• Jerry D. Ellner

National Director High School Development
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Board Member ACTE Post Secondary, ASCA, Opportunity Nation, Coalition of Career Development, Reach Higher
2015 NADA Educator of the Year – 2017 ACTE Champion
UNIVERSAL TECHNICAL INSTITUTE

12 Manufacturer Training Locations

Sacramento, CA
Rancho Cucamonga, CA
Long Beach, CA
Avondale, AZ
Phoenix, AZ
Houston, TX
Dallas/Fort Worth, TX
Lisle, IL
Bloomfield, NJ
Exton, PA
Mooresville, NC
Orlando, FL

GET THERE. FASTER. SMARTER.
5000+ Employer locations offer incentives to UTI graduates nationwide* in addition to standard wage and benefit packages
Follow Your Passion - NOT
A comprehensive guidance plan is required as part of DOE School Code under Chapter 339 entitled Guidance.

The Academic Standards for Career Education and Work address the importance of career planning for all students related to labor market projections and workforce needs.
“It’s important for every school to expose students to careers and allow students to explore different possible career pathways. It’s important that we continue to build in that interest so that pursuing STEM is not even a question.”

Massachusetts Education Commissioner Mitchell Chester
• A change is taking place in our society. The belief that a young person must obtain a college degree in something (anything!) is giving ground to the necessity for a person to acquire skills.

• Many graduates of four-year liberal arts colleges are looking for work, while students from career vocational technical schools are finding high-skill, high wage jobs.

Dr. Kevin Fleming “Success in the new economy”
The Old Smart

• You have to go to college in order to get a good job!

• “Griggs v. Duke Power: a 1971 Supreme Court decision had virtually eliminated general aptitude tests in business.

• The Griggs v. Duke Power ruling put companies on notice that they could be sued if they relied on such tests. Companies began to use college credentials as a legally safe substitute for aptitude tests.
What was thought to be true yesterday, May not be true today
ACT Testing

THEN
Get into a good college
- Get a good education
- Get a college degree
- Start your job search

NOW
Get into a good CAREER
- Which jobs are a good fit?
- Get hands-on experience
- Gain skills employers need

JOBS & WAGES ARE GROWING IN THE SKILLED TRADES

ACT Assessment
Different Thought Process

**Before—Get Into Good College**

- **Middle School**
  - Get good education

- **High School**
  - Get into good college

- **College**

- **Job**

**After—Get Into a Good Career**

- **Middle School**
  - Which occupations are a good fit?

- **High School**
  - Get occupation exposure; further education path? Career Readiness

- **Postsecondary**
  - Find good employer fit. Use College Scorecard Career Pathways

- **Career**
Focus Driven Education
Skills Based Post Secondary Opportunities
Focus Driven Education - Why?
Focus Driven Education 4 Steps

1. Self Exploration; identify your “career personality” through assessments like the ACT Online Assessment

2. Career Exploration; understanding the current career opportunities using ACT website and resources

3. Career Planning; Focus driven career readiness

4. Education; Focus driven post-secondary education using College Score Card and success history
• Getting their students into college is currently a primary goal of almost every high school in the USA.
• 81% of the members of the Why generation believe a college education is necessary for a good career.
• “We do career exploration at the highest dollar amount possible, and its called university” Paul Galbenski, Teacher of the Year.
• There are an abundance of career fields that are totally dismissed by students today because they simply do not understand the high income potential of those fields. ACT testing and online assessment is an important career readiness tool.
After they graduate from high school, they will...?

- Go into the Military: 4%
- Go directly to the world of work: 15%
- Go to a four-year college or university: 49%
- Go to a two-year community college or vocational school: 31%

Crux Research, Inc. Spring 2018
Nearly Half of College Grads are Underemployed

![Pie chart showing education requirements of occupations held by college graduates.](image)

Source: U.S. Bureau of Labor Statistics, authors’ calculations
The Awareness Gap
The Rule of 1-2-7

FOR EVERY 10 CAREERS

1. Requires an advanced degree
2. Require a bachelor’s degree
7. Require a credential such as a degree or diploma earned after the recipient completes a program by demonstrating the abilities required by employers in a particular profession.

