



# Wyoming CTE Assessment Project

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# WHY Were New CTE Assessments Developed?

- To satisfy Perkins IV requirements for measuring technical skill attainment in an “industry-specific” manner. (federal indicator 2S1)

In order to do this...

- ✓ Need competencies at pathway/program level (state standards focused upon broader workplace skills)
- ✓ State assessment strategies – description of alternatives being used in other states.
- ✓ Quality and process employed is critical!



# HOW Were the New CTE Assessments Developed?

**It was the intention from the start of the project that these competencies and assessments be selected and/or developed using an inclusive process**

- **Cooperative teacher involvement**
- **Initial focus on highest CTE enrollment areas**
- **Participation from both large and small schools**
- **Participation from both secondary and postsecondary**
- **Formation of teacher expert workgroups**
- **Careful public review process by teachers and industry experts**
- **Pilot assessment opportunity for all teachers**

# Process Followed

Desire was to put a system in place that not only satisfied the Perkins IV requirements, but was ultimately viewed as useful and valid to teachers around the state.

- ◆ Compile existing standards from national and state sources
- ◆ Examine/prioritize standards for selection/development of competencies for WY.
- ◆ Focus on what is important: Concise but *meaningful*
- ◆ Clear, measurable wording (competencies & objectives)
- ◆ Public review and stakeholder input period: revisions as necessary
- ◆ Development of assessment blueprints: prioritization and weighting
- ◆ Examination of existing assessments
- ◆ Assessment selection or development as necessary
- ◆ Examine online deployment options and select a delivery mechanism
- ◆ Piloting of assessments
- ◆ Psychometric analyses:
  - ◆ Assessment revisions
  - ◆ Deployment of “final” assessments

# Timeline for Development: Phase I

## CTE Assessment Timeline

| Cluster                         | Pathway                            | Fall 2008 | Spring 2009 | Fall 2009 | Spring 2010 | Fall 2010 | Spring 2011 |
|---------------------------------|------------------------------------|-----------|-------------|-----------|-------------|-----------|-------------|
| Manufacturing                   | Precision Machining                | ◆         | ♥           |           |             |           |             |
|                                 | Welding                            | ◆         | ♥           |           | ♣ ♠         |           |             |
| Architecture & Construction     | Residential & Commercial Carpentry | ◆         | ♥           |           | ♣ ♠         |           |             |
|                                 | Cabinetmaking & Woodworking        | ◆         | ♥           |           | ♣ ♠         |           |             |
|                                 | Technical Drafting                 | ◆         | ♥           |           | ♣ ♠         |           |             |
|                                 | Architectural Drafting             | ◆         | ♥           |           | ♣ ♠         |           |             |
| Agriculture & Natural Resources | Ag Mechanics                       | ◆         | ♥           |           | ♣ ♠         |           |             |
|                                 | Ag Business                        | ◆         | ♥           |           | ♣ ♠         |           |             |
|                                 | Natural Resource Management        | ◆         | ♥           |           |             |           |             |
|                                 | Plant Science                      | ◆         | ♥           |           | ♣ ♠         |           |             |
|                                 | Animal Science                     | ◆         | ♥           |           | ♣ ♠         |           |             |
| Auto Technology                 | General Service Technician         |           |             | ◆         | ◆           | ♥         | ♣ ♠         |
|                                 | Auto Body                          |           |             | ◆         | ◆           | ♥         |             |
|                                 | Hybrid/Alternative Fuels           |           |             | ◆         | ◆           |           |             |
|                                 | Diesel Tech                        |           |             | ◆         |             |           |             |

### Symbol Key:

- ◆ Competency Development and Review
- ♥ Assessment Review and/or Development
- ♣ Pilot Testing
- ♠ Final Online Assessment Deployed

