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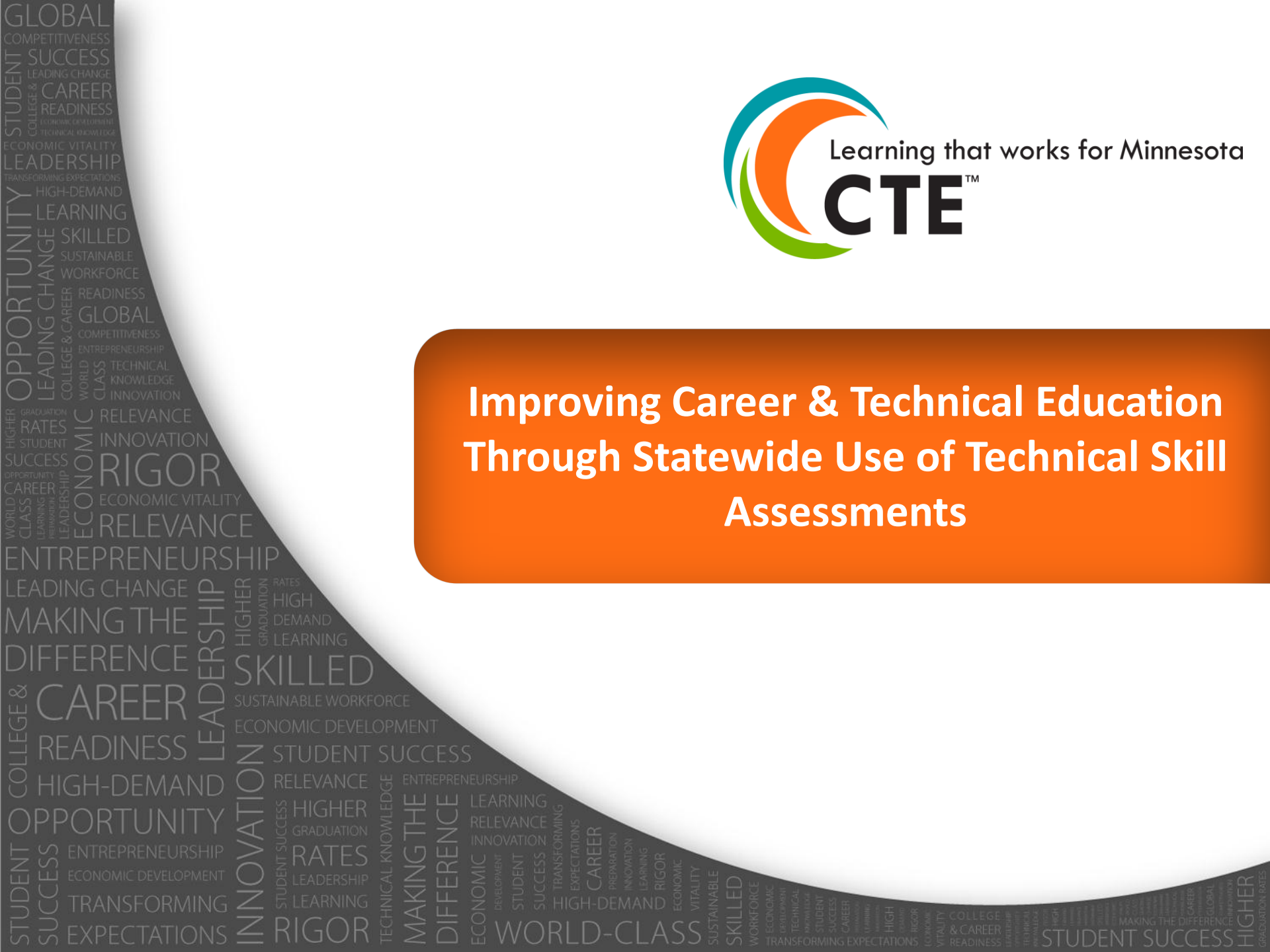
Improving Career & Technical Education Through Statewide Use of Technical Skill Assessments



Presenters:

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The CTE Opportunities

- The current Federal Perkins law affirmed the value of embedding ***industry-recognized standards*** in local and state programming.
- The law shifted more of the focus to ***curriculum, instruction, and assessment.***
- With this shift, state and local leadership gained an opportunity for ***more collaboration*** through Program of Study.
- With technical skill attainment, teachers, leaders, and policy makers would ***gain data for program improvement***.

