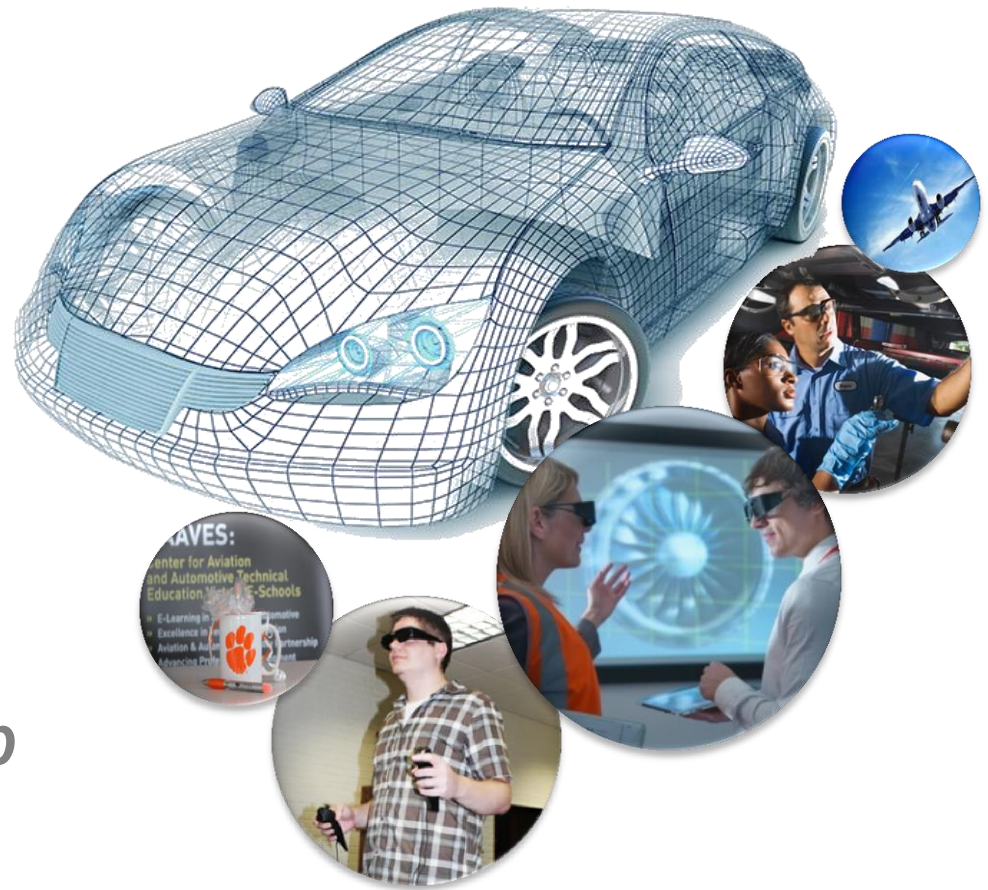


Digitally Supported Pathways Transitioning Students Into STEM Fields

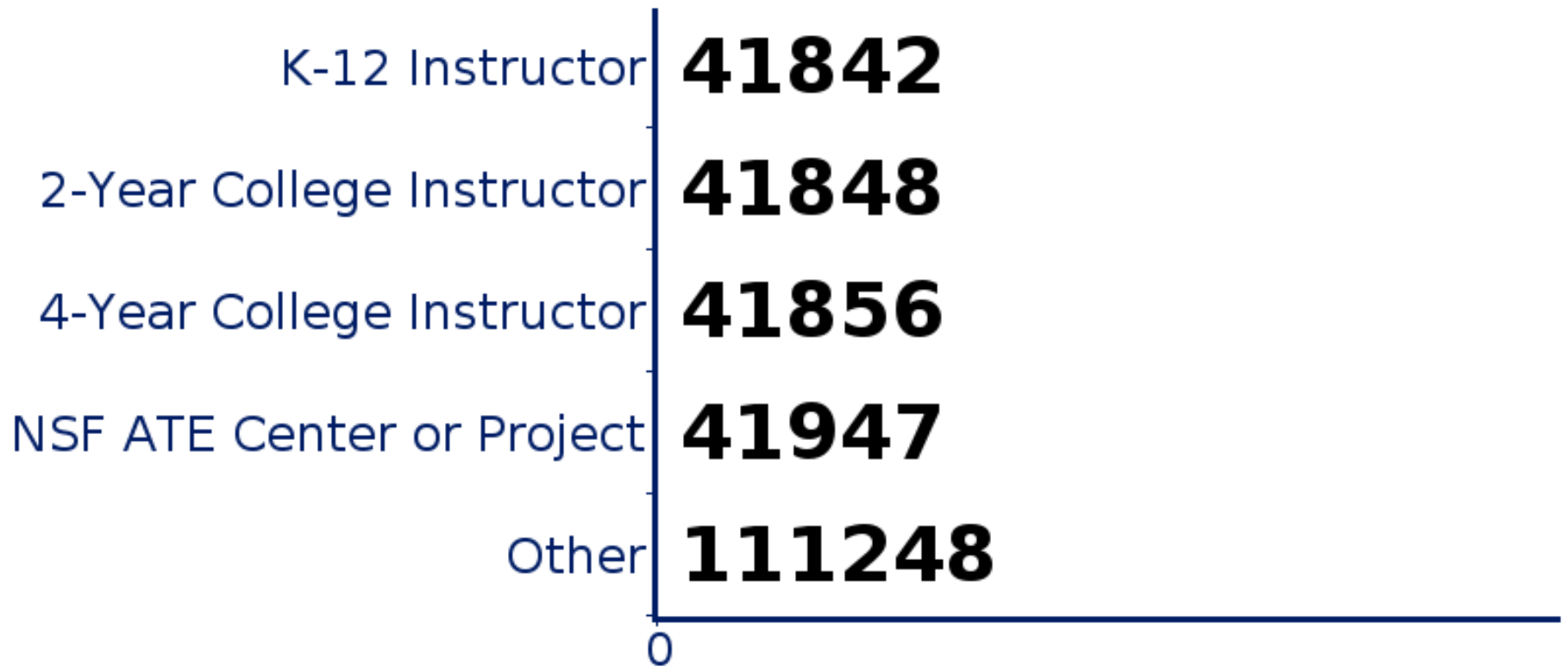
*STEM Smart Workshop
May 12th, 2014*



Please select the option that best describes your occupation:

 You may respond at **PollEv.com** when the presenter pushes this poll

 Text a **CODE** to **37607**



Total Results: 0

CUCWD

Clemson University Center for Workforce Development

Increasing employment and economic growth by building pathways, creating and maintaining strategic partnerships and developing and disseminating digital learning resources.



CA²VES

Center for Automotive and Aviation Virtual E-Schools

Advancing aviation, automotive, and manufacturing technician education to support workforce preparedness and economic development.