# Timeline for Development: Phase II

CTE Assessment Timeline

| Cluster   | Pathway                                   | Fall 2008 | Spring 2009 | Fall 2009 | Spring 2010 | Fall 2010 | Spring 2011 |
|---|---|-----------|-------------|-----------|-------------|-----------|-------------|
| IT & Arts AV                                      | Video Production                          |           |             | ◆         |             | ◆ ♥       |             |
|   | Digital Photography                       |           |             | ◆         |             | ◆ ♥       |             |
|   | Graphic Design                            |           |             | ◆         |             | ◆ ♥       |             |
|   | Information Support Services              |           |             | ◆         |             | ◆ ♥       |             |
|   | Programming & Software Development        |           |             | ◆         |             | ◆ ♥       |             |
|   | Web Development                           |           |             | ◆         |             | ◆ ♥       |             |
| Business  | Accounting                                |           |             | ◆         |             | ◆ ♥       | ♣ ♠         |
|   | Finance                                   |           |             | ◆         |             | ◆ ♥       |             |
|   | Information Management & Support          |           |             | ◆         |             | ◆ ♥       |             |
|   | Marketing, Management & Entrepreneurship  |           |             | ◆         |             | ◆ ♥       |             |
| Family & Consumer Science                         | Child & Human Development                 |           |             | ◆         |             | ◆ ♥       |             |
|   | Community Human Services                  |           |             | ◆         |             | ◆ ♥       |             |
|   | Consumer Economics                        |           |             | ◆         |             | ◆ ♥       |             |
|   | Life Management                           |           |             | ◆         |             | ◆ ♥       |             |
|   | Interior Design                           |           |             | ◆         |             | ◆ ♥       |             |
|   | Textiles                                  |           |             | ◆         |             | ◆ ♥       |             |
| Hospitality, Food Production, Nutrition & Tourism | Food, Nutrition & Wellness                |           |             | ◆         |             | ◆ ♥       | ♣ ♠         |
|   | Professional Foods                        |           |             | ◆         |             | ◆ ♥       |             |
|   | Hospitality, Lodging Management & Tourism |           |             | ◆         |             | ◆ ♥       |             |

**Symbol Key:**

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# Sample Competencies

## Manufacturing Cluster Level

### COMPETENCY

**MFG1** The student will understand and apply safe practices and professional machine shop procedures

### OBJECTIVES

- MFG1-1** Understand and apply appropriate clothing protection appropriate to the task
- MFG1-2** Locate and properly use protective equipment
- MFG1-3** Identify hazardous and non-hazardous materials
- MFG1-4** Understand and apply appropriate handling, lifting and transport of materials (hazardous and non-hazardous)
- MFG1-5** Understand and apply proper storage, stacking and securing of materials (hazardous and non-hazardous)
- MFG1-6** Apply appropriate disposal of hazardous and non-hazardous materials
- MFG1-7** Demonstrate understanding of legal issues relating to disposal of materials
- MFG1-8** Identify the purposes and use of MSDS sheets

## Welding Pathway Level

### COMPETENCY

**WDG7** The student will demonstrate proper use of the tool to conduct manual oxyfuel gas cutting processes.

### OBJECTIVES

- WDG7-1** Conduct set up for manual oxyfuel gas cutting operations on plain carbon steel
- WDG7-2** Operate manual oxyfuel gas cutting equipment
- WDG7-3** Perform straight cutting operations on plain carbon steel (within 1/8" tolerance)
- WDG7-4** Perform shape-cutting operations on plain carbon steel (within 1/8" tolerance)
- WDG7-5** Perform bevel-cutting operations on plain carbon steel (within 1/8" tolerance)

# Process for Developing Assessment Blueprints

- Percentages were given to each competencies to determine weighting in final assessment
  - Percentages for cluster versus pathway level
  - Percentages for each Competency within the clusters and pathways
- Workgroups prioritized objectives within competencies for inclusion in final assessment:
  - Green = Essential on Assessment
  - Yellow = Space Permitting
  - Red = Not Necessary on Assessment



