

48.0501 Machine Tool Technology/Machinist

Release of Standards

MDE – Office of Career and Technical Education and
Michigan Center for Career and Technical Education

2013



Agenda

RELEASE OF NEW STANDARDS WEBINAR

- Review of Career and Technical Education and Program Overview
- Overview of the review and revision process
- Steps on how to access the revised standards
- Implementation timeline

Project Team

Michigan Department of Education

Glenna Zollinger-Russell, Supervisor

Patricia Talbott-Collins, Ed.D., Program Consultant

Jackie Martinez, Administrative Support

Wayne State University

Geralyn E. Stephens, Ed.D.

Alert: Program Name Change

- According to 2010 National Center for Education Statistics: Classification of Institutional Programs, the program name for CIP 48.0501 has changed from Machine Tool Operation/Machine Shop to Machine Tool Technology/Machinist

CTE AND PROGRAM OVERVIEW

NATIONAL – Carl Perkins Legislation



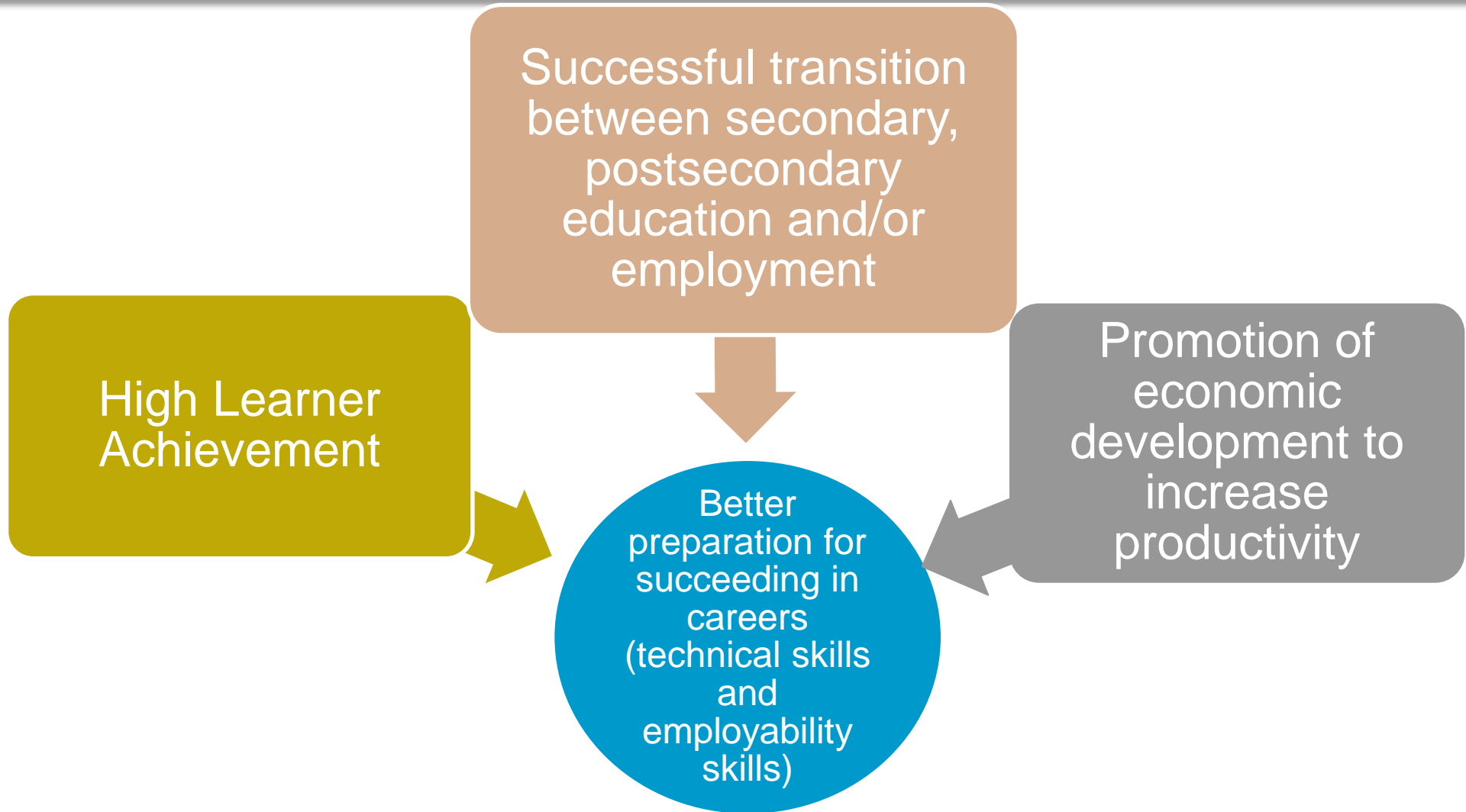
Perkins Legislation

Technical
Standards

Training
Standards &
Curriculum

Test and
certification

National Career Clusters



National Career Clusters



Agriculture, Food & Natural Resources	Hospitality & Tourism
Architecture & Construction	Human Services
Arts, A/V Technology & Communications	Information Technology
Business, Management & Administration	Law, Public Safety, Corrections & Security
Education & Training	Manufacturing
Finance	Marketing
Government & Public Administration	Science, Technology, Engineering & Mathematics
Health Science	Transportation, Distribution & Logistics

Planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance and manufacturing/process engineering.

