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

K-12 Instructor: 41842
2-Year College Instructor: 41848
4-Year College Instructor: 41856
NSF ATE Center or Project: 41947
Other: 111248

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

U.S. = 63%
SC = 56%
MA = 68%
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

- Less Than High School
- High but No College
- Some College
- B.A. Degree
- Graduate and Professional Degree

Barriers to Manufacturing Pathways

• Lack of support for advanced manufacturing career pathways

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

• 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.

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Text 115176 and your message to 37607
STEM Pathway Development Plan

1. Pathways

2. Strategic Partnerships

3. Digital Learning

Increased Employment & Economic Growth
1. Pathway Development

“A lifelong educational journey.”
Pathway Development

P-12

- Elementary  Introduction
- Middle  Exploration
- High  Immersion
Pathway Development

2-Year & 4-Year Colleges

- Dual Degree Certificate / High School Diploma
- Industry Recognized Certification
- Associates Degrees & Certifications
- Bachelor’s Degrees

BEYOND

Industry
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
2. Strategic Partnerships

- 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
- Boeing
- Milliken
- Duke
- Fluor
**Strategic Partnerships**

- 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
3. Digital Learning

AMPA (Advanced Manufacturing Production Associate)

- General Competencies
- Safety
- Quality
- Maintenance
- Manufacturing
- Green Manufacturing

- Work Keys & Work Ready Communities
- OSHA
- 6 Sigma Yellow Belt

A² (Automotive & Aviation)

- Intro to Metrology
- Basic Electricity
- Engines
- Hydraulics & Pneumatics
- Fuel Systems
CA²VES Curriculum

Outline
Open Text - Content
Mini-Video Lectures
Assessment Guide
Virtual Reality

Virtual Reality

CUWCE CA²VES
CA²VES Virtual Reality

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

Stepped Shaft Milling Tool

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

You hear a clanging noise emitting from the gears.
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 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

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<td>(iPad)</td>
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<td><strong>iTunesU</strong></td>
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</tbody>
</table>

*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!
MyHomework

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

*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 when the presenter pushes this poll

Text 112762 and your message to 37607
Questions

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