# Sample Assessment Blueprint

## Ag Business Blueprint Summary

|  | DESCRIPTION |   | % of Assessment |
|--|-------------|---|-----------------|
| Agriculture & Natural Resources Cluster Level: 25% of Assessment | AS1         | Students will demonstrate knowledge of the impacts of agriculture on society                              | 15%             |
|  | AS2         | Students will demonstrate written and verbal communication skills   | 25%             |
|  | AS3         | Students will demonstrate an understanding of agribusiness principles and skills                          | 40%             |
|  | AS4         | Students will demonstrate an understanding of applied sciences in agriculture                             | 5%              |
|  | AS5         | Students will demonstrate an understanding of the Future Farmers of America (FFA) organization            | 15%             |
| Agriculture Business Pathway Level: 75% of Assessment            | ASAB1       | Students will understand basic Business Management Procedures and Agriculture and Natural Resources       | 40%             |
|  | ASAB2       | Students will apply basic economic principles in Agriculture and Natural Resource business and management | 30%             |
|  | ASAB3       | Students will understand basic Agricultural Business Management Procedures                                | 10%             |
|  | ASAB4       | Student will understand marketing, sales, and purchasing  | 10%             |
|  | ASAB5       | Students will analyze private and public organizations  | 10%             |

# Sample Assessment Blueprint

## Ag Business Blueprint Pathway Level

|   |         | DESCRIPTION  | Additional Notes on Assessment Items | % of Assessment (Cluster or Pathway) |
|---|---------|--|--------------------------------------|--------------------------------------|
| Agriculture Business Pathway Level: 75% of Assessment | ASAB1   | Students will understand basic agricultural business management procedures in agriculture and natural resources  |                                      | 40%                                  |
|   | ASAB1-1 | Students will understand agriculture credit <ul style="list-style-type: none"> <li>• Students will understand credit and its role in agribusiness</li> <li>• Students will analyze and compare credit sources and types</li> </ul>   |                                      |                                      |
|   | ASAB1-2 | Students will maintain agricultural records <ul style="list-style-type: none"> <li>• Demonstrate understanding of record-keeping procedures including accounting and bookkeeping systems, as well as inventory and depreciation procedures commonly used in production agriculture and agribusiness</li> <li>• Maintain and complete a set of financial records based on a Supervised Agricultural Experience Project (SAE) or a simulated class activity</li> </ul> |                                      |                                      |
|   | ASAB1-3 | Students will understand cash flow planning and analysis <ul style="list-style-type: none"> <li>• Identify how to make management decisions based on financial and production records</li> </ul>   |                                      |                                      |
|   | ASAB2   | Students will apply basic economic principles in agriculture and natural resource business and management  |                                      | 30%                                  |
|   | ASAB2-1 | Students will apply basic economic principles in natural resource business and management <ul style="list-style-type: none"> <li>• Demonstrate understanding of profit motive</li> </ul>   |                                      |                                      |
|   | ASAB2-2 | Students will monitor monthly financial statements   |                                      |                                      |
|   |         |  |                                      |                                      |

**Workgroups were the ultimate authority on: 1) competencies developed; 2) which competencies and objectives were to be assessed and to what degree; and 3) how they were going to be assessed.**

***While it was hard to please everyone, the process allowed for group consensus.***



### **EXAMPLE:**

The Ag group had diverse opinions related to the inclusion of FFA competencies and the extent to which they should be assessed. The group came to consensus in that competencies were included on this BUT they were given small weighting in the final assessment blueprint and so few items were included on this in the final exam.



