

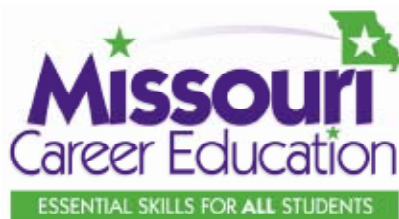
# Table of Contents



|  |    |
|--|----|
| Module Script .....  | 2  |
| Module Exercises .....                                       | 13 |
| • Exercise 1: Integration Issues .....                       | 14 |
| • Exercise 2: Blueprint for Integrated Learning .....        | 15 |
| • Exercise 3: A Communication Action Plan for Integration .. | 19 |
| Handouts .....   | 21 |
| • Devin's Story .....  | 22 |
| • Performance and Academic Standards .....                   | 24 |
| • Blueprint for Integrated Learning.....                     | 25 |
| Evaluation Forms.....  | 38 |
| Appendices.....  | 43 |
| • Appendix A: Glossary.....                                  | 44 |
| • Appendix B: Resource Links.....                            | 48 |



# Module Script



# Module Script



## Slide 1

Welcome to this module on integrating academic and career education. This module is the one of several modules found within MCCE's Career Clusters Toolkit.

We hope this module will help you understand integration — a process of combining rigorous academic content and real-world applications in a meaningful and seamless way. The basic purpose of integration is to help students make connections between academic and career and technical information while helping them discover the answer to “Why do I have to learn this?”

## Slide 2

The information provided in the module, along with the exercises and materials in your handbook, will help you obtain the knowledge and skills to meet these objectives.

## Slide 3

This module includes four sections. First, we will clarify what integration means. Second, we'll look at integration in the context of the Career Clusters Framework. Next, you will learn to identify and implement integration strategies. Last, you will work with a seven-step process for integrating curriculum called, the “Blueprint for Integrated Learning.”

## Slide 4

In this first section, we'll clarify what we mean by “integration” and why it's so vital to student success.

## Slide 5

Integration, using this definition, helps students:

- Prepare for a changing workplace
- Develop the essential skills for success
- Include rigor/relevance/relationships in education.
- Integrate career clusters knowledge and skills, academic, and CTE content into programs of study.
- Experience learning in context

## Slide 6

Integration of academics with career and technical education (CTE) programs through a coherent sequence of courses ensures learning in both the core academic and technical subjects

# Module Script



while strengthening student outcomes. By promoting the integration of challenging academic curricula and CTE curricula, teachers can jointly develop and implement curriculum and instructional strategies that:

- Create enthusiasm for learning
- Increase critical thinking skills
- Enhance knowledge retention

Implementing an integrated curriculum also provides active learning strategies that replicate work environments and prepare students for employment in high-wage, high-skill careers or participation in postsecondary education.

## Slide 7

This last bullet gets at the heart of the need for integration. The reality is that the knowledge and skills needed for success in the workplace often exceed the academics required for college. While we cannot know for certain which Career Cluster or technical skill set will be in demand for jobs in the future, we can identify the academic skills that underpin our technological world. Workplace requirements of most employees include:

- Strong academics, especially in English, language arts, math, science (particularly chemistry and biology), statistics, information management, and computer skills
- Career-specific skills for a chosen career cluster
- Entrepreneurial skills
- Virtues such as honesty, responsibility, and integrity

It has taken more than a century to move from an agriculture-based economy to the information-based economy we are experiencing today. Yet, educators still struggle to develop and fully implement integrated curriculum including the core and CTE content that prepares students for present and future workplace environments.

## Slide 8

Using one student's fictional story, let's begin to identify and discuss typical integration issues faced by high school students.

## Slide 9

Integration supports career education programs that improve academic and career technical skills of CTE students through the integration of academics in CTE. Integration also helps facilitate the connection between secondary and postsecondary education and the development of programs of study as required by the Perkins Act of 2006. We will talk more about programs of study in the next section.

# Module Script



## Slide 10

In summary then, the need for integration can be seen most clearly when looking at the statistics for our kids. In Missouri, only two in 10 ninth-grade students will go on to complete a college degree by their early 20s (within 150 percent time for their degree). Income trends show that postsecondary education is needed to earn a family-supporting wage. Schools must do more to help students bridge transitions between education environments and to assist students through their first year and into their second year in a new school setting.

## Slide 11

In this section, you will come to a better understanding of how integration fits within the Career Clusters Framework.

## Slide 12

The Career Cluster Framework provides an organizational and curricular tool that assists students as they develop personal plans of study. The framework provides institutions with a means of strengthening transitions from secondary to postsecondary education by making curriculum more efficient, effective, and streamlined. By integrating career clusters into curricula, institutions can move education away from narrow, job-specific preparation towards a broader and more durable student learning experience.