Employment Opportunities

STEM:

1.8 jobs for every
1 unemployed person

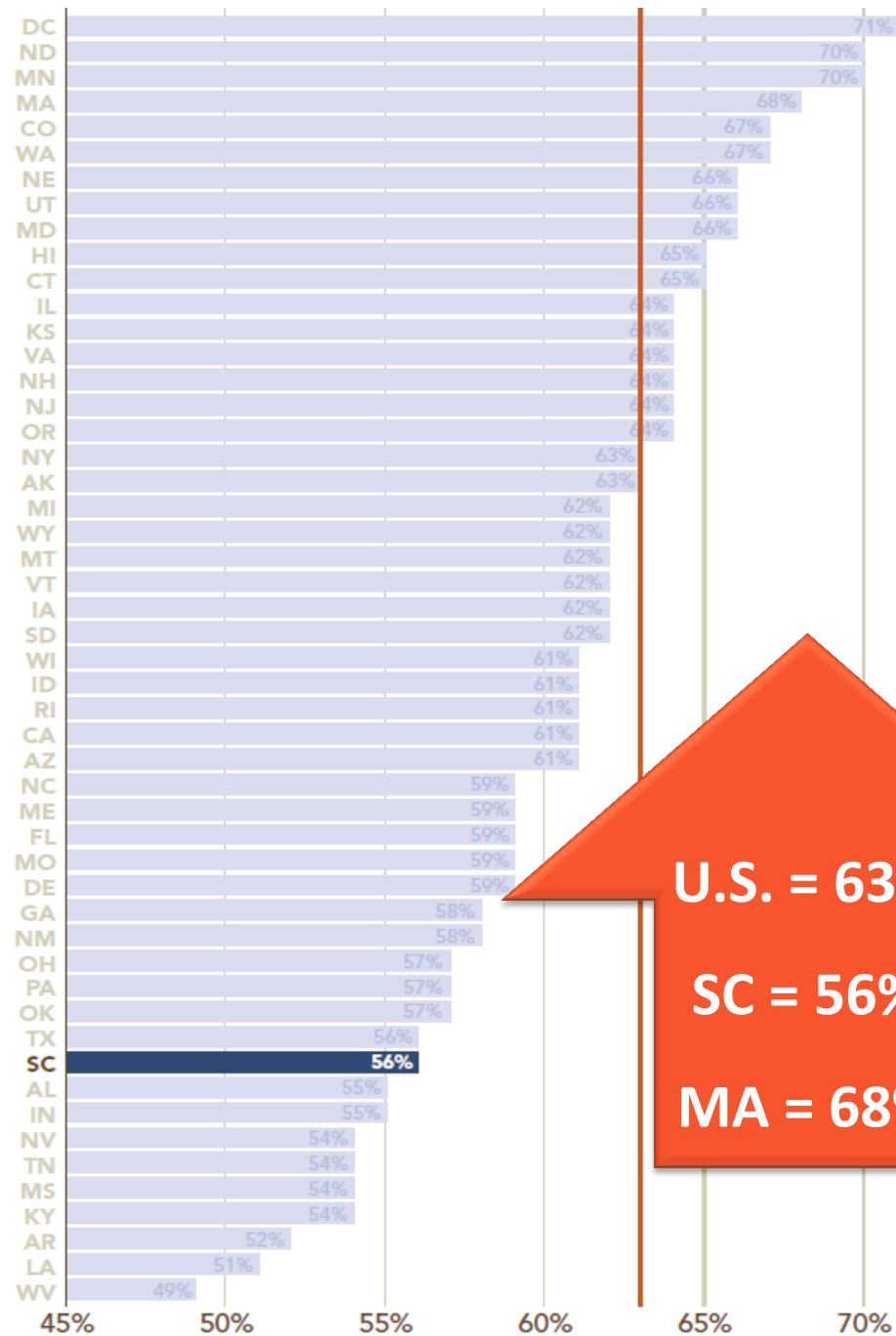


Non-STEM:

5.0 unemployed people for every **1 job**



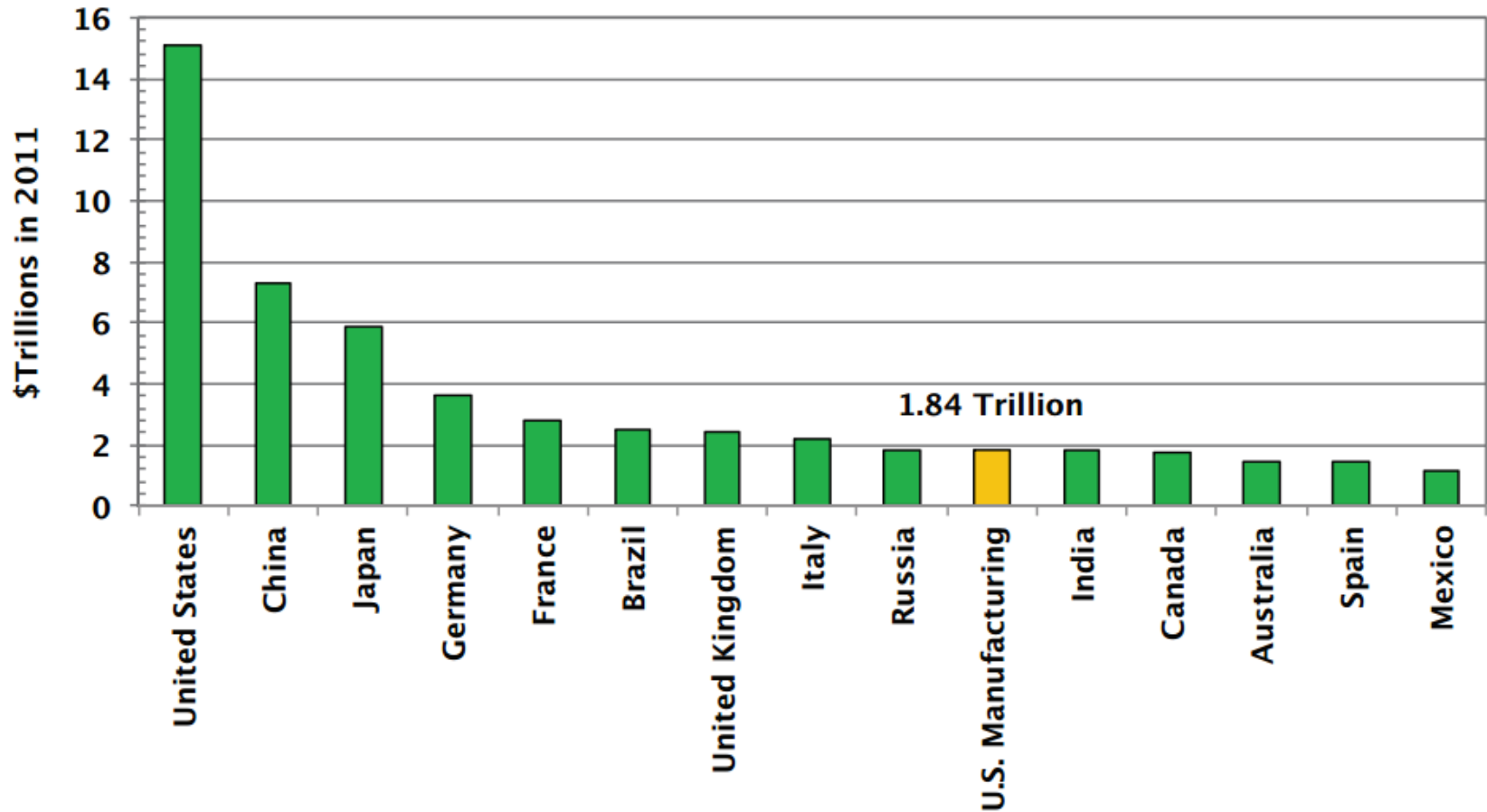
Educational Requirements for STEM Fields by 2018