Sample Career Specialties/Occupations	<ul style="list-style-type: none"> ◆ Assembler ◆ Automated Manufacturing Technician ◆ Bookbinder ◆ Calibration Technician ◆ Electrical Installer and Repairer ◆ Electromechanical Equipment Assembler ◆ Extruding and Drawing Machine Setter/Set-Up Operator ◆ Extrusion Machine Operator ◆ Foundry Worker ◆ Grinding, Lapping, and Buffing Machine Operator ◆ Hand Packers and Packager ◆ Hoist and Winch Operator ◆ Instrument Maker ◆ Large Printing Press Machine Setter and Set-Up Operator ◆ Machine Operator ◆ Manager, Supervisor ◆ Medical Appliance Maker ◆ Milling Machine Setter, Set-Up Operator ◆ Millwright ◆ Operator, Tender, Cutter/Brazer, Solderer, Machine Operator ◆ Painter ◆ Pattern & Model Maker ◆ Precision Layout Worker ◆ Precision Optical Goods Worker ◆ Production Associate ◆ Sheet Metal Worker ◆ Solderer and Brazer ◆ Tool and Die Maker ◆ Welder 	<ul style="list-style-type: none"> ◆ Design Engineer ◆ Electrical and Electronics Technician and Technologist ◆ Electronics Engineer ◆ Engineering and Related Technician and Technologist ◆ Engineering Technician ◆ Industrial Engineer ◆ Labor Relations Manager ◆ Manufacturing Engineer ◆ Manufacturing Technician ◆ Power Generating and Reactor Plant Operator ◆ Precision Inspector, Tester, and Grader ◆ Process Improvement Technician ◆ Production Manager ◆ Purchasing Agent ◆ Supervisor 	<ul style="list-style-type: none"> ◆ Biomedical Equipment Technician ◆ Boilermaker ◆ Communication System Installer/Repairer ◆ Computer Installer/Repairer ◆ Computer Maintenance Technician ◆ Electrical Equipment Installer/Repairer ◆ Facility Electrician ◆ Industrial Electronic Installer/Repairer ◆ Industrial Facilities Manager ◆ Industrial Machinery Mechanic ◆ Industrial Maintenance Electrician ◆ Industrial Maintenance Mechanic ◆ Instrument Calibration and Repairer ◆ Instrument Control Technician ◆ Job/Fixture Designer ◆ Laser Systems Technician ◆ Maintenance Repairer ◆ Major Appliance Repairer ◆ Meter Installer/Repairer ◆ Millwright ◆ Plumber, Pipefitter and Steamfitter ◆ Security System Installer/Repairer 	<ul style="list-style-type: none"> ◆ Calibration Technician ◆ Inspector ◆ Lab Technician ◆ Process Control Technician ◆ Quality Control Technician ◆ Quality Engineer ◆ SPC Coordinator 	<ul style="list-style-type: none"> ◆ Communications, Transportation and Utilities Manager ◆ Dispatcher ◆ Freight, Stock, and Material Mover ◆ Industrial Truck and Tractor Operator ◆ Logistical Engineer ◆ Logistician ◆ Material Associate ◆ Material Handler ◆ Material Mover ◆ Process Improvement Technician ◆ Quality Control Technician ◆ Traffic Manager ◆ Traffic, Shipping, and Receiving Clerk 	<ul style="list-style-type: none"> ◆ Environmental Engineer ◆ Environmental Specialist ◆ Health and Safety Representative ◆ Safety Coordinator ◆ Safety Engineer ◆ Safety Team Leader ◆ Safety Technician
	Pathways	Production	Manufacturing Production Process Development	Maintenance, Installation & Repair	Quality Assurance	Logistics & Inventory Control
CCTC /Career Ready Practices	<p>The Common Career Technical Core (CCTC) includes a set of standards for each of the 16 Career Clusters™ and their corresponding Career Pathways that define what students should know and be able to do after completing instruction in a program of study. The CCTC also includes an overarching set of Career Ready Practices that apply to all programs of study. The Career Ready Practices include 12 statements that address the knowledge, skills and dispositions that are important to becoming career ready.</p>					

Sources of CTE Standards in Michigan

National Career Cluster

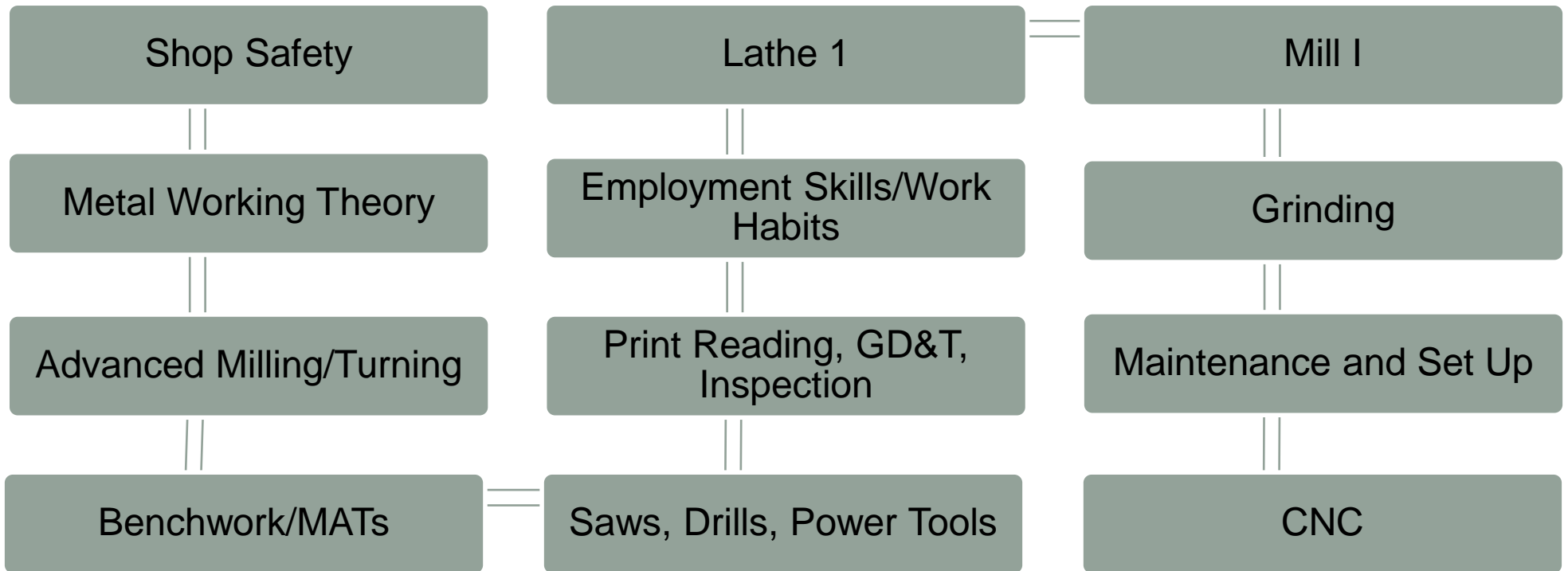
- Career Ready Practices *
- Common Career and Technical Core (CCTC)
 - *Cluster Level*
 - *Pathway Level*

Michigan Technical Standards

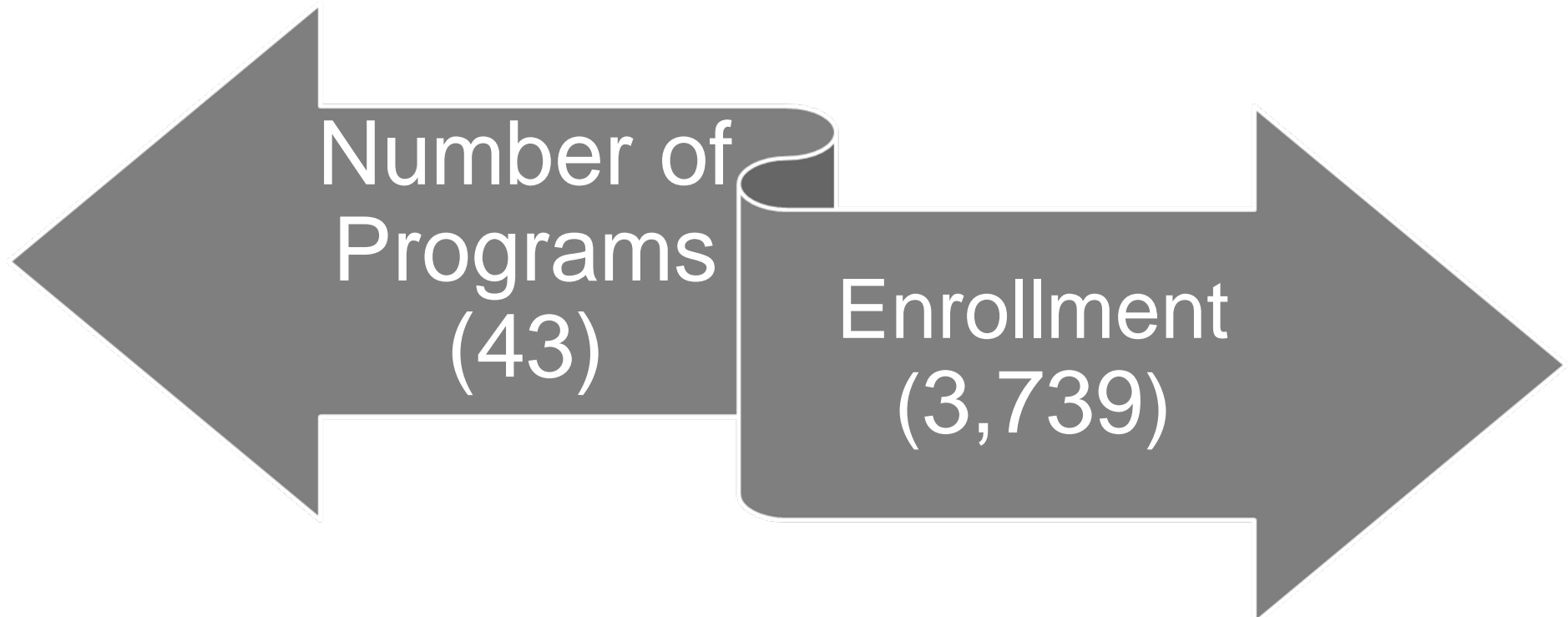
- Customized
- State
- National specific to the field