## Slide 13

Using this definition, let's look at what characteristics define programs of study:

- They feature coherent, rigorous, and relevant content.
- That content is aligned with challenging academic standards.
- Content is presented in coordinated, non-duplicative progression.
- Courses offered align secondary education with postsecondary education.

Each school district must develop at least one program of study by a career cluster pathway during Perkins IV (5 years total).

## Slide 14

A program of study supports student success and transitions by:

- Providing a sequence of courses adopted and offered by local educational agencies and postsecondary institutions as an option for students when planning for and completing coursework

# Module Script



- Incorporating secondary and post-secondary education elements, including 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
- May include the opportunity for secondary education students to participate in dual or concurrent enrollment programs or other ways to acquire postsecondary education credits; and lead to an industry-recognized credential or certificate at the postsecondary level or an associate or baccalaureate degree

## Slide 15

Programs of study help teachers remain firmly grounded in the curriculum that students have taken before coming to their course or grade while ensuring educational programs:

- Are rigorous and coherent
- Meet state standards and graduation requirements
- Prepare students for postsecondary programs leading to high-skill and high-demand occupations
- Provide teachers with a good understanding of the curriculum the students will take in subsequent courses/years

## Slide 16

An integrated curriculum is a complete teaching resource. It enables teachers to guide students through the learning process, integrating knowledge and skills from more than one subject while applying a contextual, problem-based learning approach.

## Slide 17

In this section, you will begin to pinpoint integration strategies by matching standards with career clusters knowledge and skills statements.

## Slide 18

To get started on the integration process, academic and CTE teachers must ask these key questions.

# Module Script



## Slide 19

Now, let's turn from our analysis of current conditions to envisioning the results we would like to see at our institution/district.

## Slide 20

Integrating career clusters knowledge and skills statements helps students to apply and transfer math, science, and technical reading and writing skills to any number of job tasks. The statements emphasize the process of applying knowledge rather than focusing on specific applications of knowledge for specific tasks. Integrating clusters knowledge and skills statements focuses teaching on the skills, concepts, and systems that underpin all the technologies of work—technologies that often change quickly.

## Slide 21

Educators may use a wide variety of standards that constitute appropriate learner outcomes, which can be integrated into curricula for a given content area or areas.

## Slide 22

Can you determine which of these standards are primarily academic and which are primarily performance based? Are there times when a standard can be both academic and performance based? Use the information on page 38 of your workbook as a reference when determining whether standards are primarily academic or performance based.

## Slide 23

Good standards are comprehensive; therefore, they must cover all important aspects of the subject. Standards are clearly understandable to educators and the public, and it must be possible to measure the student performance required to meet the standard. By integrating rigorous and relevant content standards into curriculum, students are challenged to think in complex ways and apply skills and knowledge to real-world situations.

## Slide 24

Standards alone do not equal curriculum, curriculum do not equal instruction, and assessment does not equal an end. Often, by starting with the end in mind, assessment becomes a beginning by identifying what a student should know and be able to do and how those skills will be measured. Through integration, a means of tying standards to curriculum and instruction in meaningful ways that enhance student learning is created. One example of how to tie standards to curriculum is the Blueprint for Integrated Learning, which will be covered extensively in the next section.

# Module Script



## Slide 25

The Blueprint for Integrated Learning is a seven-step process that encourages authentic assessments and problem-based learning. The process starts with identifying appropriate standards to be addressed and concludes with a plan of instruction that ensures students are assessed on what they are expected to know, and they are taught what will be assessed. The process includes the steps indicated here.

In this section, we will review each step with a scenario-based example. In a later exercise, you will have a chance to use the “blueprint” to begin implementing integration strategies for a specific area.

## Slide 26

It is important for teachers/educators to begin with the desired results and resist the natural temptation to dive right into creating classroom learning activities. Thus, the first step in developing student learning experiences is to identify and unpack the standards that constitute appropriate learner outcomes for given content areas. This process involves breaking standards down and capturing each of the basic parts, which are the student understandings expressed in key verbs and actions. Student outcomes/measurable learner outcomes are the unpacked key verbs and student understandings.

## Slide 27

Here is an example of an unpacked standard. Next, we’ll look at different standards and discover what they share.

## Slide 28

How do you think you might “unpack” these example standards to get to measurable student outcomes? First, let’s identify the key verbs and actions (also referred to as “student understandings”) within these standards.

## Slide 29

The text in red type indicates the “unpacked” key verbs and actions we need to focus on to determine measurable learner outcomes.