Source: Projections of Jobs and Education Requirements Through 2018, Center on Education and the Workforce Analysis

Employment Opportunities

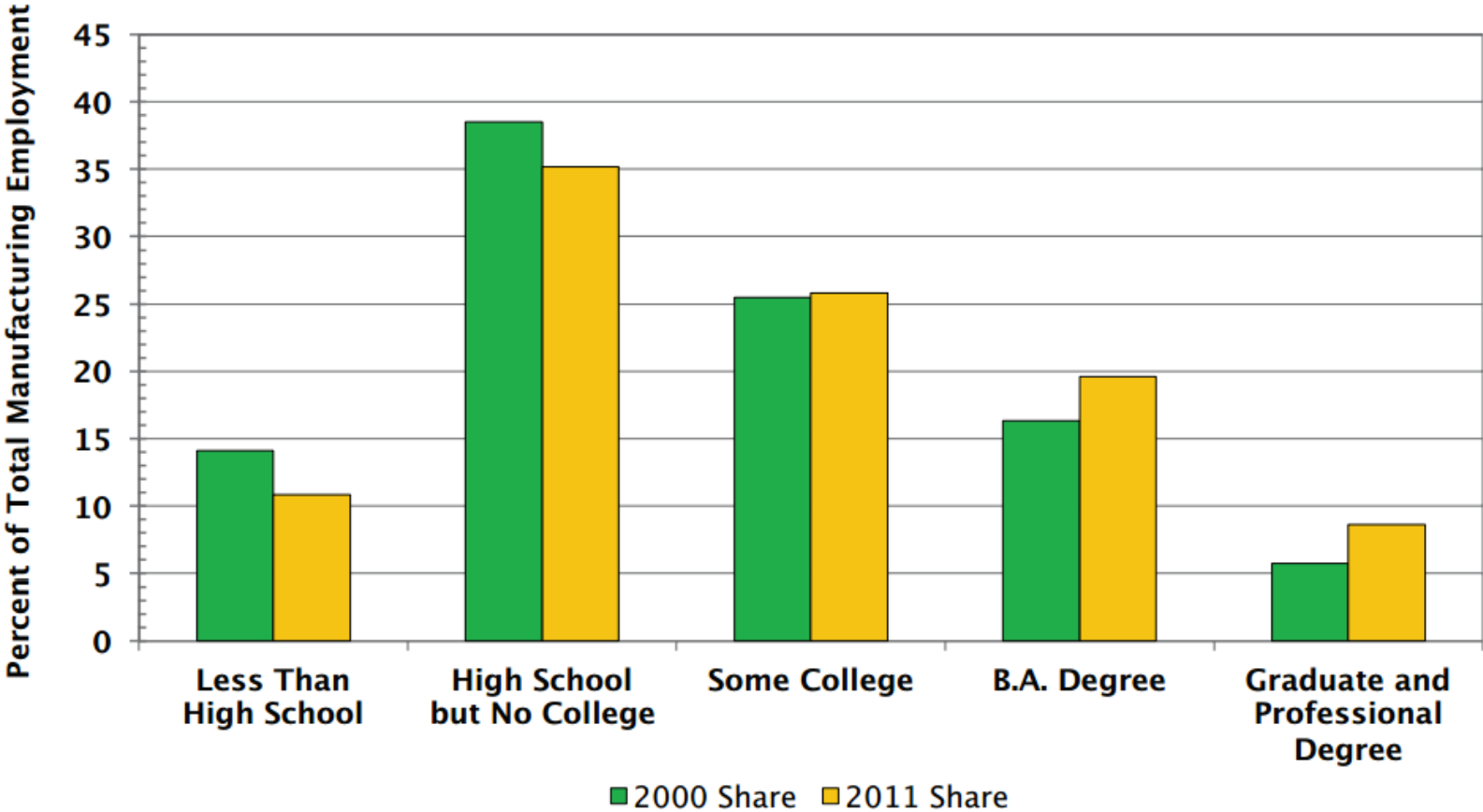
US Manufacturing Sector is the Tenth-Largest Global Economy



Source(s): International Monetary Fund, U.S. Bureau of Economic Analysis and MAPI

Employment Opportunities

Manufacturing Sector Employment by Education



Source(s): U.S. Bureau of Labor Statistics, Current Population Survey and MAPI

Barriers to Manufacturing Pathways

- Lack of support for advanced manufacturing career pathways



**Manufacturing
in the past**



1. Negative perceptions of manufacturing occupations
2. Emphasis on 4-year degrees
3. Lack of resources including funding, technology, instructor experience



**Manufacturing
Today**



- There is a greater need for innovation in the U.S. to maintain global competitiveness