*Michigan Career & Employability Skills are Included in the *National Career Ready Practices*

Current 12 Segments

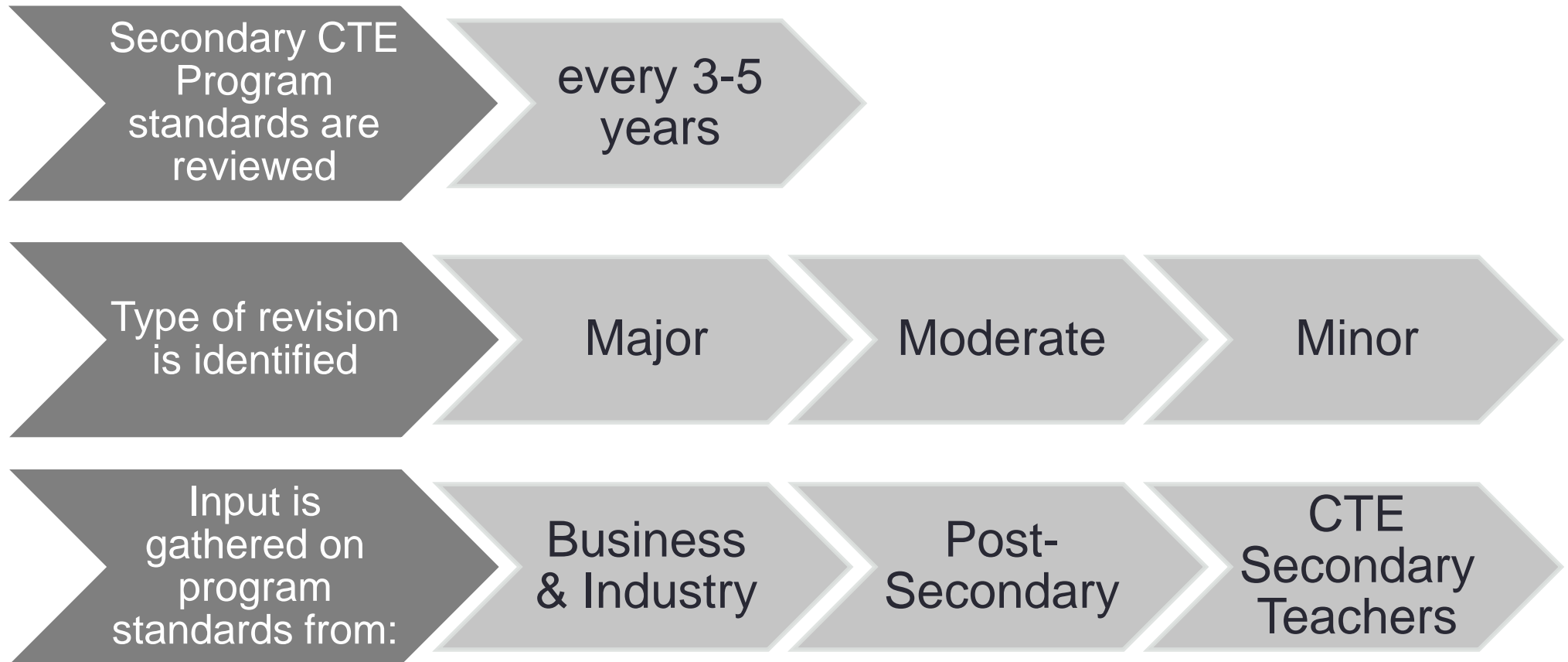


Profile – Machine Tool Technology/Machinist

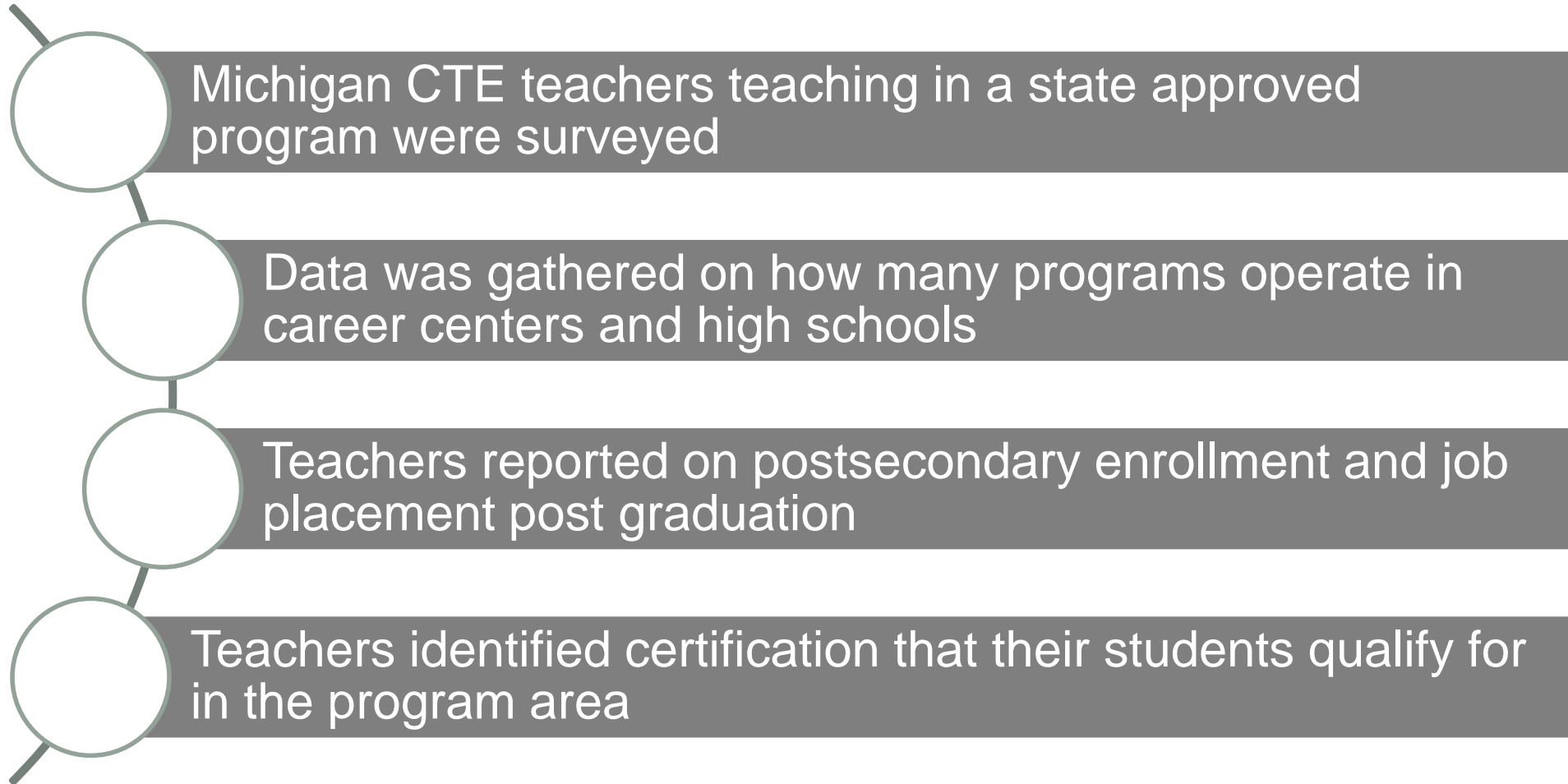


REVIEW AND REVISION PROCESS

Review and Revision Process



CTE Teacher Survey Data



National Search



Steps Needed by Business and Industry

Round 1 Survey-

- Review of identified standards individually
- Rate standards identified in survey individually
- Rate the competencies 0 to 4 rating in the survey on-line
- 7 days to complete

Round 2 Survey-

- Review the compared group average from first round to your rating sent out
- May change your first rating

Steps Completed by Business and Industry

Overview of Delphi Process

- Research tool for:
 - Gathering data
 - Facilitating consensus for core curriculum
- Used for groups and individuals who:
 - Have special knowledge to share
 - But typically not in contact with each other

Steps Completed by Business and Industry

	Importance Ratings
Highly Relevant for High School Students	Not having skill/knowledge in this area will keep you from gaining employment in this occupation
Somewhat Relevant for High School Students	Skill/knowledge in this area MAY enhance employability in this area
Not Relevant for High School Students	Skill/knowledge in this area are NOT important for employment in this occupation at all

Steps Completed by Business and Industry

Survey Format

10. Please rate the relevancy of the following standards related to designing a job process plan.

Highly Relevant for High School Students

Somewhat Relevant for High School Students

Not Relevant for High School Students

Develop a process plan for a part requiring milling, drilling, turning, or grinding.



