead the Way [www.pltw.org](http://www.pltw.org)
- Missouri Connections <http://www.missouriconnections.org/>
- Missouri Center for Career Education <http://missouricareereducation.org/>
- Missouri Department of Elementary and Secondary Education [www.dese.mo.gov](http://www.dese.mo.gov)



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## Exercise 3: A Communication Action Plan for Integration

**Objective:** Develop a “stump speech” and plan for communicating key messages about integrating curriculum in your school/district.

### Instructions:

1. Using the template on page 34 of your workbook, outline a three- to five-minute “stump speech” that addresses integration issues in your district using the key knowledge gained from this module.
2. Identify student groups and/or interested staff members and administrators to address using your “stump speech.”

### Next-Step

#### Activity:

Schedule opportunities to deliver your polished “stump speech” in the next few weeks.



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# Module Slides



## Integrating Career and Academic Education: Module Review



- Integration is the process of combining rigorous academic content and real-world applications in a seamless and meaningful way.
- With an effective integrated curriculum, students are more motivated to learn and retain knowledge because they see the relevance of their courses to their desired career.
- 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 postsecondary education.
- A program of study leads to an academic degree or an industry-recognized credential or certificate.



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## Integrating Career and Academic Education: Module Review, Continued



- An integrated curriculum matches academic standards with performance standards to ensure that students attain understanding and competency and can demonstrate knowledge and skills to meet achievement indicators.
- The Blueprint for Integrated Learning is a seven-step process that encourages authentic assessments and problem-based learning. The process begins by identifying which standards are appropriate: for example, state academic requirements and industry-specific skill and knowledge requirements.
- The Career Clusters Framework provides information about the skills and knowledge required for particular career paths.



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# Module Slides



*“In the new American high school, the entire school must own the mission of academic proficiency, and teachers should be required to collaborate across the disciplines to help students reach these proficiencies”*



Source: ACTE. Reinventing the American High School for the 21st Century, January 2006  
[http://www.acteonline.org/policy/legislative\\_issues/upload/ACTEHSReform\\_Full.pdf](http://www.acteonline.org/policy/legislative_issues/upload/ACTEHSReform_Full.pdf), page 15.



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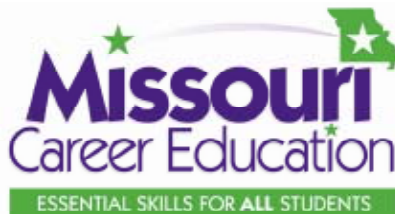
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## Module Exercises



# Exercise 1: Integration Issues



## Objective:

Identify situations where better integration of academic and career education can enhance student success.

## Instructions:

1. Read the scenario about Devin on pages 36 through 37.
2. Identify integration issues that impact the outcome of the story.
3. List the issues you encountered below.

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## Next-Step Activity:

Share Devin's story with others with whom you interact this week. Ask them to identify the integration issues they see in the story. Discuss what integration issues exist in your district and how you might together resolve those in the coming months.

Use the space below to note the results of your discussions.

Person I Spoke with About Integration Issues	Integration Issues Identified in Our District	Possible Resolutions

# Exercise 2: Blueprint for Integrated Learning



## Objective:

Use the Blueprint for Integrated Learning to develop a specific learning plan.

## Instructions:

Complete **the first three steps** of the Blueprint for Integrated Learning activity below and on the next page related to the **Arts, Audio/Video Technology and Communications** cluster. These steps are the ones that have to do with “unpacking” standards to determine shared and unshared understandings.

## Next-Step Activity:

After completing the module, fill out the rest of the Blueprint for Learning for this example using the handout, “Blueprint for Learning” as a guide (pages 39 through 51). Share the completed blueprint with your colleagues.