# Ongoing Evolution of the Online Assessments

The current CTE assessment system allows for a variety of assessment item types. Available item types include:

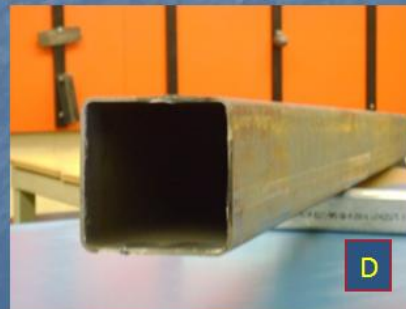
- ✧ Matching
- ✧ Ordering
- ✧ Grouping
- ✧ Labeling
- ✧ Multiple Choice
- ✧ Drop and Drag

Questions can also include images...and even videos.

# Sample Assessment Items: Welding

WDG 4-2 : Identify structural steel shapes (channel, angle, tubing, I-beam, H-beam, sheeting and plate)

Which of the following structural shapes is known as plate steel?



# Sample Assessment Items: General Ag

ASAS6-2: Students will identify wholesale and retail cuts of beef, lamb and pork

Identify the wholesale pork cuts. Drag and drop the correct answers.

[Boston Butt](#)

[Clear Plate](#)

[Back Fat](#)

[Loin](#)

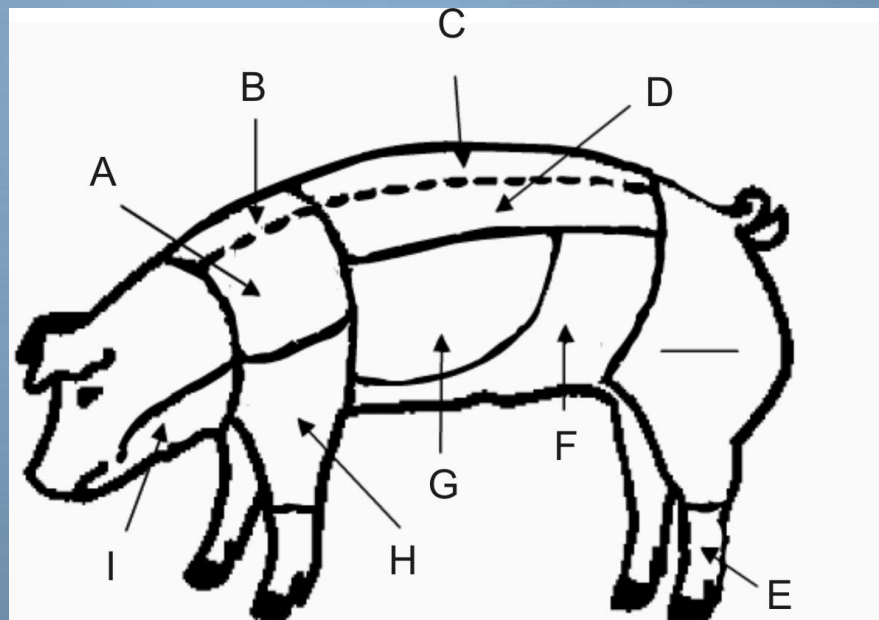
[Hind Feet](#)

[Bacon](#)

[Spareribs](#)

[Picnic](#)

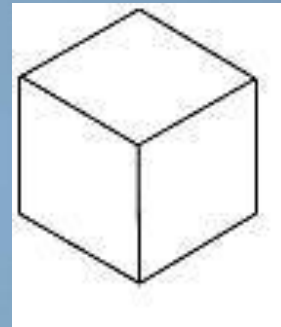
[Jowl](#)



# Sample Assessment Items: Technical Drafting

ACTD<sub>4-1</sub> : Identify three types of pictorial drawings

Which of the following is shown?