Steps of the Process

Analysis of data and report given to OCTE

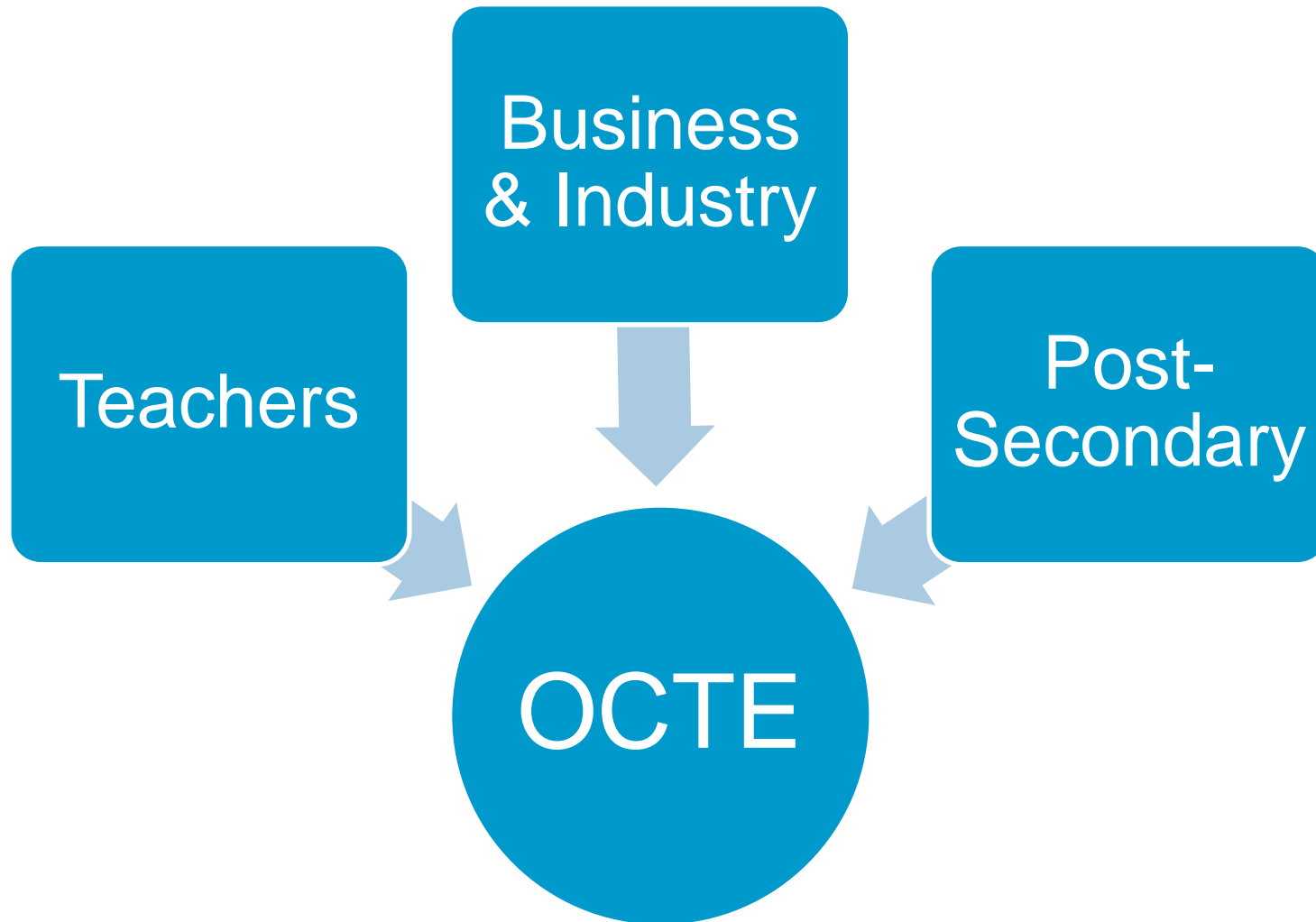
Recommendation of the new standards

Decision Process

Consultants
develop white
paper

- 3 options
- Pros and Cons
- Recommendation

Decision



New Standards for Machine Tool Technology/Machinist

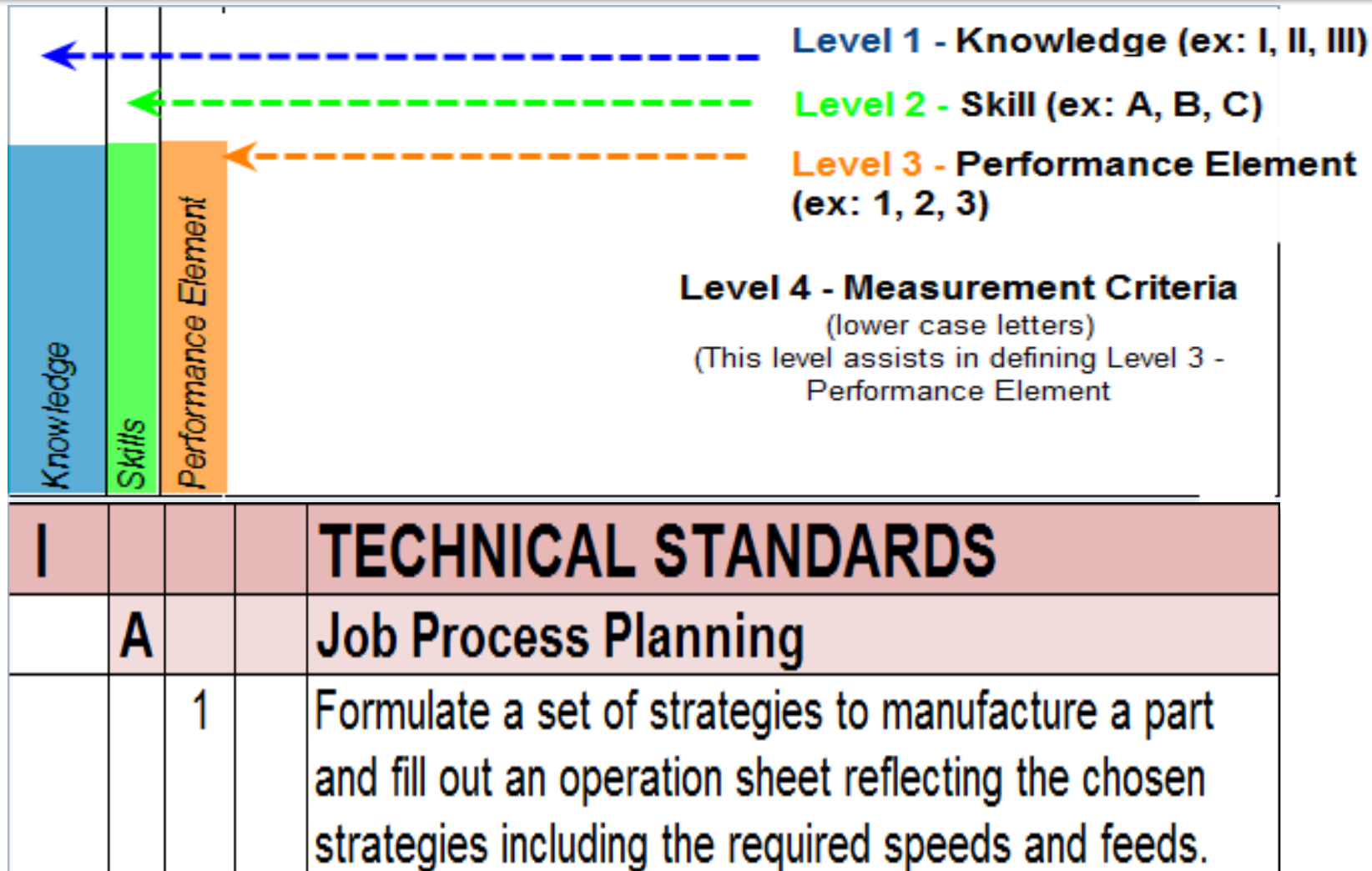
Continue to use the National Institute for Metalworking Skills (NIMS) standards. These are nationally recognized standards that provide industry support, strengthens the articulation agreement process, and improves employability for students after graduation.

Knowledge Areas for Standards

All CIPs
have Four
Knowledge
Areas

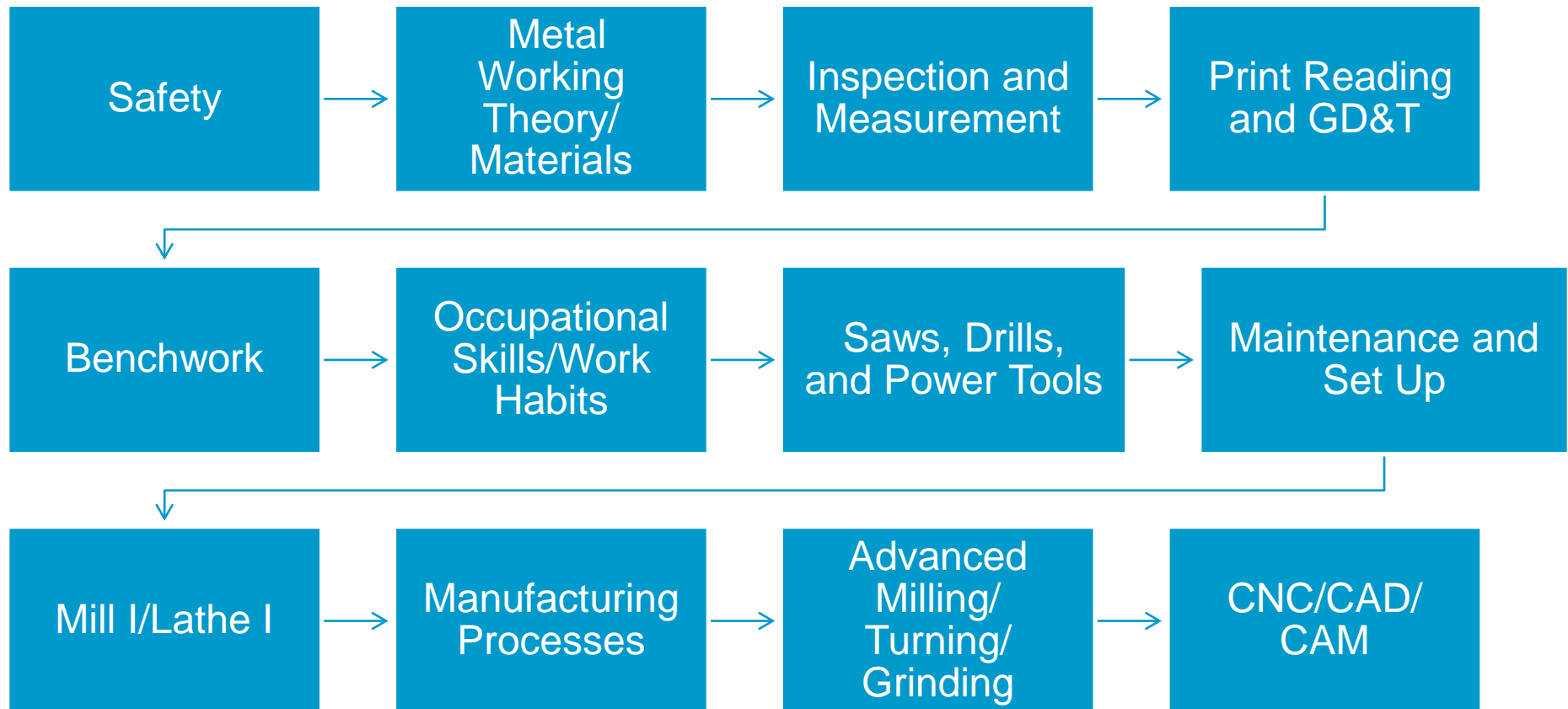
- Technical Skill Standards
- Pathway Standards
- Career Cluster Standards
- Career Ready Practices