## Slide 30

Here are some measurable learner outcomes based on student understandings from the health sciences example we’ve been using. In the left column of this table, we have our student



# Module Script



understandings (or key verbs and actions). From these, we can extrapolate what will be the measurable student outcomes of acquiring those understandings, which appear in the right column.

## Slide 31

When standards with shared tasks and outcomes are paired, the shared understandings among them should be unpacked as performed in step one of the seven-step process. Unshared outcomes should be reviewed to determine whether the standards are mutually exclusive and whether opposing team interpretations of standards can be blended. Unshared outcomes can be built upon or sequenced to develop shared understandings. If sequencing of instruction is important, teachers can present the list of expected student understandings in the order required for effective learning.

Based on the shared/unshared understandings arrived at, teachers/educators should make connections among the shared understandings and develop mutually agreed-upon, measurable outcomes. Each outcome should be measurable and lend itself to rigorous learning experiences and alignment with authentic assessment plans. If deemed appropriate by educators, the concept, skill, or idea may be suitable for an integrated project.

## Slide 32

Integrated instruction CONNECTS shared understandings and translates them into learning experiences and assessment plans that truly reflect the desired outcomes.

## Slide 33

Using our previous example from the Health Sciences cluster, consider this example for measurable outcomes.

## Slide 34

These examples indicate knowledge and skills statements that might go with the previous example of outcomes.

## Slide 35

It is also important to determine transferable concepts/skills/ideas and whether or not the understandings and outcomes justify an integrated project.

## Slide 36

The primary purpose of this step is to determine if the student has attained the desired understandings and outcomes. If this is a team or subject matter integration, students should be

# Module Script



able to demonstrate they have attained the desired outcome through a valid assessment. The bulleted items here represent the kinds of learning activities that could be part of a valid assessment.

## Slide 37

Problem-based learning experiences help ensure rigor and relevance and offer the opportunity to move into higher levels of knowledge acquisition. Integrating clusters knowledge and skills standards in relevant career-related contexts helps to create scenarios with real-world applications.

## Slide 38

These are the 10 criteria you need to present and evaluate to determine the appropriateness of any problem-based learning activity.

## Slide 39

Creating an integrated plan of instruction requires teachers to identify the teaching requirements needed. This process requires teachers to review the standards and outcomes agreed upon earlier in the process. Creating a list of each of the outcomes and the knowledge and/or skills students need to acquire will help teachers develop lesson plans for integrated instructional activities.

## Slide 40

Building on the previous examples from the Health Science cluster, one could create a problem-based plan of instruction for one aspect (that of identifying and accessing sources of information, applying written skills, and delivering a formal presentation), which meets the needs of a targeted audience — in this case, people who need to access health information on the Internet.

## Slide 41

Identify and coordinate logistical items (resources, time, materials, etc.). Reviewing the scenario will help to identify the resources required, how they will be acquired, and how they will be used.

# Module Script



## Slide 42

Now it's your turn. Your workbook features an example scenario related to the Arts, Audio/Video Technology and Communications cluster. In this exercise, you will use the information presented to complete the first three steps of the Blueprint for Integrated Learning by:

- Determining what will be learned by identifying and unpacking relevant standards
- Identifying what learning is shared or not shared
- Establishing the connections, creating more opportunities to share understandings and agree on expected outcomes

Once you've completed this activity, consider walking through all seven steps of the process with this example and sharing your completed work with others in your school/district. Discuss with them specific ways everyone can apply this "blueprint" to developing more integrated instruction.

## Slide 43

A number of additional resources exist for your use. These include:

- **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.
- **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.
- **Model Schools Initiative** is a program of the International Center for Leadership in Education ([www.leadered.com](http://www.leadered.com)), which 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.
- **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

# Module Script



schools, which allows students to explore career options and develop personal plans of study as well as electronic portfolios.

- **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 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.

## Slide 44

The major goal of this activity is to prepare you to speak about the relationship between career clusters knowledge and skills statements and the integration of academic with career and technical education in formal and informal conversations. Becoming familiar with the standard principles of integration and patterns of interaction with one's peers will increase each participant's comfort level when speaking about career clusters and integration in various situations. Using the activity objectives and format in your workbook, develop your "stump speech" about the relationship between career clusters and integration. Then, take action by scheduling opportunities to deliver your speech to specific people with whom you interact regularly.

## Slide 45

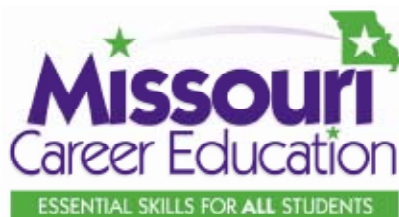
Take a few minutes to review these key points from this module.