Discussion



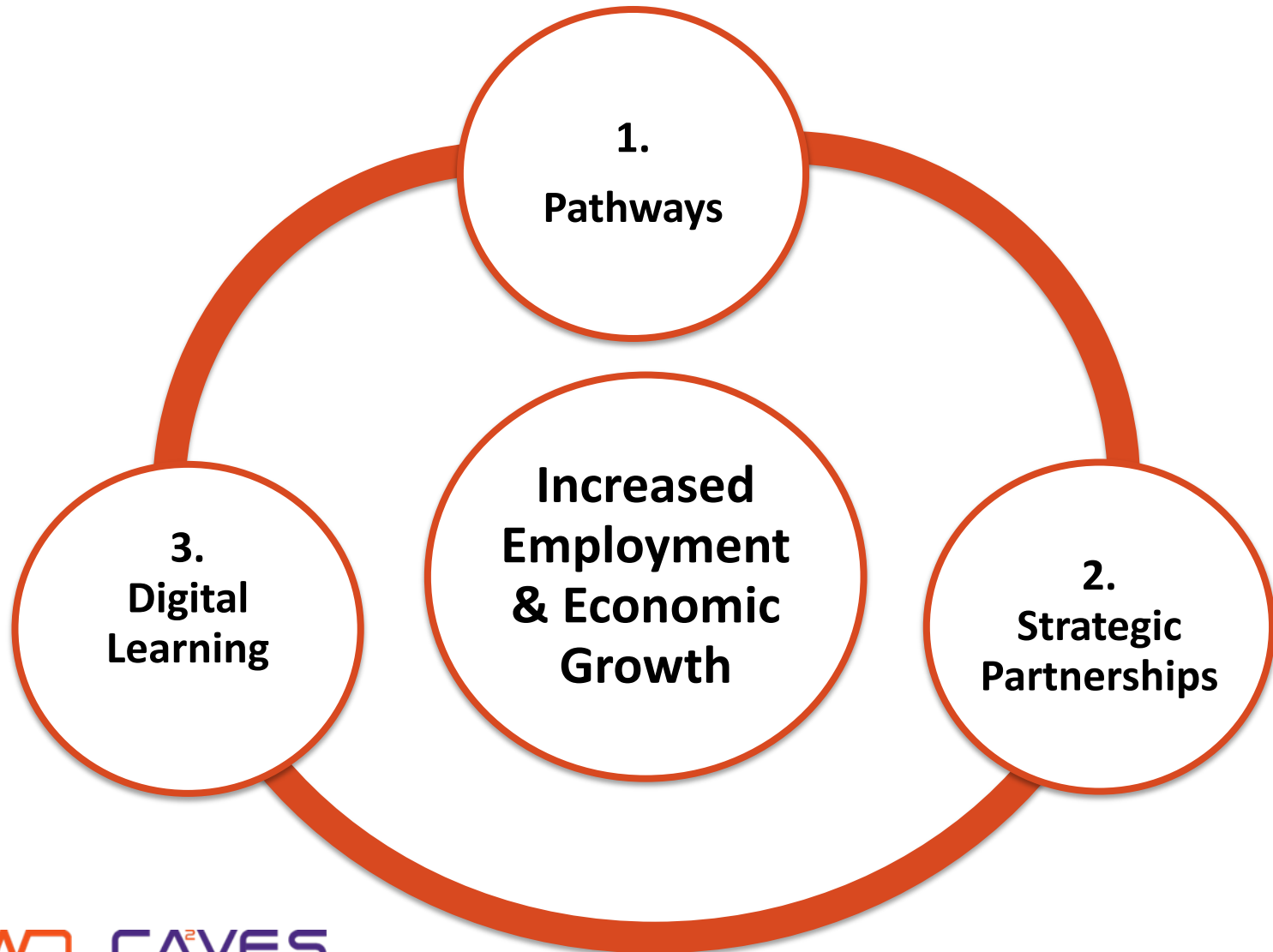
Developing Pathways into STEM Fields

Identify some barriers that impact the recruitment of students into your STEM field.

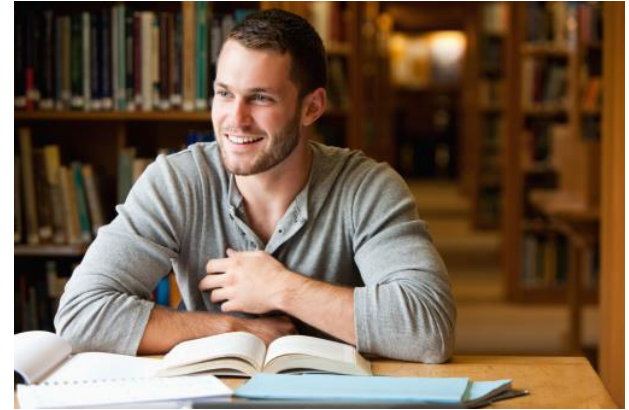
 You may respond at [PollEv.com](https://www.poll-ev.com) when the presenter pushes this poll

 Text **115176** and your message to **37607**

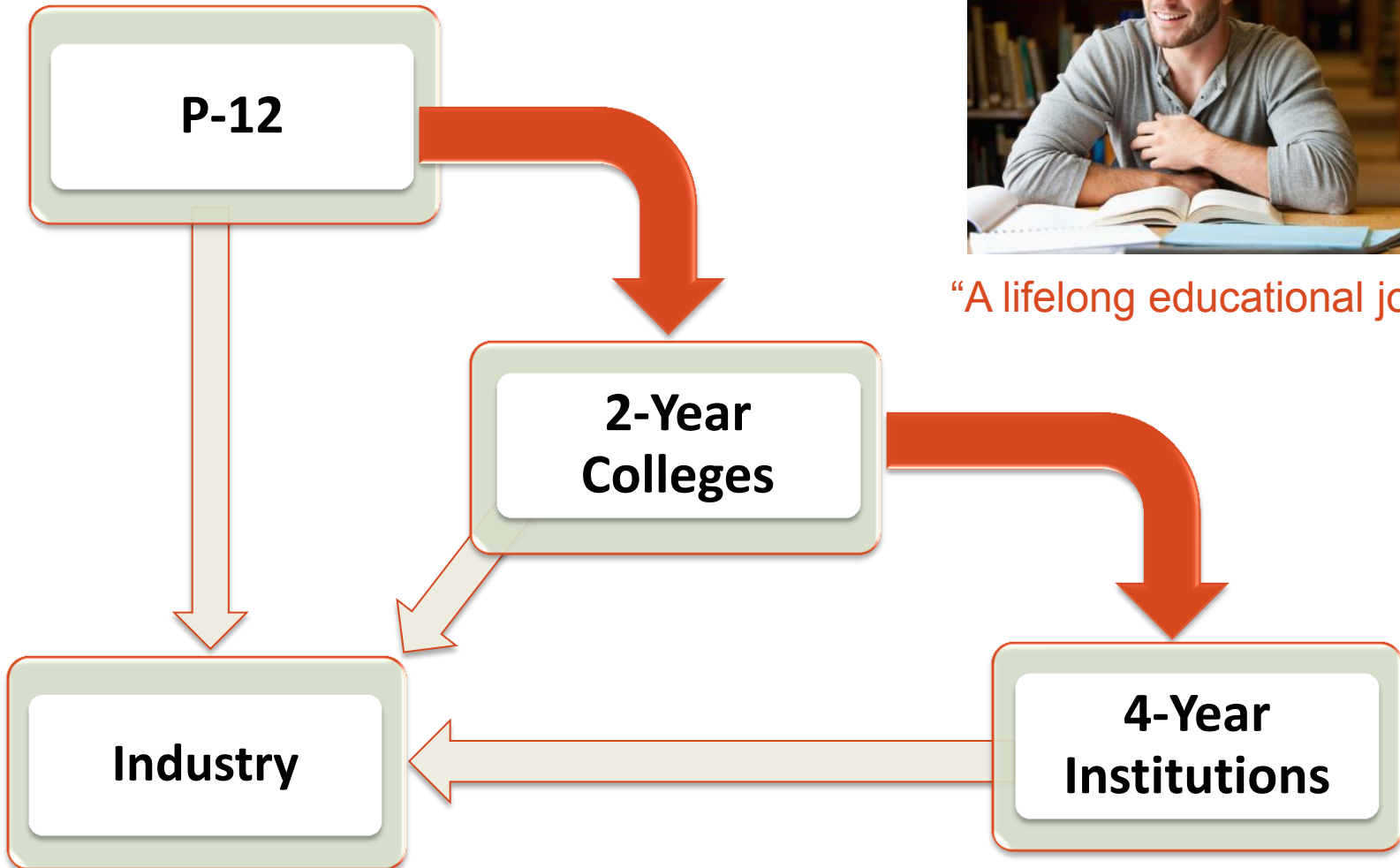
STEM Pathway Development Plan



1. Pathway Development



“A lifelong educational journey.”