The CTE Challenge

- Federal Perkins law, which drives much of current CTE-funded programs and policy, ***needs additional clarity and focus***
- There are too few systematic partnerships to support ***student achievement*** and entry into postsecondary education
- Teachers and leaders ***need additional professional development*** and support
- Many programs emphasize ***skill standards that are poorly matched to employer demands***
- Nationally ***comparable data*** on CTE students' educational and employment outcomes is ***not readily available***

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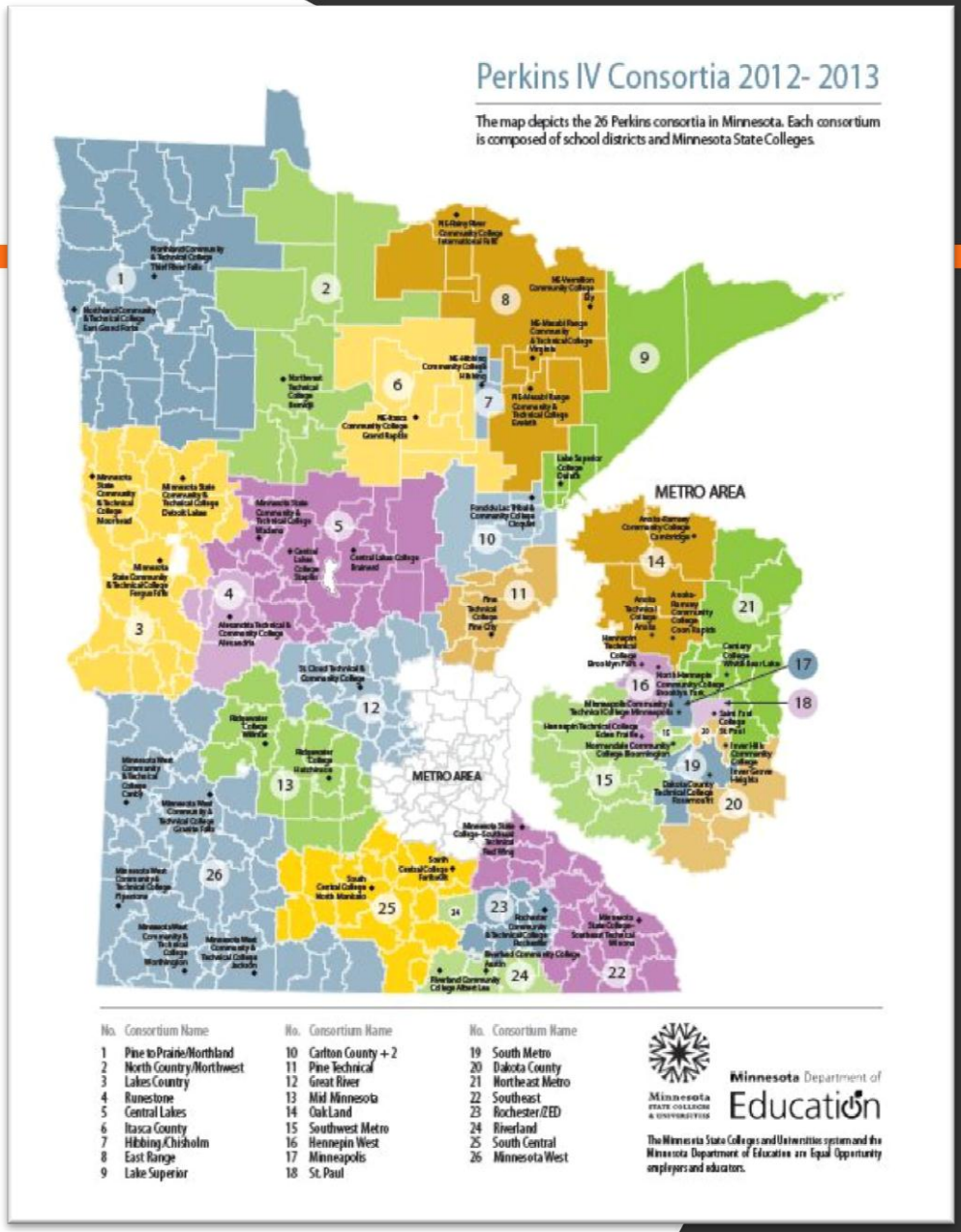
Minnesota's response…

Three important changes in the implementation of Perkins Act of 2006

- A requirement for the establishment of Programs of Study
- A new approach to assessing CTE skills
  - ❑Academic (Liberal Arts & Sciences) skills
  - ❑Technical skills
  - ❑Workplace skills
- MN changed its definition of a local recipient

Minnesota only awards Perkins funds to collaborating consortia of secondary and postsecondary schools…no individual local recipients.