### Step 1: What will be learned?

**Standards:** Identify and unpack the following pertinent standards:

- **Career Clusters Knowledge and Skill Statement:**  
Use correct grammar, punctuation, and terminology to write and edit documents.
- **Show-Me Standard — Communication Arts:**  
In Communication Arts, students in Missouri public schools will acquire a solid foundation, which includes knowledge of and proficiency in speaking and writing standard English (including grammar, usage, punctuation, spelling, capitalization).
- **Future Business Leaders of America (FBLA) Competitive Performance Rating Sheet — Public Speaking:**  
*[Competitors are rated based on the]* Extent to which speech was sincere, interesting, clear, creative, convincing, and concise.

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## Exercise 2: Blueprint for Integrated Learning, Continued



### Student Understandings (Key Verbs and Actions to Unpack)

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### Measurable Learner Outcomes (Key Verbs and Actions Unpacked)

STUDENT UNDERSTANDING	OUTCOME

# Exercise 2: Blueprint for Integrated Learning, Continued



## Step 2: What learning is shared or not shared?

Identify student tasks and outcomes shared among the standards.

### Shared Understandings

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### Unshared Understandings

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# Exercise 2: Blueprint for Integrated Learning, Continued



## Step 3: What are the connections?

Create more opportunities to share understandings. Agree on expected outcomes.

Answer the questions below for one of the shared understandings you developed in Step 2.

What are the desired results or measurable outcome of this understanding?

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What should students know and be able to do?

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What is the transferable concept, skill, or idea that students must be able to take away with them from this experience?

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Is this idea deep enough for an integrated project?

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## Next-Step Activity:

In the next week, complete the rest of the Blueprint for Integrated Learning steps 4-7 for this same example. Use the worksheets found on pages 47 through 51 of your workbook. Share your completed example with your colleagues.

# Exercise 3: A Communication Action Plan for Integration



## Objective:

Develop a “stump speech” and plan for communicating key messages about integrating curriculum in your school/district.

## Instructions:

1. Using the template on the next page, outline a three- to five-minute “stump speech” that addresses integration issues in your district using the key knowledge gained from this module.
2. Identify student groups and/or interested staff members and administrators to address using your “stump speech.”

**Target Audience** (student groups and/or interested staff members/administrators)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_

## Next-Step Activity:

Schedule opportunities to deliver your polished “stump speech” in the next few weeks.

Audience (from above)	Date/Time Stump Speech Scheduled	Location

# Exercise 3, Continued: Stump Speech Template



## Stump Speech Outline Template

1. **Set the Stage:** Start with a story about problems that occur in your district due to a lack of integration between academic and career education.

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2. **Preview Your Purpose:** Explain that you will be talking about how integration can solve current problems in the district.

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3. **Deliver Your Key Points:** Make three key points about the benefits of integration and how it might be implemented in your district. For each point, summarize your message and provide persuasive details and/or examples your audience can relate to.

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4. **Review Your Message:** Summarize the key points you made, perhaps including a specific solution using the story you presented in step one of the outline.

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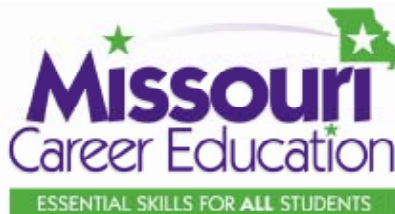
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# Handouts



# Exercise 1: Devin's Story



## A Story about Career and Technical Education

Devin, a sophomore at one of the high schools in St. Louis County, is sitting in the high school's assistant principal's office with his parents, Mr. and Mrs. Smith. The topic for discussion: Devin's declining school performance. The last semester of his freshmen year, Devin received Ds in Algebra I, Physical Science, and Language Arts. This semester, he is failing those subjects.

Devin begins the conversation: "I don't see what the big deal is. I don't really need to know these subjects. They are boring. Besides, at Tech they tell me I'm doing great. In fact, they tell me I'm the best they have seen in a while and that they will write me letters to get into IT."