Pathway Development

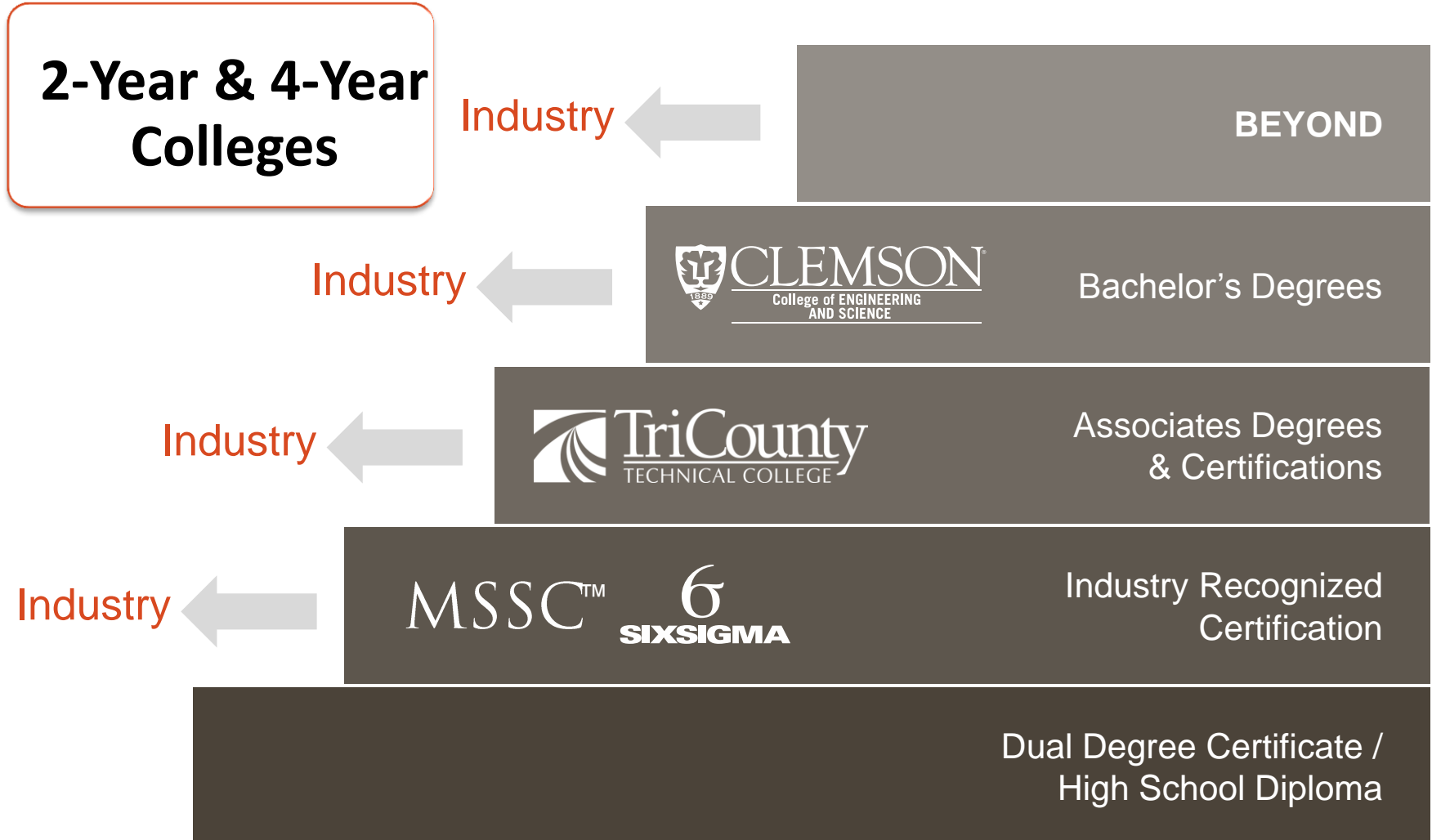


P-12

- Elementary → *Introduction*
- Middle → *Exploration*
- High → *Immersion*



Pathway Development



Discussion



Developing Pathways into STEM Fields

Name some methods for overcoming barriers related to pathway development initiatives (i.e. Developing articulation agreements, Involving industry in student recruitment, etc.)

 Text **6160** and your message to **37607**

 Submit responses at [PollEv.com](https://www.pollEv.com)

2. Strategic Partnerships

P-20 Partners

- Local P-12 School Districts
- All 16 Two-Year Colleges in SC



Strategic Partnerships

Government Partners

- SC Technical College System
- SC Department of Commerce
- Department of Education
- Personal Pathways to Success
- AOP Economic Development Offices
- SCMEP
- Vocational Rehab
- Economic Development



Strategic Partnerships

Industry Partners

- BMW
- Michelin
- GE
- Honda
- Boing
- Milliken
- Duke
- Fluor



Strategic Partnerships

Other Partners




- South Carolina Advanced Technological Education (SC ATE)
- Consortium for Alabama Regional Center for Automotive Manufacturing (CARCAM)
- Automotive Manufacturing Technical Education Collaborative (AMTEC)
- Florida Advanced Technological Education (FLATE) Center
- South Carolina Coalition for Math and Science (SCCMS)
- SC STEM collaborative
- Programs for Educational Enrichment and Retention (PEER)
- Women in Science and Engineering (WISE)