Our objective

Develop an assessment system focused on technical skill attainment within each of the 79 nationally-recognized career pathways

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Our goals

The technical skill assessment system would:

- Provide teachers & faculty with accurate and useful information about student skills and allow them to target efforts to improve instruction

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Our goals

The technical skill assessment system would:

- Encourage and support local administrators to use local program-level and aggregate results to lead instructional improvement efforts and align resources to support student achievement

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Our goals

The technical skill assessment system would:

- Collect, analyze and report state-level aggregate results to inform policy makers and business/industry stakeholders

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Developing the Assessment System

The stakeholders

- Perkins consortia leaders
- Local education administrators
- Teachers and faculty
- Business and industry leaders
- State CTE staff

The process

- Identify stakeholders to involve by pathway.
- Identify core competencies and skills by pathway.
- Develop an assessment blueprint.
- Assemble an inventory of available third-party technical skill assessments that are valid and reliable.
- Involve business & industry reps in a process of validating the identified competencies and skills.
- Reconvene teachers and faculty to review business & industry input and recommended a list of assessments that will be the state-approved technical skill assessments for a pathway.

Academic Year	Pathways	
2010-2011	• Accounting • Law Enforcement Services • Network Systems	• Plant Systems • Therapeutic Services
2011-2012	• Animal Systems • Diagnostic Services • Early Childhood Development & Services • Teaching/Training (Pre K-3) • Engineering & Technology	• Facility & Mobile Equipment Maintenance • Marketing Management, Merchandising • Professional Sales • Visual Arts/ Printing Technology • Foundation Knowledge & Skills
2012-2013	• Administrative Support • Construction • Emergency & Fire Management • National Security • Environmental Services Systems • Natural Resource Systems • Web & Digital Communications	• Health Informatics • Personal Care Services • Production • Mfg Production Process Development • Restaurant • Food & Beverage Services • Teaching/Training (K-12)
2013-2014	• Agribusiness Systems • A/V Technology • Film • Performance Arts • Journalism & Broadcasting • Banking Services • Business Finance • Securities & Investment • Human Resource Management • Business Information • Maintenance Installation & Repair • Public Management & Administrative Planning • Quality Assurance Health • Transportation Operations	• Insurance • Biotechnology Research & Development • Health Support Services • Consumer Services • Correction Services • Security & Protective Services • Design/Pre-construction • General Management • Operations Management • Information Support & Services • Power Structural and Technical Systems • Revenue & Taxation • Safety & Environmental Assurance • Sales & Services
2014-2015	• Education Admin & Administrative Support • Family & Consumer Services • Food Products & Processing Systems • Governance • Legal Services • Recreation, Amusement and Attractions • Transportation Systems, Infrastructure • Health Safety & Environmental Management • Marketing Communications • Programming & Software Development	• Professional Support Services • Counseling & Mental Health Services • Foreign Service • Regulation • Lodging, Travel, & Tourism • Logistics Planning & Management Services • Warehousing & Distribution Center Operations • Maintenance/Operations • Marketing Research • Telecommunications