As a sophomore, Devin attends classes for a half day at his home high school within the district in which his family lives and pays taxes. The other half day, Devin is enrolled in Technical Education Exploration, TEE, a one-year exploratory program that allows him to explore two of four career clusters. The four choices are Business & Graphics, Construction, Medical & Human Services, and Technology. Devin has chosen Business & Graphics and Technology. He is interested in computers but also precision machining.

"But Devin," counters the assistant principal, "how can you be successful at any of those fields you are interested in with failing grades in mathematics and science here at this school? Those areas require math abilities, geometry, trigonometry, and in IT, algorithms. Right now you're a long way off from taking our upper-level mathematics courses. You can't build many machines without a knowledge of physics and trigonometry and that requires Algebra skills, in which you have not shown proficiency."

Devin's father, angry and confused, speaks up: "I don't understand how you can excel in a technical field, and that is what he says he is being told by his teachers at Tech, but he is failing Geometry and Science? What is going on here?"

The assistant principal asks Devin to step outside for a moment. When the administrator returns, Devin's mom makes the following statement to Devin's father...

"Look, Frank, this is the first time in a long time that Devin has experienced any success in a school setting. What with his learning disability, there have been times that I never thought he would want to attend or participate in anything that had to do with school. He likes Tech. They give him the time to do projects that interest him. Maybe it's a place where he can find some success..."

"That may be true, Mrs. Smith," the assistant principal replies, "but if Devin's performance does not improve here, he can count on the following things occurring; first, possibly not having enough credits to attend Tech or graduate on time. Also, you can plan on Devin spending at least a year in remedial coursework at any postsecondary program he plans on attending – say, at St. Louis Community College or Ranken. And, we know that kids who have to spend time taking remedial coursework often drop out of college within the first year."

# Exercise 1: Devin's Story, Continued



The assistant principal asks Devin to step back into the office. “Devin,” he asks, “what do you think caused your performance in Geometry and Biology to decline so much in the second quarter? Your first quarter grades, all Cs, were not stellar but they were not failing like they are now.”

“I don’t know,” replies Devin. “I told you these high school courses are boring. There’s a lot of reading, and I don’t like to read that much. I read a couple of pages and can’t remember what I have just read. How am I ever going to learn if that happens?”

“I don’t know either, Devin,” his exasperated father responds, “but you’re obviously not trying hard enough.”

Devin’s mother throws a disconcerting look at her husband’s low level of tolerance.

“I’m trying as hard as I can, Dad. Look, at TEE we don’t have to read long textbooks, and we can’t do homework ’cause I can’t take the machines home. I still don’t see what math and science at this school have to do with the projects I get to do at Tech.”

The assistant principal has heard these student-parent conversations before and knows that young people like Devin who find little interest in the traditional high school curriculum can be intrigued by the world of work. Devin is this kind of student. His freshman grades and fall semester sophomore grades and excitement for real-world learning show it.

A program like graphic design or precision machining might catch him —keep him in school and aid him in fashioning an occupation. It might give him a chance to forge a career pathway for himself. The big question the assistant principal wonders is what awaits Devin? Would it be a restricted pathway that defined him and the trade he would choose in the narrowest of intellectual as well as economic terms? Or a pathway that consists of a curriculum that ensures curiosity and the ability to learn. And, while situated in a particular trade, will he seek connections to writing, to mathematics, to science, to economics.

The core problem, it seems to the assistant principal, is not that multiple curriculums exist. In fact, varied courses of study are enriching. The problem it seems is that, even after tracking, there are biases at play in who gets what curriculum. Furthermore, the curricular options are built on terribly diminished and self-fulfilling assumptions about the cognitive capacity of technical students. After a while, a short “while” in Devin’s case, they figure out whose mind is certified by their high school and whose future is not.

It is tough, the assistant principal thinks, to be a sophomore in high school and have to define yourself either in compliance or rejection of an institution’s dynamics.