Discussion



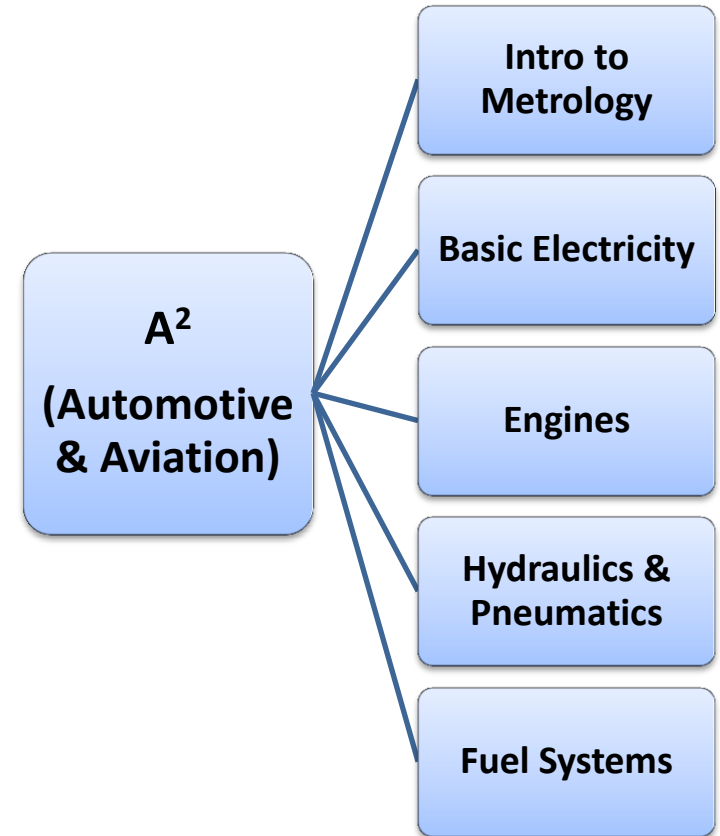
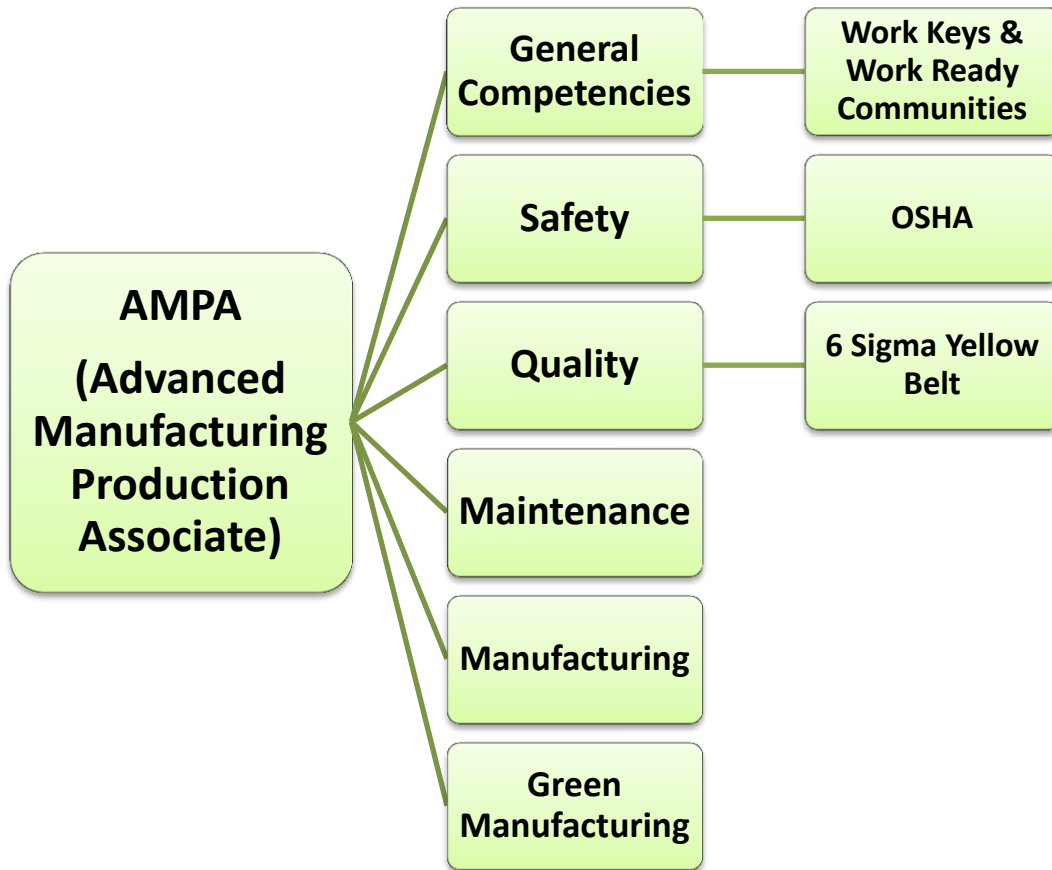
Developing Strategic Partnerships

Identify some challenges and possible solutions associated with developing strategic partnerships that bridge the gap into STEM fields.

 Text **43356** and your message to **37607**

 Submit responses at [PollEv.com](https://www.poll-ev.com)

3. Digital Learning



CA²VES Curriculum

Outline



MODUL OUTLINE

INTRODUCTION TO METROLOGY

Goal
The goal of this module is to provide a brief introduction to the history of measurement, units of measurements and basic use of measurements.

Topics Covered

- Introduction
- Defining metrology
- History of measurements
- Classification of metrology
- Units of measurement
- Basic measurements and English conversion
- Errors in measurements
- The guiding principles

Assessment

- Exercises
- Lab
- Discussion prompts
- Critical thinking scenarios
- Test

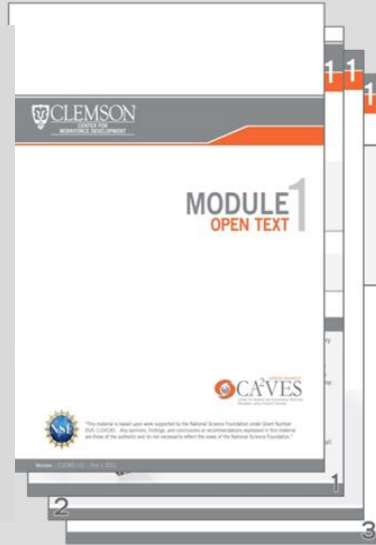
Objectives
The learner will be able to:

- Explain and analyze the measurement process
- Organize significant events in the history of measurement
- Differentiate between base and derived units of measurement
- Solve Metric and English conversion problems
- Predict effect of errors in measurements

Labs
This lab gives a brief introduction to various instruments used measurements in both the English and metric systems. Using instruments, various measurements are taken and comparison between may be applicable.

Contact
Clemson University Center for Workforce Development
133 Freeman Hall / Department of Industrial Engineering
Clemson University | Clemson, SC 29634
Email: ind@clwfd.org

Open Text - Content



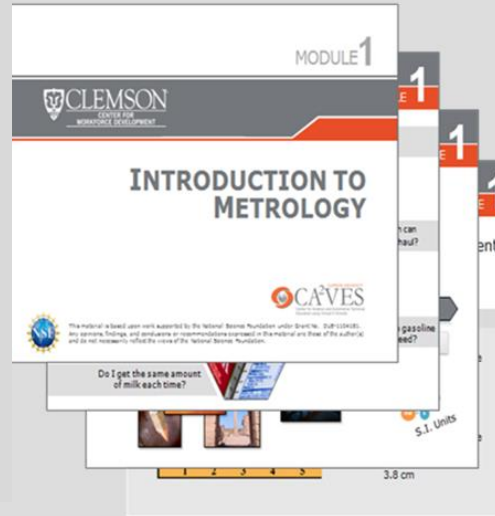
MODUL OUTLINE

MODULE 1 OPEN TEXT

CAVES

CAVES

Mini-Video Lectures



MODULE 1

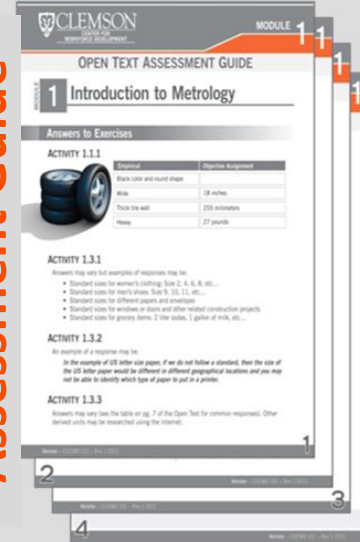
INTRODUCTION TO METROLOGY

CAVES

Do I get the same amount of milk each time?