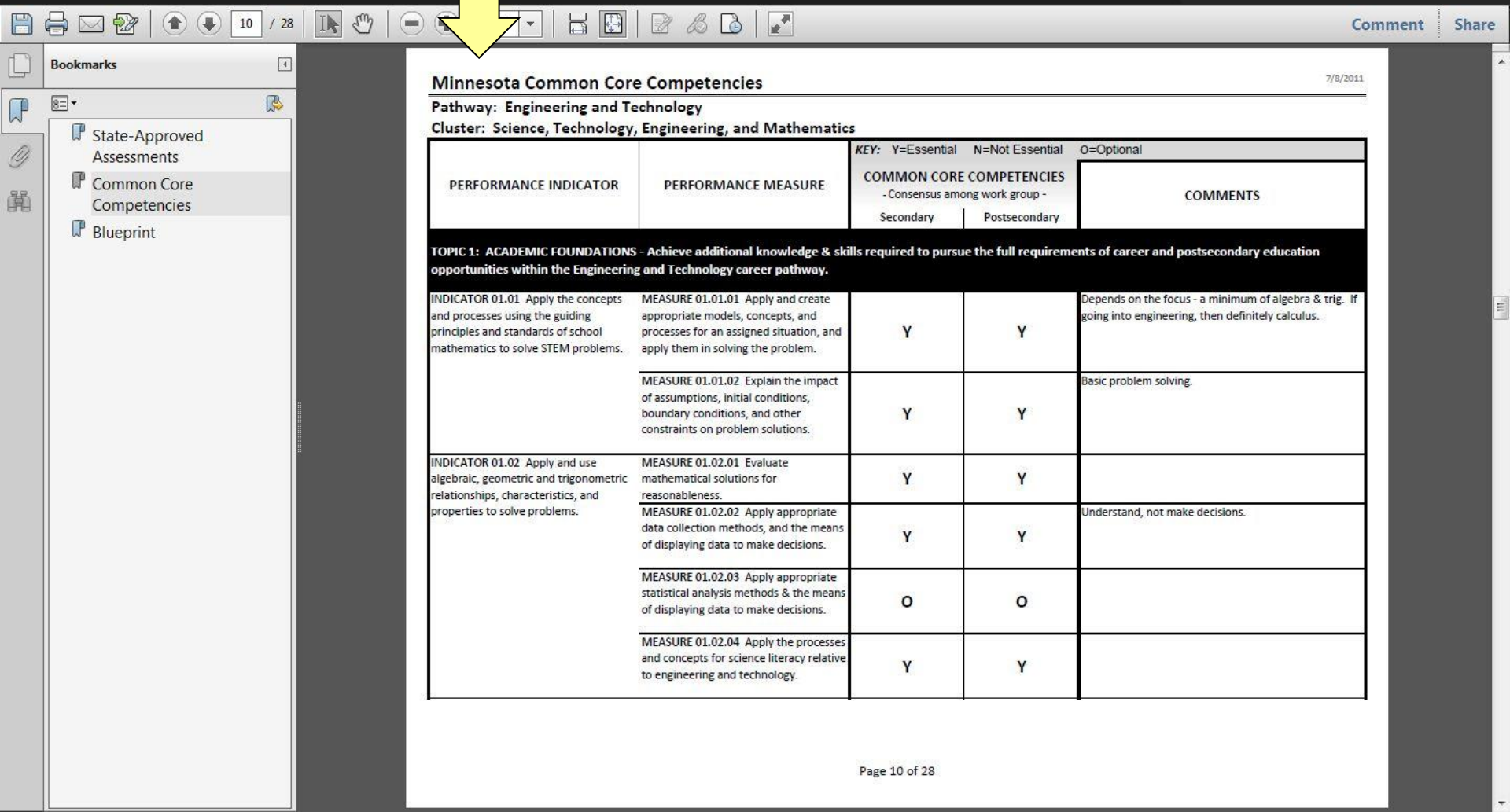
State's Role in Supporting Implementation

- Set up systems and processes for pathway teams to complete this work
- Provide direct technical assistance
- Provide professional development to teachers, faculty, and administrators focused on initial implementation
- Launch a statewide marketing campaign focused on building awareness of the benefits of rigorous CTE
- Provide targeted professional development to teachers and faculty to use assessment results and other data to plan instructional improvement

Creating Collaborative Virtual Workspaces

http://www.cte.mnscu.edu/programs/mntsa.html

Providing a consistent format to record Common Core Competencies in a Career Pathway