# Performance and Academic Standards



## Performance and Academic Standard Examples

Performance Standards	Academic Standards
Show Me: Goal 2,1 — Students will plan and make written, oral, and visual presentations for a variety of purposes and audiences.	Show Me: Goal 3,6 — Students will examine problems and proposed solutions from multiple perspectives.
Show Me: Goal 4,7 — Students will identify and apply practices that preserve and enhance the safety and health of self and others.	Show Me: Goal 4,1 — Students will explain reasoning and identify information used to support decisions.
Mathematics GLE: MA,4,3.1 — Students will use <u>unit analysis</u> to solve problems involving rates, such as speed, density, or population density.	Mathematics GLE: MA, 3, 3.1 — Students will recognize how linear transformations of single-variable data affect shape, center, and spread.
Science GLE: Strand 4,3,A,a — Students will compare and contrast common fossils found in Missouri (i.e., trilobites, ferns, crinoids, gastropods, bivalves, fish, mastodons) to organisms present on Earth today.	Science GLE: Strand 1,2,A,a — Students will recognize internal cues (e.g., hunger) and external cues (e.g., changes in the environment) that cause organisms to behave in certain ways (e.g., hunting, migration, hibernation).
Cluster's K&S: Human Services, Leadership, and Teamwork — Participate in civic and community leadership and teamwork opportunities to enhance skills.	Cluster's K&S: Human Services, Leadership, and Teamwork — Recognize the organizations' mission and its priorities to ensure quality.
Cluster's K&S: STEM, Ethics and Legal Responsibilities — Compare and contrast personal ethical values with various professional and organizational codes of ethics.	Cluster's K&S: STEM, Ethics and Legal Responsibilities — Know current ethical and legal standards in the scientific and mathematics as well as the engineering and technology communities.

# Blueprint for Integrated Learning



## Blueprint for Integrated Learning

This blueprint for integrated learning is designed to help teachers start with the end in mind. By reverse-engineering their learning activities, teachers are better able to develop high-quality integrated instructional activities aligned to their content standards.

For many instructors, integrated instruction seems like a desirable addition to what is already taught. While integration of instruction certainly is to be desired (particularly between academics and career and technical education), it should not be a bonus added when time allows. Integrated instruction should be tied to the essential student outcomes of the courses, placing it at the heart of instruction, not at the periphery. Integrated instruction is particularly useful because it tends to create a contextual learning environment where students can see why they are learning things and how to apply their knowledge. Integrated instruction should be essential, not extra.

This blueprint encourages the use of authentic assessments and problem-based learning in the development of integrated instruction through a clear seven-step process. In this process, teachers start with the standards to be addressed, develop a common understanding of desired student outcomes, decide which outcomes are shared or can be shared, create authentic assessments, mold a problem-based learning experience, create a plan for instruction, and see what is needed to implement the plan. Teachers may be tempted to juggle the steps to create assessments, a learning experience and a plan for instruction, but they are strongly encouraged to follow this process in order. By following this process step by step, teachers aim assessment at expected student outcomes, then aim instruction at that assessment. This ensures that students are assessed on what they are expected to know and they are taught what will be assessed.

### **Step 1: What will be learned?**

Identify and unpack the standards.

### **Step 2: What learning is shared or not shared?**

Identify student tasks and outcomes shared among the standards.

### **Step 3: What are the connections?**

Create more opportunities to share understandings. Agree on expected outcomes.

### **Step 4: How do we know what is learned?**

Identify a demonstration of learning for each shared student outcome.

### **Step 5: What is the scenario?**

Create the problem-based learning experience.

### **Step 6: What is the plan for instruction?**

Identify the teaching requirements and establish a plan for instruction.

### **Step 7: What resources are needed?**

Identify the materials, time and other resources required for instruction.