3.8 cm

Assessment Guide



MODUL OUTLINE

OPEN TEXT ASSESSMENT GUIDE

1 Introduction to Metrology

Answers to Exercises

ACTIVITY 1.1.1

Question	Objective Assessment
Each side and round edge	
Width	28 inches
Thick tire wall	255 millimeters
Height	27 pounds

ACTIVITY 1.3.1
Answers may vary but examples of response may be:

- Standard sizes for women's clothing: Size 2, 4, 6, 8, etc...
- Standard sizes for men's shoes: Size 9, 10, 11, etc...
- Standard sizes for different papers and envelopes
- Standard sizes for windows in doors and other related construction projects
- Standard sizes for grocery items: 2 liter sodas, 1 gallon of milk, etc...

ACTIVITY 1.3.2
An example of a response may be:
In the example of 10 letter size paper: If an dot follow a standard, then the size of the 10 letter paper would be different in different geographical locations and you may not be able to identify which type of paper to put in a printer.

ACTIVITY 1.3.3
Answers may vary like the table on pg. 7 of the Open Text for common responses. Other correct units may be researched using the internet.



Virtual Reality

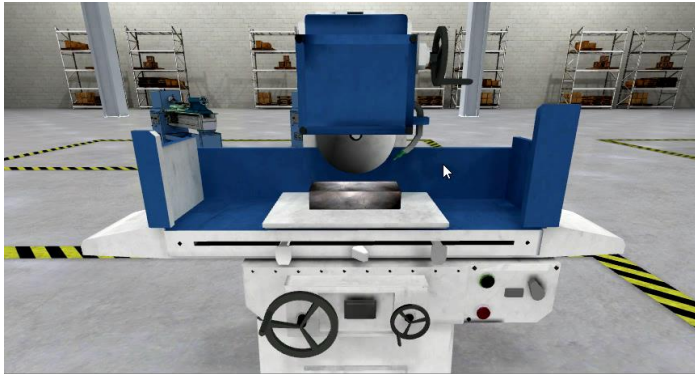


Introduction Guided Practice Exercise Calipers | Metrology Modul

Use the fine adjusting roll to close the outside measuring contact until they are pressed against the piston

Previous 3 / 5 Next

CA²VES Virtual Reality

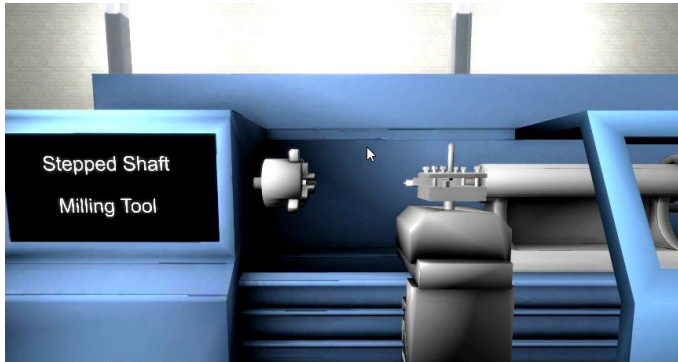


Repeat the steps you learned in the guided practice to grind the top surface of the metal block.

For educational use only



For educational use only



Stepped Shaft
Milling Tool

This simulation is designed to introduce you to the CNC Lathe.

Previous

Next

For educational use only



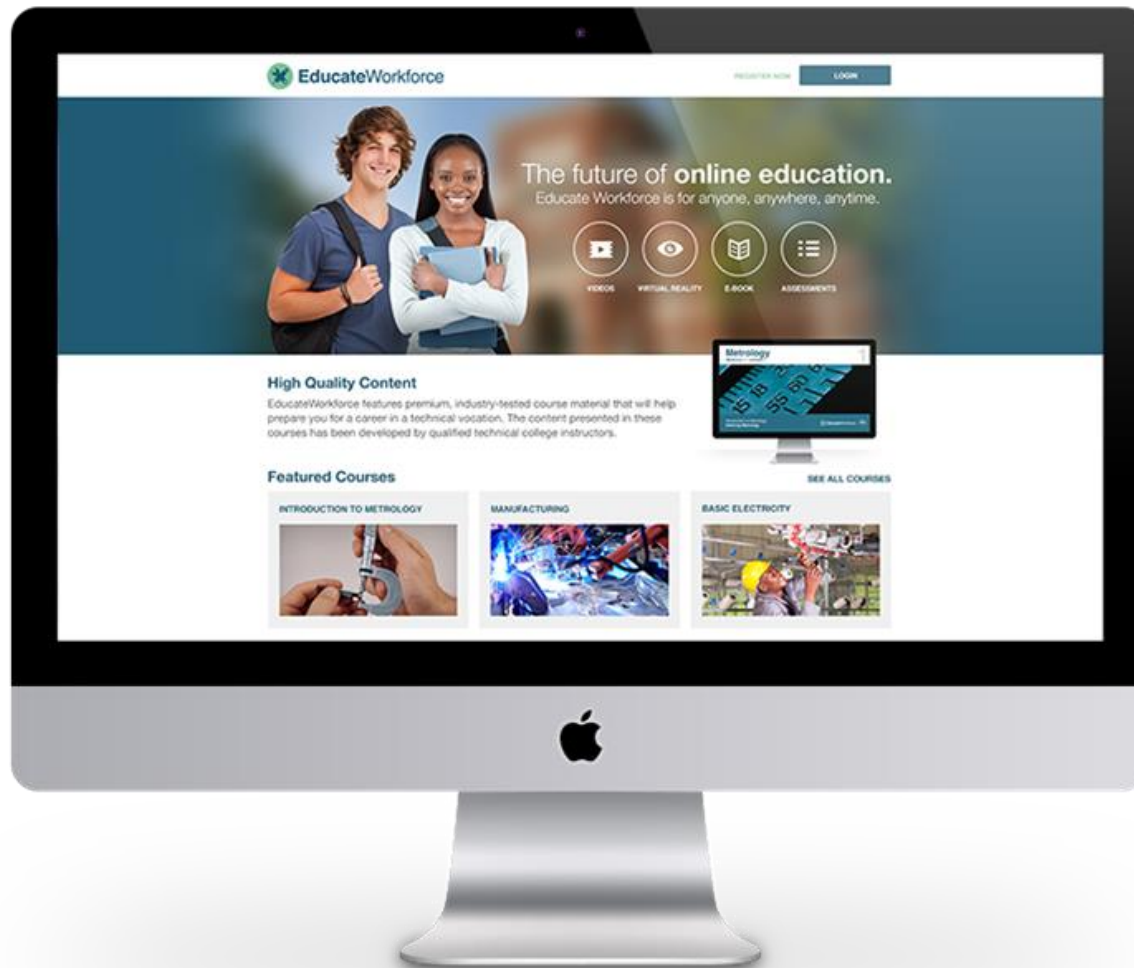
You hear a clanging noise emitting from the gears

Previous

Next

For educational use only

EducateWorkforce.com



Discussion



Online or hybrid learning in STEM fields

Identify some challenges and possible solutions associated with adapting STEM courses with hands-on components into online or hybrid formats.