STEM is CTE

50% of all Science, Technology, Engineering and Mathematics (STEM) jobs are open to workers with less than a bachelor's degree.

30% of today's STEM intensive jobs are in occupations such as installation, maintenance and repair; construction; manufacturing; and health care support.

CTE is ...

SCIENCE

61% of CTE students interested in a science career report that their CTE courses provide them with skills for the workforce.

TECHNOLOGY

IT employees can earn more than 2x the national average, and IT is one of the best-paying Career Clusters for those with middle-level skills.

ENGINEERING

18% job growth is projected for environmental engineering technicians by 2022. These jobs typically require an associate's degree and pay more than $45,000 per year.

MATHEMATICS

45% of CTE students interested in a math career report that their CTE courses help them attain higher math and/or science skills.

References for this research can be found at www.actonline.org or by contacting cimperatore@actonline.org. Revised May 2014
STEM Skills are in Demand

STEM:
1.7 jobs for every 1 unemployed person

Non-STEM:
4.5 unemployed people for every 1 job
Transportation is a STEM Career

• Transportation is the most technologically advanced industry many of us will experience

• Cars, trucks, motorcycles, and boats are designed using advanced STEM principles
  • Advanced suspension and steering systems utilize high-level geometry
  • Fuel and battery systems use chemistry
  • Elaborate electrical and electronic systems utilize advanced level math and technology
Chemistry of Gasoline/Fuel

- Gasoline = 85% Carbon (C) + 15% Hydrogen (H)
- Fuel quality measured in Calorific Value (CV)
  - High CV = more heat/energy potential
  - Higher energy potential = more horsepower
- Add atmospheric air to get oxygen (O)
- Chemicals needed to start combustion:
  - Carbon (C)
  - Hydrogen (H₂)
  - Oxygen (O₂)
Chemistry of Automotive Power Source

**In from Fuel Injector and Outside Air**
- Carbon (C)
- Hydrogen (H₂)
- Nitrogen (N₂)
- Oxygen (O₂)

**Out to Exhaust Pipe**
- Hydro-Carbon (HC) ➔ Unburned Fuel
- Carbon Monoxide (CO) ➔ Partially Burned Fuel
- Carbon Dioxide (CO₂) ➔ Completely Burned Fuel
- Oxygen (O₂) ➔ Left Over Oxygen
- Nitrogen Oxide (NOₓ) ➔ Formed at very high temperature
- Water (H₂O) ➔ Plain water as Steam
Starting Your Car

Driver turns on the Key

Computer sends the signal to fire the Ignition Coils. The Spark Plugs Fire!

The System Powers On. Voltage goes up.

Crank Shaft Position Sensor tells the Computer when it is the right time to send fuel and when to fire the spark plugs

The Starter Motor Engages, see the Blip?
Ohm’s Law

• Relationship between volts, resistance and amperage

\[ V = I \times R \]
\[ I = \frac{V}{R} \]
\[ R = \frac{V}{I} \]

\(12 = 2 \times 6\)
\(2 = 12 / 6\)
\(6 = 12 / 2\)
Techs Use Scientific Method

Scientific Method

- Observation
- Research Problem
- Construct Hypothesis
- Test Hypothesis with Experiment
- Analyze the data and develop conclusion
- Test Hypothesis / Was it Correct?

Auto Technician Process

- Customer Presents Complaint
- Research conditions when problem occurs
- Develop *Educated Guess* about source of problem
- Attach test equipment and gather data
- Analyze the data and develop a diagnosis
- Install new component and verify problem is solved
The College Score Card Background

• President Obama’s State of the Union 2013.

• DOE releases an interactive College Scorecard.

• Provides consumers critical information necessary to make smart decisions about post-secondary education. Is even more relevant when used in conjunction with ACT resources.