- a) Isometric
- b) Orthographic
- c) Cavalier oblique
- d) Oblique



# Pilot Process

- Recruitment of teachers & students from around the state
- Training
- Students & teachers take the pilot assessments
- Teacher feedback provided via online format
- Assessment blueprints, pilot results (psychometric analyses), and teacher feedback used to design final CTE assessments

**Table 1. CTE Pilot Assessments: Total Participation Rates\*\***

| Pathway                          | Teachers       | Students       | Schools        |
|----------------------------------|----------------|----------------|----------------|
|                                  | # Participated | # Participated | # Participated |
| General Ag - Version A*          | 5              | 74             | 5              |
| General Ag - Version B*          | 7              | 149            | 7              |
| Ag Mechanics                     | 5              | 72             | 5              |
| Welding - Version A*             | 16             | 295            | 13             |
| Welding - Version B*             | 6              | 194            | 5              |
| Cabinetmaking & Woodworking      | 12             | 140            | 12             |
| Residential/Commercial Carpentry | 7              | 85             | 6              |
| Technical Drafting               | 9              | 126            | 9              |
| Architectural Drafting           | 9              | 131            | 9              |
| <b>TOTAL</b>                     | <b>76</b>      | <b>1,266</b>   | <b>71</b>      |

\* Given the number of items developed for these pathways, the test was spilt into 2 versions.

\*\* Participation rates include duplicated counts (i.e., students, teachers, schools may have participated in more than one pathway test).