Minnesota Common Core Competencies

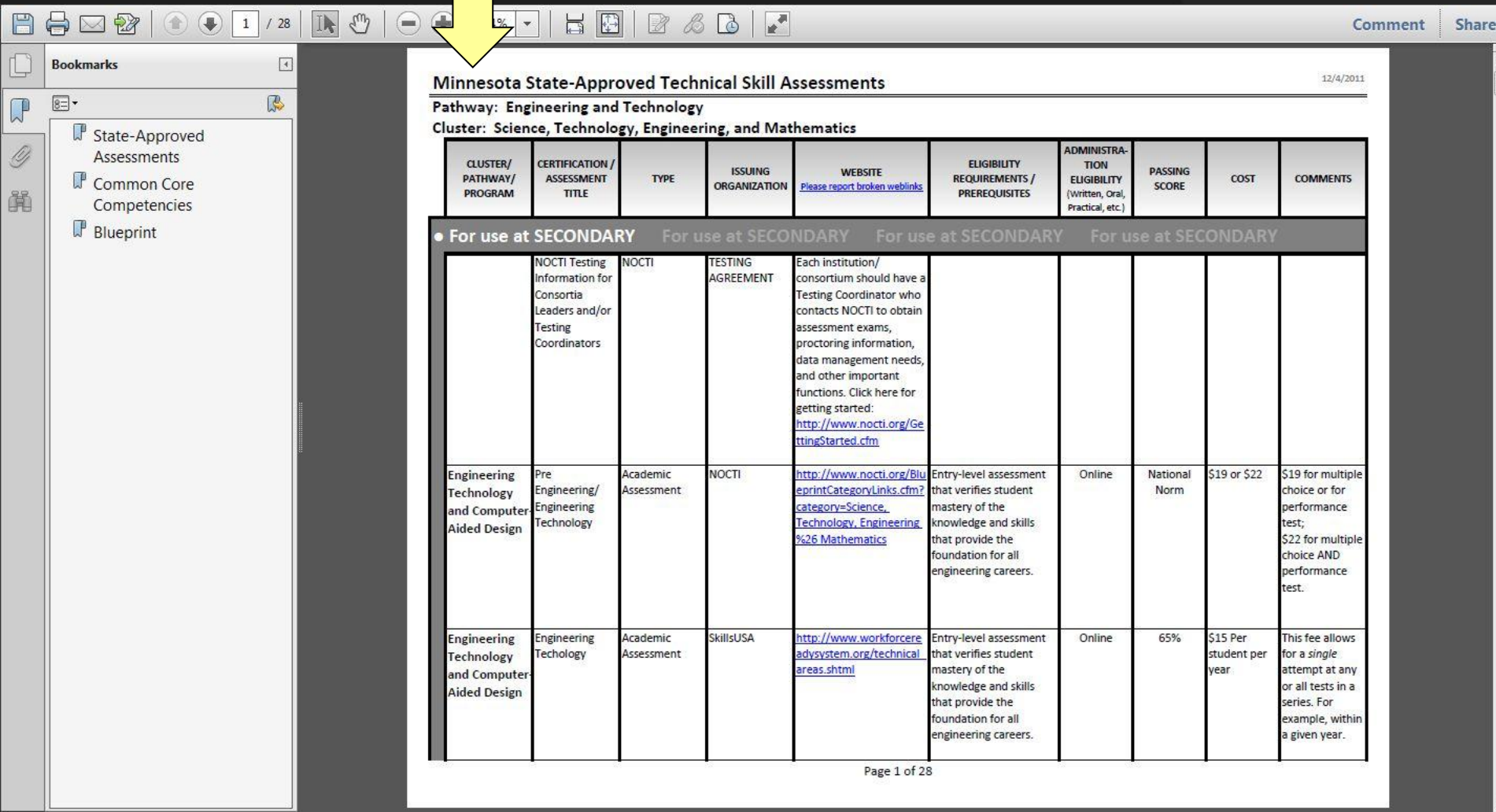
7/8/2011

Pathway: Engineering and Technology

Cluster: Science, Technology, Engineering, and Mathematics

PERFORMANCE INDICATOR	PERFORMANCE MEASURE	*KEY:* Y=Essential N=Not Essential O=Optional COMMON CORE COMPETENCIES - Consensus among work group - Secondary	Postsecondary	COMMENTS
TOPIC 1: ACADEMIC FOUNDATIONS - Achieve additional knowledge & skills required to pursue the full requirements of career and postsecondary education opportunities within the Engineering and Technology career pathway.				
INDICATOR 01.01 Apply the concepts and processes using the guiding principles and standards of school mathematics to solve STEM problems.	MEASURE 01.01.01 Apply and create appropriate models, concepts, and processes for an assigned situation, and apply them in solving the problem.	Y	Y	Depends on the focus - a minimum of algebra & trig. If going into engineering, then definitely calculus.
	MEASURE 01.01.02 Explain the impact of assumptions, initial conditions, boundary conditions, and other constraints on problem solutions.	Y	Y	Basic problem solving.
INDICATOR 01.02 Apply and use algebraic, geometric and trigonometric relationships, characteristics, and properties to solve problems.	MEASURE 01.02.01 Evaluate mathematical solutions for reasonableness.	Y	Y	
	MEASURE 01.02.02 Apply appropriate data collection methods, and the means of displaying data to make decisions.	Y	Y	Understand, not make decisions.
	MEASURE 01.02.03 Apply appropriate statistical analysis methods & the means of displaying data to make decisions.	O	O	
	MEASURE 01.02.04 Apply the processes and concepts for science literacy relative to engineering and technology.	Y	Y	