• Initially, the scorecard provided a snapshot of costs and value.
The Present

- Initially, the Scorecard provided students and parents with:
  - Location
  - Size
  - Campus setting
  - Degree

- In conversations with educators, parents and students, the Scorecard evolved to include:
  - Cost
  - Graduation Rate
  - Loan Default Rate
  - Average amount borrowed
  - Employment
The College Scorecard compiles detailed data from the U.S. Department of Education, including:

- Graduation rates
- Median earnings 10 years after entering the school
- Costs of education

Want to learn more? Visit CollegeScorecard.ed.gov
## UTI vs. College

<table>
<thead>
<tr>
<th>Institution type</th>
<th>Median annual earnings, 10 years after starting school</th>
<th>Graduation rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctoral universities</td>
<td>$48,490</td>
<td>62%</td>
</tr>
<tr>
<td>UTI of Arizona</td>
<td>$45,200</td>
<td>63%</td>
</tr>
<tr>
<td>Liberal arts colleges</td>
<td>$42,642</td>
<td>66%</td>
</tr>
<tr>
<td>Two-year public colleges</td>
<td>$29,412</td>
<td>22%</td>
</tr>
</tbody>
</table>
# UTI vs. Liberal Arts Colleges

<table>
<thead>
<tr>
<th>College</th>
<th>10-Year Median Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington and Lee University</td>
<td>$72,900</td>
</tr>
<tr>
<td>Harvey Mudd College</td>
<td>$67,200</td>
</tr>
<tr>
<td>Claremont McKenna College</td>
<td>$66,400</td>
</tr>
<tr>
<td>Wellesley College</td>
<td>$56,500</td>
</tr>
<tr>
<td>Amherst College</td>
<td>$56,300</td>
</tr>
<tr>
<td>Williams College</td>
<td>$54,200</td>
</tr>
<tr>
<td>Carleton College</td>
<td>$49,500</td>
</tr>
<tr>
<td>Vassar College</td>
<td>$49,300</td>
</tr>
<tr>
<td>Skidmore College</td>
<td>$43,000</td>
</tr>
<tr>
<td>Oberlin College</td>
<td>$40,300</td>
</tr>
<tr>
<td>Reed College</td>
<td>$35,200</td>
</tr>
</tbody>
</table>

Source: College Scorecard, [https://collegescorecard.ed.gov/](https://collegescorecard.ed.gov/). Calculated by determining the median earnings of former students, who received federal financial aid, at 10 years after entering the school, regardless of whether they graduated from the school. Earnings are defined in the College Scorecard as the sum of wages and deferred compensation from all W-2 forms received for each individual, plus self-employment earnings. College Scorecard does not show earnings for the UTI Arizona campus alone. Instead, the number shown is for the four campuses that were operating in 2001-2003 (Arizona, Rancho Cucamonga, NASCAR Technical Institute and Glendale Heights) that are included in the Office of Postsecondary Education Identifier (OPEID) assigned to UTI of Arizona. The OPEID number is assigned by the U.S. Department of Education to identify schools that have program participation agreements (PPAs) so its students are eligible to participate in federal student financial assistance programs under Title IV regulations. This subset of most selective (as identified by top 50 highest SAT scores) liberal arts colleges was selected for comparison Focus only.
• Outcomes should be considered along with cost.

• Being out of the workforce for several years is a big negative factor for cash flow.
  • The true cost of an education has to include the “opportunity cost”.
  • Tuition reimbursement programs (TRIP) are not included in the analysis.
We Can Help!

- Presenting the Career Personalities workshop and student assessment in your school.
- Review career personalities with your students.
- Introduce your students to the 1-2-7 equation.
- Share current career pathways in 8 major STEM fields that are hiring today.
- Sharing the students results with advisors, counselors and parents
- Exposing your students to millions of dollars in scholarship opportunities.
- Professional Development workshops available at your school
- Certifying your classroom and curriculum as a UTI Certified STEM Program
You Can Advocate Too

- ACT Test Prep and Testing
- ACT Scholarships
- ACT Online Assessment
- ACT resources on Career Readiness and College
- Promote your STEM program
- Open House for Parents
- Open House for Middle School
- Involve Industry
- Industry Day Field Trips
- Career Pathways Exploration Days
- Rebrand as a STEM Program
- Celebrate Success
Which is Right for OUR Students?

STEM Education Vs. Traditional Education = Both Wins

Competency Based Credentials = Careers
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