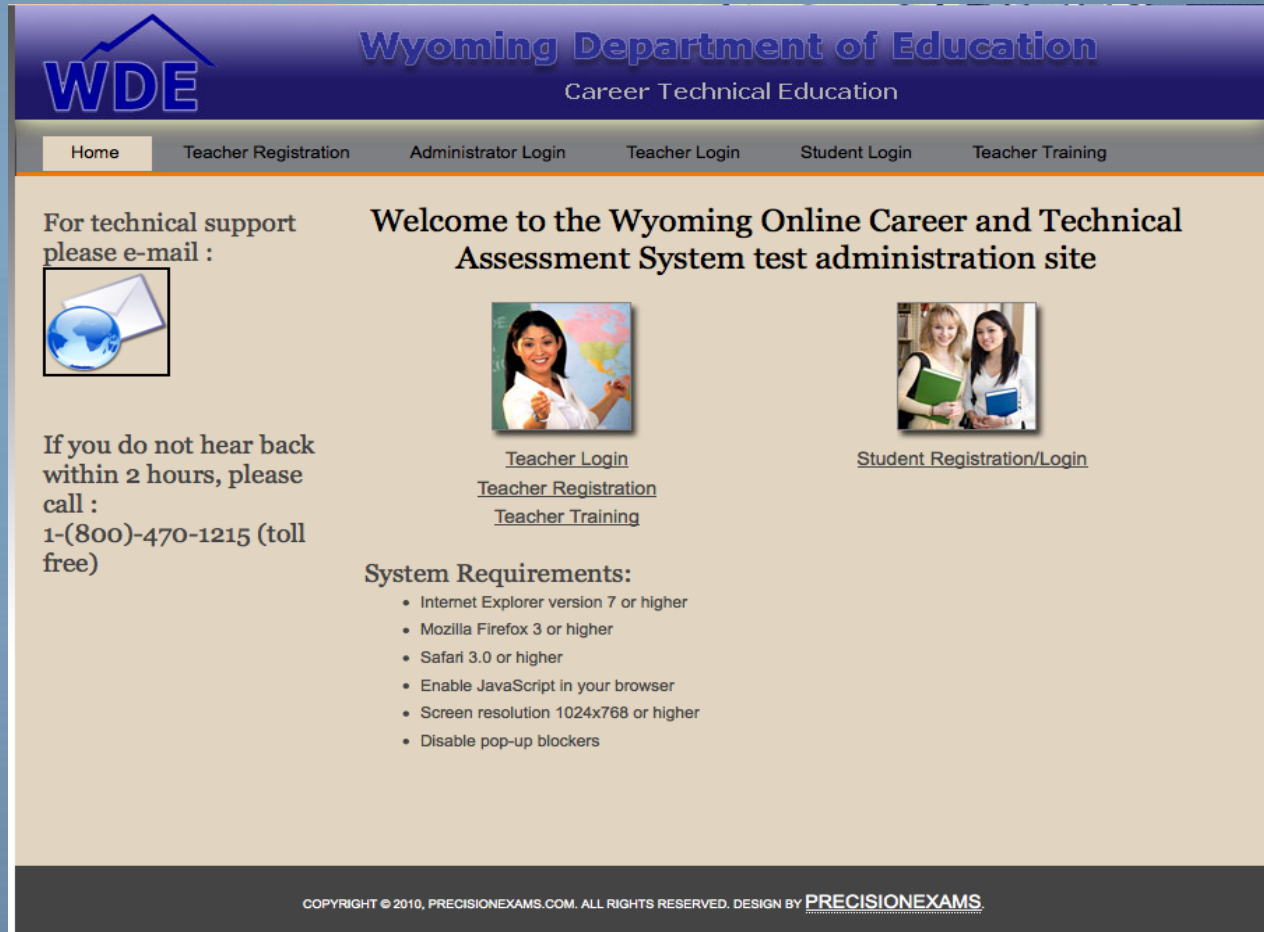


# What Will You Find When You Access the New Online Assessments?

- ✓ Easy registering and login process for teachers and students
- ✓ Teacher controlled loading of assessments
- ✓ Ability for teachers to proctor exams from any computer
- ✓ Quick assessment feedback
- ✓ Live and immediate technical support via a toll free number or email

# Wyoming CTE Assessment Home Page

- Teacher Login
- Student Login
- Training Materials
- Student  
Registration/Login




The screenshot shows the homepage of the Wyoming Department of Education's Career Technical Education assessment system. The header features the WDE logo and the text "Wyoming Department of Education Career Technical Education". A navigation menu includes links for Home, Teacher Registration, Administrator Login, Teacher Login, Student Login, and Teacher Training. The main content area is divided into three columns. The left column provides technical support contact information, including an email icon and a phone number. The middle column contains a welcome message and links for Teacher Login, Teacher Registration, and Teacher Training, accompanied by an image of a teacher. The right column features a link for Student Registration/Login with an image of two students. A System Requirements section lists browser and screen resolution specifications. The footer contains copyright information for Precision Exams.

**WDE** Wyoming Department of Education  
Career Technical Education


Home Teacher Registration Administrator Login Teacher Login Student Login Teacher Training

For technical support please e-mail :




If you do not hear back within 2 hours, please call :  
1-(800)-470-1215 (toll free)

Welcome to the Wyoming Online Career and Technical Assessment System test administration site



[Teacher Login](#)  
[Teacher Registration](#)  
[Teacher Training](#)



[Student Registration/Login](#)

**System Requirements:**

- Internet Explorer version 7 or higher
- Mozilla Firefox 3 or higher
- Safari 3.0 or higher
- Enable JavaScript in your browser
- Screen resolution 1024x768 or higher
- Disable pop-up blockers

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# How Do I Administer an Assessment?

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## THE 6 BASIC STEPS

- Teacher Registration
- Teacher Login
- Add Classes
- Add Tests
- Proctor an Exam
- Student Registration, Login & Take an Exam

# Performance Report Features

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Following administration of assessments, teachers and school officials will have access to performance reports that include the following features:

- Users can run reports at different levels (state, district, school, teacher, class, student).
- Users can run reports according to specific time periods (to/from dates).
- Information on overall performance as well as by competency and objective will also be available.
- Eventually, performance cutpoints may be established.