State Approved Technical Skill Assessments by Pathway



Bookmarks

- State-Approved Assessments
- Common Core Competencies
- Blueprint

Minnesota State-Approved Technical Skill Assessments

12/4/2011

Pathway: Engineering and Technology

Cluster: Science, Technology, Engineering, and Mathematics

CLUSTER/ PATHWAY/ PROGRAM	CERTIFICATION / ASSESSMENT TITLE	TYPE	ISSUING ORGANIZATION	WEBSITE Please report broken weblinks	ELIGIBILITY REQUIREMENTS / PREREQUISITES	ADMINISTRATION ELIGIBILITY (Written, Oral, Practical, etc.)	PASSING SCORE	COST	COMMENTS
• For use at SECONDARY	For use at SECONDARY	For use at SECONDARY	For use at SECONDARY	For use at SECONDARY					
	NOCTI Testing Information for Consortia Leaders and/or Testing Coordinators	NOCTI	TESTING AGREEMENT	Each institution/ consortium should have a Testing Coordinator who contacts NOCTI to obtain assessment exams, proctoring information, data management needs, and other important functions. Click here for getting started: http://www.nocti.org/GettingStarted.cfm					
Engineering Technology and Computer-Aided Design	Pre Engineering/ Engineering Technology	Academic Assessment	NOCTI	http://www.nocti.org/BlueprintCategoryLinks.cfm?category=Science,_Technology,_Engineering_%26_Mathematics	Entry-level assessment that verifies student mastery of the knowledge and skills that provide the foundation for all engineering careers.	Online	National Norm	$19 or $22	$19 for multiple choice or for performance test; $22 for multiple choice AND performance test.
Engineering Technology and Computer-Aided Design	Engineering Techology	Academic Assessment	SkillsUSA	http://www.workforcereadysystem.org/technicalareas.shtml	Entry-level assessment that verifies student mastery of the knowledge and skills that provide the foundation for all engineering careers.	Online	65%	$15 Per student per year	This fee allows for a *single* attempt at any or all tests in a series. For example, within a given year.

Minnesota Career Technical Education Data Driven Improvement Professional Development

- CTEDDI provides teachers & faculty professional development to increase their confidence, knowledge and skills in the use and interpretation of assessment data for making instructional improvements.
- CTEDDI will be delivered by facilitators who will also serve as coaches as the educators apply their initial training at their school sites.

Local Implementation

- **Review the technical skill assessments from the list of state-approved technical skill assessments for each high school and college CTE program.**
- **Review the common core competencies established by teacher/faculty group in a pathway.**
- **Determine the best time to assess the students in the program based on the approved Program of Study and the common core competencies.**
- **Identify the technical skill assessment(s) from the list of state-approved technical skill assessments for each high school and college CTE program.**
- **Report the selected assessments for programs.**
- **Determine and allocate fiscal and technology resources needed to assess students within pathway**

Lessons Learned

- Teachers and faculty value meeting together—discussing common outcomes, exchanging lesson ideas, and identifying options for assessments.
- In general, teachers and faculty welcome information on student learning & student-level data. They question the value of statewide and national data collection for accountability purposes as all are not equal.
- Many college programs have been using technical skill assessments in their programs for years or are now implementing them for accreditation purposes.
- Most metro secondary schools are implementing technical skill assessments in their advanced CTE programs. Smaller programs in rural school districts struggle with the requirements.
- The collection of data from multiple sources is overwhelming!
- Professional development in this project is massive. . .with state staff, with consortia leaders, with high school and college administrators, and with teachers and faculty.

Next Steps

- Step back and evaluate our process. We now have to identify maintenance and review of the state-approved assessment system.

- Sustainable professional development for program improvement is KEY!!!
    - Aligning course curriculum with learning outcomes
    - Evaluating assessments to meet desired learning outcomes
    - Data-driven decision-making by teachers & administrators

- Collaborate with our regional and national colleagues.

Resources

- www.cte.mnscu.edu
- www.careertech.org
- www.mnpos.com*

*MNPOS will be changing to www.mnprogramsofstudy.org in 2012