# Blueprint for Integrated Learning, Continued



## Step 1: What will be learned? Identify and unpack the standards.

*What will students know and be able to do? It is important to begin with the desired results and resist the natural temptation to dive right into creating learning activities.*

The first step in developing integrated student learning experiences is determining the results desired within the curricular area or areas to be integrated. To accomplish this, educators may use a variety of standards that constitute appropriate learner outcomes for a given content area or areas. Examples of appropriate standards include:

1. Missouri Show-Me-Standards. (Both process standards and content standards are appropriate.)
2. Missouri academic Grade Level Expectations (GLEs).
3. Missouri guidance and placement Grade Level Expectations (GLEs).
4. Subject matter competencies.
5. Industry developed competencies. (These may be occupation specific or based on a given credential.)
6. Graduate Profile objectives.
7. Secretary's Commission on Achieving Necessary Skills (SCANS).
8. National Career Development Standards (NCDS).
9. Career Clusters knowledge and skills statements.
10. Any combination of the above examples.

It is very important to ensure the decided upon learner outcomes are *the* essential outcomes. The essential outcomes should indicate those outcomes central and necessary to understanding the knowledge students are expected to acquire. Since integrated learning is most effective as an instructional device to teach and assess the use of critical knowledge, educators are cautioned not to use integrated learning to impart facts or material not at the core of the subject content area. Integrated instruction should touch the essential outcomes of instruction.

As with all standards, it is important that educators be able to measure students' knowledge acquisition. However, the meaning of these standards must be unpacked by educators in terms of the measurable outcomes students are expected to acquire. Teaching to standards often only leads to surface learning, while integrated learning offers teachers an opportunity to teach for deep application of the subject matter. For this reason, the first step of this process offers the opportunity to identify learner outcomes and unpack or break apart those standards into smaller learning pieces. This process will help teachers determine the enabling skills required of students to accomplish a task represented in a statement of educational standards. In addition to atomizing educational standards to their most basic parts, the cess of unpacking standards involves capturing each of those basic parts in an essential question for instruction. An example of unpacking a standard is included on the next page.

# Blueprint for Integrated Learning, Continued



When educators developing an integrated unit of instruction as a team, it is important that they all agree on the concept of integration and develop agreed outcomes prior to designing the task. Identifying related standards can occur jointly. Unpacking those standards should be an individual activity before educators begin the next step of the integration process. Each educator should independently complete this process for each standard considered in the development of the integrated unit.

## Example of an unpacked standard:

### Standard

Develop skills to locate, evaluate, and interpret career information.

### Student Understandings (Key Verbs and Actions)

Locate career information  
Evaluate career information  
Interpret career information

### Student Outcomes / measurable learner Outcomes (Unpacked Key Verbs and Understandings)

Locate career information: What are sources of career information and how are they found?

Evaluate career information: How do we judge the value or worth of career information?

Interpret career information: What do these circumstances tell us about this career?

# Blueprint for Integrated Learning, Continued



## Step 1: What will be learned?

Identify and unpack the standards.

Standard \_\_\_\_\_

\_\_\_\_\_

Student Understandings (Key Verbs and Actions to Unpack)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Measurable Learner Outcomes (Key Verbs and Actions Unpacked)

STUDENT UNDERSTANDING

OUTCOME

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

## Step 2: What learning is shared or not shared?

Identify student tasks and outcomes shared among the standards.

*What combined points should the students know and be able to do?*

The next step in developing an integrated unit is to determine where the points of integration lie. Educators should ask what combined points they want the students to know and be able to do. The first part of this step is to see where how well student understandings from the standards align with each other. Educators must review the lists of expected student understandings and see where the standards have expected student understandings that are shared and which understandings appear unshared. When sequencing of instruction is important, present the items in the order required for effective student learning.

# Blueprint for Integrated Learning, Continued



Please keep in mind that for the purposes of this integration process, understandings and outcomes are not synonymous. An understanding represents a meaning or knowledge that students acquire through instruction, and an outcome indicates an application or a set of applications for that understanding.