# Wyoming CTE Assessment Results: Welding

## Class Level Report

Report for:

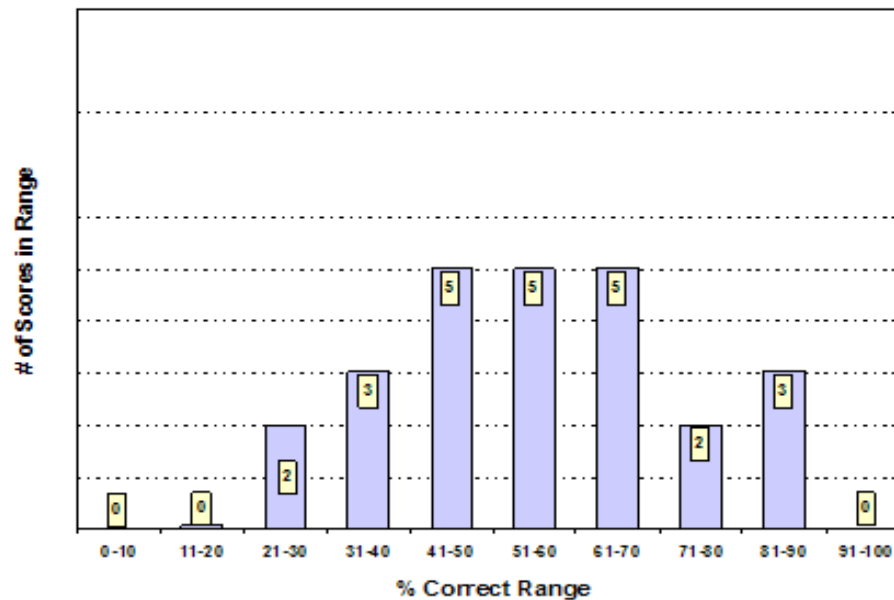
Testing Period:

Number of Participants

Time to Complete:

| Number Tested | Minimum Correct | Maximum Correct | Average Total Correct | Total Possible | % Correct (Average) |
|---------------|-----------------|-----------------|-----------------------|----------------|---------------------|
| 25            | 18              | 67              | 50                    | 100            | 50.0%               |

Score Distribution



## Cluster Level

### MFG1: The student will understand and apply appropriate safe practices and professional machine shop procedures

|  |       |               |
|--|-------|---------------|
| MFG1-1 Understand and apply appropriate clothing protection appropriate to the task                          | 42.9% | (6 out of 14) |
| MFG1-2 Locate and properly use protective equipment  |       | (1 out of 4)  |
| MFG1-3 Identify hazardous and non-hazardous materials  |       | (2 out of 4)  |
| MFG1-4 Understand and apply appropriate handling, lifting and transport of materials                         |       | (2 out of 3)  |
| MFG1-5 Understand and apply proper storage, stacking and securing of materials (hazardous and non-hazardous) |       | (1 out of 3)  |
| MFG1-6 Apply appropriate disposal of hazardous and non-hazardous materials                                   |       | NA            |
| MFG1-7 Demonstrate understanding of legal issues relating to disposal of materials                           |       | NA            |
| MFG1-8 Identify the purposes and use of MSDS sheets  |       | NA            |

### MFG2: The student will demonstrate proper equipment safety practices

|   |     |               |
|---|-----|---------------|
| MFG2-1 Maintain and use appropriate proactive guards and equipment on machinery                   | 60% | (6 out of 10) |
| MFG2-2 Select appropriate tool for the task   |     | (1 out of 4)  |
| MFG2-3 Conduct pre-use inspection and set-up of tools   |     | (2 out of 3)  |
| MFG2-4 Apply proper use of the tool (hand placement, minimum and max materials sizes, feed rates) |     | (2 out of 2)  |
| MFG2-5 Demonstrate awareness of proper functioning during use of the tool                         |     | (1 out of 1)  |
| MFG2-6 Demonstrate maintenance of the tool (cleaning, lubrication, sharpening)                    |     | NA            |
|   |     | NA            |

### MFG3: The student will demonstrate proper use of emergency equipment and procedures

|  |       |              |
|--|-------|--------------|
| MFG3-1 Demonstrate proper use of fire extinguisher                                       | 37.5% | (3 out of 8) |
| MFG3-2 Understand purpose and meaning of fire triangle (covers all areas)                |       | (2 out of 4) |
| MFG3-3 Understand and apply evacuation procedures  |       | (1 out of 1) |
| MFG3-4 Understand basic first aid to cuts and burns, eye wash, and blood-borne pathogens |       | NA           |
|  |       | (0 out of 3) |