## Slide 46

Thank you for your participation in Integrating Career and Academic Education. We hope the exercises and next-step activities provided will help you to work within your institution/district to enhance career opportunities for all students.



## 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 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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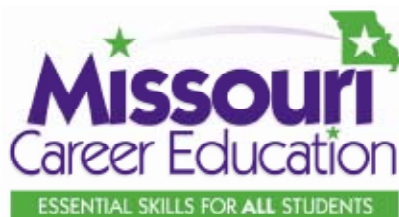
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## Handouts



# 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 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 process 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)**

| <u>STUDENT UNDERSTANDING</u> | <u>OUTCOME</u> |
|------------------------------|----------------|
| _____                        | _____          |
| _____                        | _____          |
| _____                        | _____          |
| _____                        | _____          |
| _____                        | _____          |
| _____                        | _____          |
| _____                        | _____          |
| _____                        | _____          |
| _____                        | _____          |

**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.





# 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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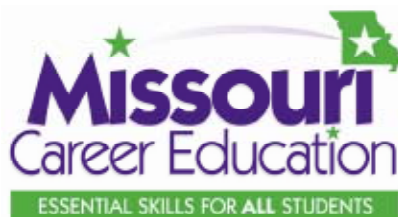
### Person Responsible

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## Evaluation Forms



# Participant Evaluation



## Leader Instructions:

The evaluation form below shown below should be used in instructor-led workshop settings for the module. You can download a pdf version of this form to be printed and distributed at the end of the workshop (at [www.missouricareereducation.org/Project/pos](http://www.missouricareereducation.org/Project/pos)).

## Workshop 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:

\_\_\_\_\_

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:

\_\_\_\_\_

\_\_\_\_\_

# Leader Evaluation



## Leader Instructions:

Complete the evaluation form shown below by downloading and printing the pdf version or by using the online version (at [www.missouricareereducation.org/Project/pos](http://www.missouricareereducation.org/Project/pos)). This form facilitates our understanding of how well this module meets your needs as a facilitator as well as a summary of the workshop participants' perceptions. We appreciate your input about this module and knowing what additional assistance we can provide.

## Workshop Leader Evaluation and Summary of Participant Evaluations: 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  
**Number of Workshop Participants:** \_\_\_\_\_  
**Audience Demographics:** Please describe your target audience. \_\_\_\_\_

**Workshop Duration** \_\_\_\_\_ **& Time:** ☐ Before school ☐ After school ☐ Staff development day

**Part One:** (Provide input on module materials)

### A. Quality of the Content

| Please rate the quality of each of the following components. | High | Average | Low |
|--|------|---------|-----|
| 1. PowerPoint slides   |      |         |     |
| 2. Talking Points script                                     |      |         |     |
| 3. Leader's Guide information                                |      |         |     |
| 4. Participants' Workbook                                    |      |         |     |

### B. Usability of the Module Materials

| Please indicate "agree" or "disagree" or "neutral" for each statement.  | Agree | Neutral | Disagree |
|---|-------|---------|----------|
| 5. The materials were easy to access from the MCCE Web site.  |       |         |          |
| 6. Appropriate and necessary information is provided to allow an individual to prepare for and deliver and workshop presentation. |       |         |          |
| 7. The amount of information included was "just right" for a workshop presentation.   |       |         |          |
| 8. More information was needed to make the presentation effective.  |       |         |          |



# Leader Evaluation, Continued



## C. Overall Presentation

9. Describe what worked well (materials, activities) in your presentation:

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10. Describe what—if anything—did not work well (materials, activities) in your presentation:

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11. Describe what you would do differently if you presented this module as a workshop again:

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**Part Two:** (Summarize workshop participants' evaluations.)

**A. How many individuals participated in the workshop presentation?** \_\_\_\_\_ (enter #)

| Enter the total number of responses in each category.  | 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.    |       |         |          |

# Leader Evaluation, Continued



## B. Provide sample responses from the participants' evaluation:

4. The knowledge or skill that I learned from this module will impact student achievement in my educational setting in this way:

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5. I now have a better understanding of:

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6. The knowledge or skill I learned from this presentation will enable me to:

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## C. Enter the total number of responses for each choice.

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: \_\_\_\_\_

## D. Share any relevant comments:

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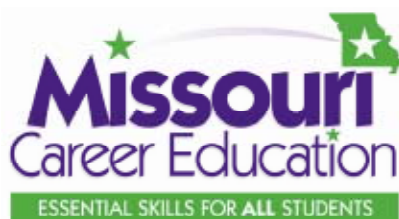
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## Appendices



# 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.