When determining shared understandings, the following prompts may assist educators:

- What knowledge and skills that we each identified link to one another?
- Are there any similar “unpacked” items?
- Can one set of understandings be derived?

One way to facilitate this alignment and creation of shared understandings is to write each of the understandings or outcomes from each standard on a post-it note. These understandings can then be placed on a board or wall and grouped and regrouped as educators discuss which items represent shared student understandings between two standards. After completing this process, the team should have a group of paired understandings that represent understandings shared by different standards, and a group of understandings that are not shared by the standards.

When educators determine a pair of shared understandings, they should review them and create an integrated understanding that all educators involved can agree upon, and that understanding should be unpacked through the process in step one. A list of shared understandings should be developed.

When pairs of shared understandings are identified, the team should review the unshared understandings. The following prompts may assist educators to review unshared understandings:

- ✓ Are there any mutually exclusive unpacked items?
- ✓ Are there any opposing interpretations of unpacked standards? If so what are they?
- ✓ How can these opposing interpretations or instructional requirements be blended?
- ✓ Do any of the items build upon one another?
- ✓ How are they sequenced?
- ✓ Do they need to be sequenced?

After completing this review and making further adjustments and finding new conflicts or adjustments that can appropriately allow shared understandings to be developed, the team should compile a list of unshared understandings. Each unshared understanding should be listed with its unpacked measurable student outcomes as well.

# Blueprint for Integrated Learning, Continued



## Step 2: What learning is shared or not shared?

Identify student tasks and outcomes shared among the standards.

### Shared Understandings

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### Unshared Understandings

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## Step 3: What are the connections?

Create more opportunities to share understandings. Agree on expected outcomes.

In this step, educators should achieve agreement on the outcomes expected from the previously identified shared and unshared understandings. The process of identifying common outcomes may seem simple; however, it is crucial to build an effective authentic assessment device in the next step.

Earlier, educators listed the shared and unshared understandings and unpacked or determined the enabling knowledge students must have in order to be successful in understanding the materials. In this step, the team will jointly review a few prompts to help them make connections among the shared understandings and develop mutually agreed measurable outcomes. Begin this portion by reviewing and eliminating or moving the unshared understandings into the shared understandings section. Once the team has agreed upon the shared understandings, answer the following questions for each shared understanding.

- ☐ What are the desired results or measurable outcome of this understanding?
- ☐ What should students know and be able to do?

# Blueprint for Integrated Learning, Continued



- ☞ What is the transferable concept, skill, or idea that students must be able to take away with them from this experience?
- ☞ Is this idea deep enough for an integrated project?

Where possible, identify the desired understandings and outcomes using verbs that are measurable. This will help with the creation of a rigorous experience that aligns well with an authentic assessment plan.

## Step 3: What are the connections?

Create more opportunities to share understandings. Agree on expected outcomes.

*Complete this form for each shared understanding.*

What are the desired results or measurable outcome of this understanding?

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What should student know and be able to do?

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What is the transferable concept, skill, or idea that students must be able to take away with them from this experience?

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Is this idea deep enough for an integrated project?

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# Blueprint for Integrated Learning, Continued



## Step 4: How do we know what is learned?

Identify a demonstration of learning for each shared student outcome.

*If this is a team or subject matter integration, how will the team know if the students have attained the desired understandings and outcomes?*

The following question should be answered in step four: If this is a team or subject matter integration, how will the team know if the students have attained the desired understandings and outcomes? At this point, educators develop an authentic assessment based on the understandings that students should master and the outcomes that they should exhibit. The team should develop an acceptable demonstration for each outcome, and this set of acceptable demonstrations can be developed into a scoring guide to assess the learning assessment.