 You may respond at [PollEv.com](https://www.poll-ev.com) when the presenter pushes this poll

 Text **111471** and your message to **37607**



Trends in Tools and Resources

Supporting Implementation of OPEN Digital Curriculum

Mobile Applications for the Classroom



[Air Sketch](#)

(iPad)



[ShowMe](#)

(iPad)



[iTunesU](#)

(iPad)



[Adobe Connect](#) (iOS

and Android)



[MyHomework](#)

(iOS, Android, Windows, Kindle)



[iBook](#)

(iOS)



[Khan Academy](#) (iPad)



[Dropbox](#)

(iOS, Android, Windows, Kindle)



[Notesplus](#)

(iPad)



[Wolfram|Alpha](#)

(iOS)



[StudyBlue](#)

(iOS, Android, Windows, Kindle)



[iAnnotate](#)

(iOS)



[Wunderlist](#)

(iOS, Android, Windows, Kindle)



[Evernote](#)

(iOS, Android, Windows, Kindle)



[Ted and Ted Books](#)

(iOS)



[Quick Office](#)

(iOS, Android)



[PBS](#)

(iPad)



[NASA App HD](#)

(iOS, Android)



[Mindomo](#)

(iOS, Android)



[SlideShark](#)

(iOS)



[Mental Case](#)

(iOS)

*** Click on the App Names to view a description and the APP Icons to view a video**



Air Sketch



Need a recordable whiteboard?
Try [Vittle](#) or [ShowMe](#) !



iAnnotate

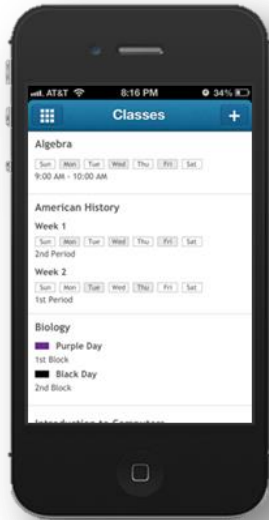
The image shows a screenshot of the iAnnotate application interface on a tablet. The screen displays a document titled "User Guide" with various annotations and toolbars. Red callout boxes highlight specific features:

- Tabbed Reading**: Points to the document title and navigation tabs at the top.
- Fully customizable toolbars**: Points to the vertical toolbar on the right side of the screen.
- Add notes & bookmarks**: Points to a yellow note icon and a bookmark icon.
- Easily mark-up text**: Points to a blue box containing the word "DRAFT" and a yellow highlight on the text.
- Typewriter annotations**: Points to a red typewriter icon in the bottom toolbar.
- Search document text**: Points to a magnifying glass icon in the bottom toolbar.
- Quickly navigate annotations**: Points to a red double-headed arrow icon in the bottom toolbar.
- check links**: Points to a blue link icon in the bottom toolbar.

The document content includes sections like "1.1: QuickStart Guide" and "Get Documents: Get PDF documents onto your iPad from E-mail by tapping on attachments, from the web using our integrated web downloader, from your Dropbox account, or from your computer using the All PDF Service or iTunes USB file sharing." The bottom of the screen shows a navigation bar with icons for home, back, forward, search, and other functions.

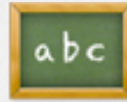


MyHomework



Homework

Track your homework, tests, projects and lessons.



Class Schedules

Supports time, block and period based schedules.



Reminders

Get reminded when assignments are due.



Sync

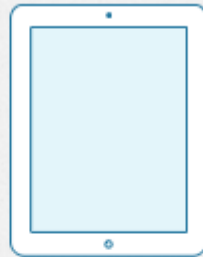
Sync to access your classes and assignments on any of the available devices!



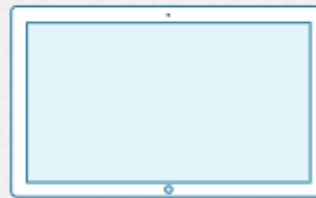
iPhone



Android



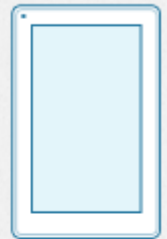
iPad



Windows 8



Web



Kindle

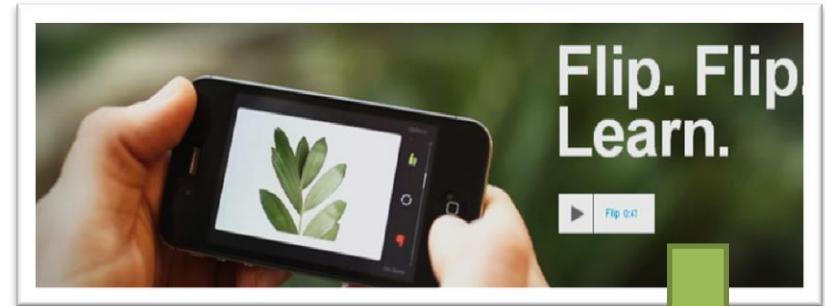
Teachers.io = share class information with students synced through MyHomework



StudyBlue

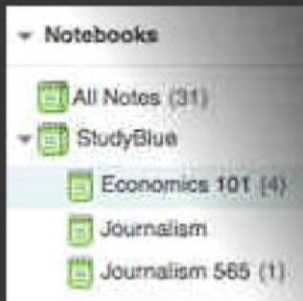


Evernote



STUDYBLUE + Evernote.

You've successfully connected Evernote to your STUDYBLUE account.



Evernote class notebooks sync with StudyBlue to import your study materials.



StudyBlue creates class notebooks in your Evernote account.



Copy & paste your original notes onto digital flashcards.



Study online or on your iPhone or Android. Track your progress and get reminders.

Open Educational Resources - E-Texts

[OpenStax College](#)

[Connexions](#)

[College Open Textbooks](#)

[University of Minnesota](#)

[WikibooksBoundless](#)

[CK12 Flexbooks](#)

[The Saylor Foundation](#)

[Flatworld Knowledge](#)

[Orange Grove Text Plus](#)

The value of
education



** Click on the E-Text Names to view a description*

OER – Open Educational Resources

OER Repositories:

- [SBCTC OERs \(Washington State Board\) Open Course Library](#)
- [NROC – National Repository of Online Courses](#)
- [Curriki](#)
- [OER Commons](#)
- [Open Source Physics](#)
- [PHET Interactive Simulations](#)
- [Open Learning Network \(OLNet\)](#)



OER Resources:

- [OER Matrix](#)
- [Order of Operations OER Creation](#)
- [Quality Matters Rubric](#)
- [Learning Registry](#)
- [OER-Friendly Tools & Resources](#)
- [Scoop It](#)
- [Wikimedia](#)
- [Open Policy Implementation Guide](#)

** Click on the OER Names to view a description*


Discussion



Digital Tools and Resources

Name a resource you have used or are familiar with that supports the implementation of Digital Curriculum

 You may respond at [PollEv.com](https://www.poll-ev.com) when the presenter pushes this poll

 Text **112762** and your message to **37607**

Questions

Ginny Hall, Ed.D
Director of Digital Learning
CUCWD

Caroline Christ
Digital Learning Experience Designer
CUCWD