Levels of Standards



Standards are Segmented by CTE Teachers

- *CTE Teachers assist with process to identify 12 segment titles*



New Segment Allocation

48.0501 Machine Tool Technology/Machinist (2013)	Pre	Safety	Metal Working Theory/Materials	Inspection and Measurement	Print Reading and GD&T	Benchwork	Occupational Skills/Work Habits	Saws, Drills, and Power Tools	Maintenance and Set Up	Mill/Lathe I	Manufacturing Processes	Advanced Milling/Turning/Grinding	CNC/CAD/CAM	Post	Totals
Technical (52)	0	3	4	11	3	0	11	2	4	4	0	2	4	0	52
Pathway (27)	0	7	1	2	0	0	2	0	3	0	11	0	0	0	27
Cluster (24)	0	5	1	1	0	1	10	0	0	0	10	1	1	0	24
CRP (12)	5	5	5	5	5	5	6	5	5	5	6	6	6	5	12
Segment Totals (115)	5	20	11	19	8	6	30	7	12	9	28	9	11	5	115

Standards Released To The Field

Website: ctenavigator.org

The screenshot displays the website for the Michigan Center for Career and Technical Education. At the top left is a logo of Michigan with the text "Michigan Center for Career and Technical Education". To the right is the Michigan Department of Education logo with the tagline "A Partner With". Below the header is a navigation menu with links for Home, Schools, Academics, Programs, Resources, and Help. The "Programs" link is highlighted with a red arrow. The main content area features a "Welcome to MCCTE Navigator" section with a login form on the left and contact information on the right. The login form includes fields for E-Mail and Password, and buttons for LOGIN and REGISTER. The contact information includes the Office of Career and Technical Education, P.O. Box 30712, Lansing, MI 48909, and contact details for Navigator Technical Support.

Michigan Center for Career and Technical Education

A Partner With
MICHIGAN
Department of
Education

Home Schools Academics **Programs** Resources Help

Home

Login

E-Mail:

Password:

[Forgot your password?](#)

Links

[States' Career Clusters](#)
[OCTE Website](#)

Welcome to MCCTE Navigator

Welcome to the electronic curriculum system for Michigan's Career and Technical Education community (State/Regional/Local Administrators, and Instructors). The system is called MI CTE Navigator and provides real-time access to Michigan's state approved CTE program curriculum which is necessary for educational decision-making, management and ultimately student achievement.

The web-based, online database is comprehensive, statewide, user-friendly, and instructor-driven and can be used for managing the technical standards, career cluster content, segments, resource content, and academic alignment results for all of Michigan's CTE program areas.

For State Approved Programs with a PSN Only:
NEW IN MCCTE NAVIGATOR – ELECTRONIC GAP ANALYSIS

You can now complete the Gap Analysis electronically in MCCTE Navigator. To access the directions to do the Electronic Gap Analysis go to "**Resources**", scroll down to "**Gap Analysis Documents**", and click on "**Directions for MCCTE Navigator Gap Analysis – 2011**".

Upcoming Events

No events scheduled at this time.

General Contact

Office of Career and Technical Education
P.O. Box 30712
Lansing, MI 48909

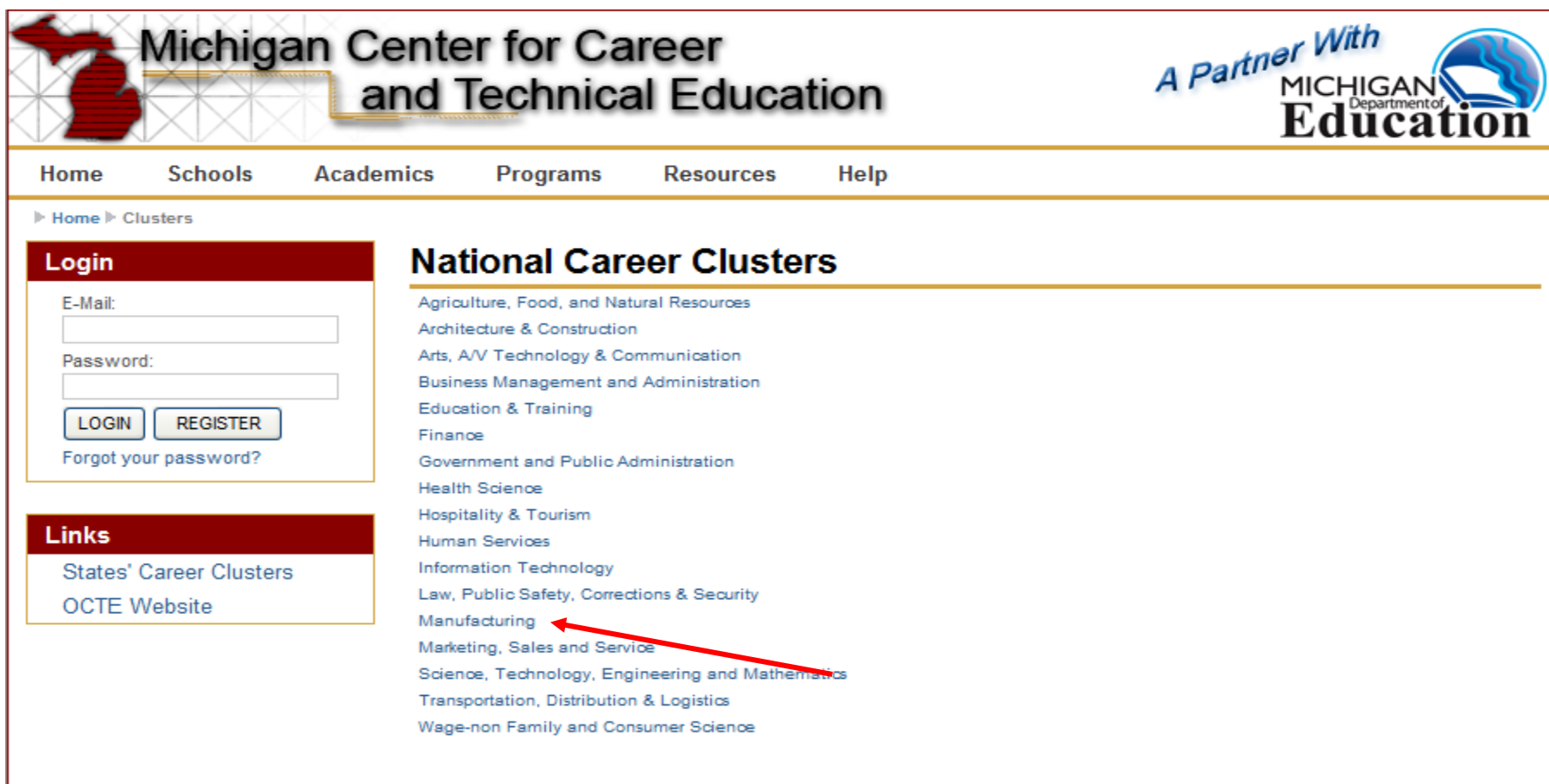
Telephone: 517.241.2072
Fax: 517.373.8778

Navigator Technical Support
Email: support@ctenavigator.org

Standards Released To The Field

Steps to access webinar and gap analysis:

1. Select Career Cluster



The screenshot shows the Michigan Center for Career and Technical Education website. The header includes the Michigan state map logo, the text "Michigan Center for Career and Technical Education", and the Michigan Department of Education logo with the tagline "A Partner With MICHIGAN Department of Education". The navigation menu contains: Home, Schools, Academics, Programs, Resources, Help. The breadcrumb trail is "Home > Clusters".