For each desired result, the team should identify an acceptable demonstration of the desired result by the student. When defining an acceptable demonstration of student mastery, the following guidewords may be helpful: explaining, interpreting, applying, evaluating, and relating the experience. Remember that where possible, desired understandings and outcomes should be defined using verbs that are measurable. This will help with the creation of a rigorous experience that aligns well with an authentic assessment plan. It is not necessary to use every guideword for every outcome. It is quite possible that only one type of demonstration may be required for a given outcome. This process should be repeated for each of the outcomes for the shared understandings.

While developing acceptable demonstrations, the team should consider ways that the assessment can be linked to the local business community. This can be achieved by students demonstrating their product or presenting their findings to knowledgeable business people or by involving some local business people at this stage to review the proposed acceptable demonstrations and asking whether these demonstrations match or approximate workplace expectations.

Once completed, these results and demonstrations of understanding can be refined into a scoring guide to assess the learning experience. The following elements should be considered for inclusion as part of the scoring guide:

- ▢ A tangible product or solution should be created.
- ▢ Students should be able to demonstrate an application.
- ▢ Students should be able to interpret the results of their work.
- ▢ Students should be able to explain the process they used.
- ▢ Students should be able to reflect upon the challenges and alternatives discovered as a result of their work.

The diagram illustrates the **Foundation Knowledge & Skills** for the 21st Century, centered around six interconnected areas:

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

These six areas are arranged in a circular pattern, each represented by a colored hexagon, with the central text **Foundation Knowledge & Skills** in black.

- ☐ A tangible product or solution is created.
- ☐ Students demonstrate an application.
- ☐ Students interpret the results of their work.
- ☐ Students explain the process they used.
- ☐ Students reflect upon the challenges and alternatives discovered as a result of their work.
- ☐ Students address a real world application.
- ☐ Students address an unpredictable situation.

# Blueprint for Integrated Learning, Continued



## Step 5: What is the scenario?

Create the problem-based learning experience.

*Problem-based learning (PBL) is an instructional method that challenges students to “learn to learn,” working cooperatively in groups to seek solutions to real-world problems. These problems are used to engage students’ curiosity and initiate learning the subject matter. PBL prepares students to think critically and analytically, and to find and use appropriate learning resources.*

**Barbara Duch, University of Delaware**

<http://www.udel.edu/pbl/>

Sample problems and texts are available at this Web site

Use of scenario-based learning and problem-based learning can ensure rigor and relevance in any learning experience. Scenario-based learning offers the opportunity to move into higher levels of knowledge acquisition. Learning is presented in a relevant career-related context or through application of the knowledge in a real-world situation. This situation can have a predictable or unpredictable setting. Straight-forward projects with a predetermined product or outcome represent a predictable setting. An unpredictable setting offers students a challenging opportunity to seek solutions and decide the best solution they would offer to address a problem. While scenario-based learning and problem-based learning both address real-world applications, problem-based learning involves an unpredictable situation that may have multiple solutions coupled with real-world applications. Educators wanting to know more about scenario-based learning, problem-based learning and the Rigor and Relevance Framework can find more information through the Missouri Center for Career Education.

In this step, the team creates the integrated task or problem based learning experience. In order to accomplish this, and to meet the desired understandings identified earlier, the team must keep in mind the demonstrations of understanding represented in the authentic assessment. Begin by listing or creating real-life scenarios based upon one of the 16 Career Clusters that would cause the student to demonstrate the explanations, interpretations, applications, evaluations and/or experiences that listed in the authentic assessment. It may be helpful to review occupations specific to a chosen cluster or pathway in order to focus the generation of real-life scenario ideas.

Once several scenarios have been identified, choose the best alternative by asking whether the scenario allows for the following to occur:

1. Is there a context moving beyond the content to a real-life situation?
2. Is there an apparent goal for the student(s) to achieve?
3. Does the scenario contain a problem or challenge?
4. Does the scenario allow for multiple correct answers?
5. Will the problem or challenge presented be of interest to the student(s) who will undertake the task?
6. Will student(s) assume a real-world role?
7. Will a tangible product or solution be produced?
8. Will a written component be produced?
9. Will an oral component be produced?
10. Will there be an audience who evaluates the result or solution?