### MFG4: The student will use basic math and measuring skills

|  |       |              |
|--|-------|--------------|
| MFG4-1 Demonstrate proper use of measuring devices                                 | 66.7% | (4 out of 6) |
| MFG4-2 Identify and apply appropriate unit of measurement                          |       | NA           |
| MFG4-3 Able to measure to a specified tolerance                                    |       | (1 out of 1) |
| MFG4-4 Convert fractions/decimals/metric   |       | NA           |
| MFG4-5 Apply appropriate calculation to the task (add, subtract, multiply, divide) |       | (2 out of 2) |
| MFG 4-6 Perform basic layout techniques  |       | (1 out of 3) |
|  |       | NA           |

# Who Should Take the New Online Assessments?

- CTE concentrators can take a “practice” or baseline assessment
- CTE program completers will be required to take the new online assessment if it is available in their area.
- New online CTE assessments are currently available in the following areas (other areas to be rolled out in 2010-2011):
  - Ag Mechanics
  - General Ag (includes Ag Business, Plant Science & Animal Science)
  - Welding
  - Cabinetmaking & Woodworking
  - Residential/Commercial Carpentry
  - Technical Drafting
  - Architectural Drafting



# When Should Students Take the Assessments?

- Concentrators are allowed to take online assessments in their area of concentration at two points during their CTE program:
  - A student can take the new assessments once when they are at the beginning of concentrator status . The reason for this is so students and instructors can receive formative feedback while the student is still in the CTE program and receiving instruction.
  - A student will take the assessment a second and final time at the completion of their CTE program or during their senior year, whichever comes first. The online assessments that were rolled out this Spring will be available as of 2010-2011 throughout the school year, so instructors can have students take the assessment whenever they have completed the program.



**Did teachers get  
to provide  
feedback on  
assessments  
prior to  
administering  
them?**

- ❖ All Perkins coordinators in the state were asked to invite their CTE teachers to participate in the pilot
- ❖ During the pilot teachers were able to preview the assessments
- ❖ Teachers were given the opportunity to provide feedback on the assessments to be taken prior to the final rollout
- ❖ Still, we are going to reconvene groups another time later this summer.



# Next Steps

- Training and professional development with CTE educators and Perkins coordinators around the new technical skill assessments to occur - Fall, 2010.
- Meetings with workgroups to review final 7 assessments that were deployed this Spring - August, 2010.
- Determine “cutpoints” and performance levels on the 7 “final” assessments we have. That is, what score or performance level is considered “proficient?”
- Reconvene business, IT, Arts/AV, culinary, and FACS groups to review the competencies, develop assessment blueprints, and discuss assessment options.
- Assessment selection or development for auto, business and culinary.
- Piloting and deployment of 5-6 new CTE assessments will occur during the 2010-2011 school year in the areas of:
  - Auto Technology: general service technician and possibly auto body;
  - Business: accounting; finance; and entrepreneurship, management, marketing;
  - Culinary: foods and hospitality management

# Discussion items ...

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- How will this information be used?
- Cycle for revisions and revisiting of competencies and assessments.
- Areas for which there are few numbers of students.
- Participation in the groups moving forward ....
- Professional Development and curricula ...
- Other items???

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*Final versions of competencies can be downloaded at:*

WDE website:

[http://www.k12.wy.us/ICS/cluster\\_pathways.asp](http://www.k12.wy.us/ICS/cluster_pathways.asp)

PRES website:

<http://www.presassociates.com/wycta.html>

# ***Thank You!***

- **The CTE assessment project would not be where it is today without all of your help.**
- **Many dedicated teachers from around the state have generously contributed their time and expertise to this project.**
- **We are extremely appreciative of all that you have done!**

# Contacts

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