Login

E-Mail:

Password:

[Forgot your password?](#)

Links

- [States' Career Clusters](#)
- [OCTE Website](#)

National Career Clusters

- [Agriculture, Food, and Natural Resources](#)
- [Architecture & Construction](#)
- [Arts, A/V Technology & Communication](#)
- [Business Management and Administration](#)
- [Education & Training](#)
- [Finance](#)
- [Government and Public Administration](#)
- [Health Science](#)
- [Hospitality & Tourism](#)
- [Human Services](#)
- [Information Technology](#)
- [Law, Public Safety, Corrections & Security](#)
- [Manufacturing](#) ←
- [Marketing, Sales and Service](#)
- [Science, Technology, Engineering and Mathematics](#)
- [Transportation, Distribution & Logistics](#)
- [Wage-non Family and Consumer Science](#)

Standards Released To The Field

Steps to access webinar and gap analysis:

2. Select specific CTE program

The screenshot shows the Michigan Center for Career and Technical Education website. The header includes the Michigan state map logo and the text "Michigan Center for Career and Technical Education". To the right, it says "A Partner With MICHIGAN Department of Education" with a logo. The navigation menu includes: Home, Schools, Academics, Programs, Users, Reports, Resources, Help, and CIP Self-Review. The breadcrumb trail is: Home > Clusters > Manufacturing. On the left, there is a "Welcome" section for Jackie Martinez with links for "Edit Profile" and "Log Out", and a "Links" section with "States' Career Clusters" and "OCTE Website". The main content area is titled "Programs" and lists several CTE programs. A red arrow points to the program "48.0501 - Machine Tool Technology/Machinist (2013)".

Welcome

Jackie Martinez

- Edit Profile
- Log Out

Links

- States' Career Clusters
- OCTE Website

Programs

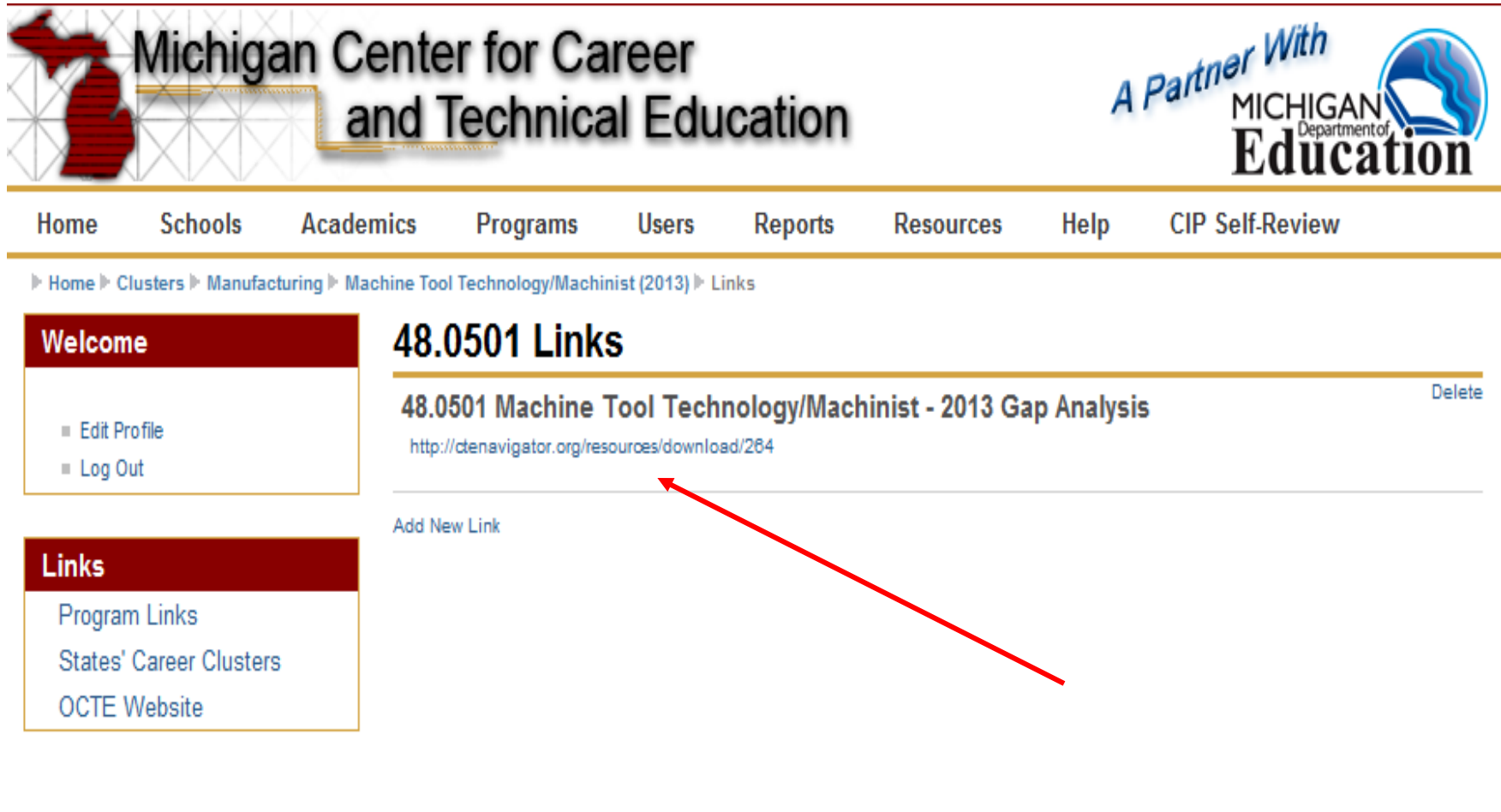
- 47.0101 - Electrical/Electronics Equipment Installation & Repair (2010 Implement by Fall 2011)
- 47.0101 - Electrical/Electronics Equipment Installation & Repair (2010 Implement by Fall 2011) Consolidated
- 47.0616 - Marine Maintenance
- 48.0501 - Machine Tool Operation/Machine Shop
- 48.0501 - Machine Tool Technology/Machinist (2013)
- 48.0508 - Welding, Brazing and Soldering
- 48.0508 - Welding, Brazing, and Soldering (2013)
- 48.0701 - Woodworking General
- 48.0701 - Woodworking (2013)