Construct the scenario that allows for all 10 criteria to occur. If any criteria are missing, develop that component in order to complete the scenario.

# Blueprint for Integrated Learning, Continued



## Step 5: What is the scenario?

Create the problem-based learning experience.

*Complete this form for each possible scenario.*

### Career Cluster or Career Pathway

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### Scenario Title

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### Student Outcomes Addressed

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### Describe the Scenario

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- ☐ Is there a context moving beyond the content to a real-life situation?
- ☐ Is there an apparent goal for the students to achieve?
- ☐ Does the scenario contain a problem or challenge?
- ☐ Does the scenario allow for multiple correct answers?
- ☐ Will the problem or challenge presented be of interest to the students who will undertake the task?
- ☐ Will students assume a real-world role?
- ☐ Will a tangible product or solution be produced?
- ☐ Will a written component be produced?
- ☐ Will an oral component be produced?
- ☐ Will there be an audience who evaluates the result or solution?

# Blueprint for Integrated Learning, Continued



## Step 6: What is the plan for instruction?

Identify the teaching requirements and establish a plan for instruction.

Review the measurable student outcomes agreed upon earlier in the process and list for each outcome the knowledge and/or skill, instructional method and calendar to be used for each identified outcome. These can be used to create individual lesson plans for the integrated instructional activity.

*Complete this form for each identified outcome.*

**Measurable Outcome (Knowledge or Skill)**

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**Instructional Method**

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**Instructional Calendar or Timeline**

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**Equipment, Resources, Assistance Needed**

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# Blueprint for Integrated Learning, Continued



## Step 7: What resources are needed?

Identify the materials, time and other resources required for instruction.

For this integration blueprint to be effectively implemented, students will need to be provided with resources, time, and materials. The purpose of this last step is to identify and coordinate those logistical items. Consider linking the learning experience with the local business community.

### Resource Needed

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- ☐ Available in an educator's classroom
- ☐ Available through the school; must be scheduled
- ☐ Available through a local community member or business partner
- ☐ To be acquired by students outside of class time

### Dates Needed

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### Person Responsible

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### Resource Needed

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- ☐ Available in an educator's classroom
- ☐ Available through the school; must be scheduled
- ☐ Available through a local community member or business partner
- ☐ To be acquired by students outside of class time

### Dates Needed

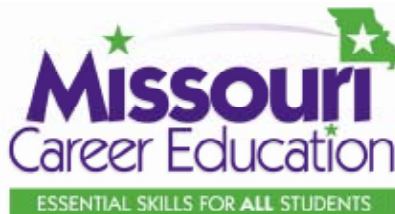
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### Person Responsible

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## Participant Evaluation



# Participant Evaluation



## Integrating Career and Academic Education

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:

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5. I now have a better understanding of:

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

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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:

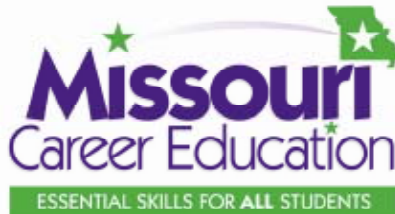
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## Appendices



# 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](http://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](http://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](http://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](http://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](http://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](http://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](http://www.DESE.mo.gov))** offers downloadable booklets and other information about career clusters and career pathways.
- **Edutopia ([www.edutopia.org](http://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](http://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](http://www.MCCE.org))** offers curriculum, professional training, and other resources for schools, teachers, and staff.
- **Missouri Connections ([www.missouriconnections.org](http://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](http://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](http://www.leadered.com)), offers a wealth of information related to rigor and relevance in learning.
- **Project Lead the Way** ([www.pltw.org](http://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](http://www.thefutureschannel.com)) connects learning with the real world through stories and short movies about people who are innovating in various fields of work.