Standards Released To The Field

Steps to access webinar and gap analysis:
-Click on Links – “Program Links”

The screenshot shows the Michigan Center for Career and Technical Education website. The header includes the Michigan state map logo and the text "Michigan Center for Career and Technical Education". To the right, it says "A Partner With MICHIGAN Department of Education" with a logo. The navigation menu contains: Home, Schools, Academics, Programs, Users, Reports, Resources, Help, and CIP Self-Review. The breadcrumb trail is: Home > Clusters > Manufacturing > Machine Tool Technology/Machinist (2013). The main content area is titled "48.0501 - Machine Tool Technology/Machinist (2013)". Below the title is an "Edit" section with expandable options: Technical, Pathway, Cluster, and Career Ready Practices. On the left, there is a "Welcome" sidebar with "Edit Profile" and "Log Out" links. Below that is a "Links" sidebar with "Program Links", "States' Career Clusters", and "OCTE Website". A red arrow points from the "Program Links" link in the sidebar to the "Program Links" text in the breadcrumb trail.

Standards Released To The Field



The screenshot shows the Michigan Center for Career and Technical Education website. The header includes the Michigan state map logo and the text "Michigan Center for Career and Technical Education". To the right is the Michigan Department of Education logo with the tagline "A Partner With". The navigation menu contains: Home, Schools, Academics, Programs, Users, Reports, Resources, Help, and CIP Self-Review. The breadcrumb trail is: Home > Clusters > Manufacturing > Machine Tool Technology/Machinist (2013) > Links. The main content area is titled "48.0501 Links" and contains a single link entry: "48.0501 Machine Tool Technology/Machinist - 2013 Gap Analysis" with a "Delete" link to its right. Below the link is the URL "http://ctenavigator.org/resources/download/264". A red arrow points to this URL. On the left side, there are two sidebar boxes: "Welcome" with links for "Edit Profile" and "Log Out", and "Links" with links for "Program Links", "States' Career Clusters", and "OCTE Website".

Gap Analysis

Section to be completed by CTE teacher electronically or hardcopy

Hard copy



Gap Analysis for 2012 Standards																					PLAN OF IMPROVEMENT																					
Directions: (Print on legal size paper) <i>Secondary Delivery:</i> Indicate the level the student will be able to perform the standard when leaving the program for each of the <i>Performance Elements</i> <i>Local Task ID Code/Delivery Point:</i> Indicate where the standard is delivered in the curriculum <i>Academic Standards Crosswalk:</i> You may indicate the academic content replication number or you may use a check mark to indicate the appropriate academic content taught in the standard <i>Post-Secondary Delivery for Articulation:</i> Indicate with a check if this is a standard required for post-secondary articulation for the program																					<i>Any performance element rated a "1" or "N" needs plan of improvement.</i>																					
Institute	SE/ID	Performance Element	Measurement Criteria	National Cluster Code	Secondary Gap Analysis											Segments														Standard Areas												
					Rate Only the Performance Element Standards						Local Task ID Code/Delivery Point	Part-Secondary Delivery for Articulation	Academic Standards Crosswalk					Pre	Safety	Metal Working Theory/Materials	Inspection and Measurement	Print Reading and GD&T	Benchmark	Occupational Skill/Hank Habits	Saw, Drill, and Power Tool	Maintenance and Set Up	Mill/Lathe I	Manufacturing Processes	Advanced Milling/Turning/Grinding		CNC/CAD/CAM	Post										
4	3	2	1	N	ELA	Math	Social Studies	Science	WPA	1			2	3	4	5	6													7			8	9	10	11	12					
					48.0501 Machine Tool Technology/Machinist (2013)																																					
					National Institute for Metalworking Skills (NIMS) - Technical Skills																																			What needs to be done?	Who is going to do it?	When will it be done?
I					TECHNICAL STANDARDS																																			Technical		
A					Job Process Planning																																			Technical		
	1				Formulate a set of strategies to manufacture a part and fill out an operation sheet reflecting the chosen strategies including the required speeds and feeds.																																			Technical		

Gap Analysis Ratings

4=Exceeds criteria and/or able to teach task



3=Accomplishes task to criteria



2=Accomplishes task with help



1=Exposed to the task



N=Not Exposed to the Task

Gap Analysis – Plan of Improvement

Section to be completed if standard was rated with a “1” or “N”



Gap Analysis for 2012 Standards																					PLAN OF IMPROVEMENT																			
Directions: (Print on legal size paper) <i>Secondary Delivery:</i> Indicate the level the student will be able to perform the standard when leaving the program for each of the Performance Elements. <i>Local Task ID Code/Delivery Point:</i> Indicate where the standard is delivered in the curriculum. <i>Academic Standards Crosswalk:</i> You may indicate the academic content expectation number or you may use a check mark to indicate the appropriate academic content level in the standard. <i>Post-Secondary Delivery for Articulation:</i> Indicate with a check if this is a standard required for post-secondary articulation for the program.																					Any performance element rated a "1" or "N" needs plan of improvement.																			
Knowledge	Skill	Performance Element	Measurement Criteria	National Cluster Code	Secondary Gap Analysis												Segments												Standard Area	What needs to be done?	Who is going to do it?	When will it be done?								
					4	3	2	1	N	Local Task ID Code/Delivery Point	ELA	Math	Social Studies	Science	WPA	Pre	Safety	Metal Working Theory/Materials	Inspection and Measurement	Print Reading and GD&T	Benchmark	Occupational Skill/Work Habits	Saw, Drill, and Power Tool	Maintenance and Set Up	Mill/Lathe I	Manufacturing Processes	Advanced Milling/Turning/Grinding	CNC/CAD/CAM					Post							
				48.0501 Machine Tool Technology/Machinist (2013)																																				
				National Institute for Metalworking Skills (NIMS) - Technical Skills																																				
I				TECHNICAL STANDARDS																																				
A				Job Process Planning																																				
	1			Formulate a set of strategies to manufacture a part and fill out an operation sheet reflecting the chosen strategies including the required speeds and feeds.																																				

Sample Plan of Improvement

PLAN OF IMPROVEMENT		
<i>Any performance element rated a "1" or "N" needs plan of improvement.</i>		
What needs to be done?	Who is going to do it?	When will it be done?
<i>Sample: Provide students exposure through job shadow</i>	<i>Teacher</i>	<i>Fall 2013</i>
<i>Sample: Evaluate current teaching material to expand opportunities for students.</i>	<i>Teacher</i>	<i>Summer 2013</i>
<i>Sample: Expand Curriculum</i>	<i>Teacher</i>	<i>Summer 2013</i>

IMPLEMENTATION TIMELINE

Next Steps

March 2013 –
December 2013

- Complete Gap Analysis

March – May,
2013

- Academic alignment

Fall 2013

- OCTE Teacher Academy or Webinar for New Standards

Fall 2014

- Implementation of the standards

Thank You

If you have questions regarding this webinar contact:

Patricia Talbott-Collins, Ed.D.
State Consultant for Michigan
Department of Education
Email: talbott-collinsp@michigan.gov
Phone: (517) 335-0359