

Today's Careers

What Our Students Really Need to Know

Sorting through the minutia and targeting the skills our employers actually need for “gold collar” jobs

*Neal Kauffman & Brian Gordon
Three Rivers Education For Employment System*



America today in Mike Rowe's view



PROFOUNDLY DISCONNECTED?

- * A trillion dollars in student loans.
- * Record high unemployment.
- * Three million good jobs that no one seems to want.

The goal of Profoundly Disconnected is to challenge the absurd belief that a four-year degree is the only path to success. The Skills Gap is here, and if we don't close it, it'll swallow us all. Which is a long way of saying, we could use your help...



Our Background



- *Combined 40+ years of experience in business and industry*
- *Trainer and HR manager for Exelon, a fortune 200 company*
- *Small Business Owners*
- *Work with health care consulting firm - Securities Licenses held*
- *Adjunct Community College Faculty*
- *Adjunct Graduate School Faculty*
- *Combined 30+ years in K-12 education*

Typical Industrial Hiring Process

(STEM Employment)

*Complete an **application** and submit a **resume***

*Screening phone interview (HR) with **aptitude exam invite** (Go/No Go) - This may be skipped*

Complete aptitude exam (Go/No Go)

*Behavior based **Interview** with multiple hiring managers (Soft and Hard Skills Evaluation)*

*Hiring Managers **select candidate(s)** (rated each question 1-5)*

***Job offer** extended (HR) with contingencies*

*Fitness for duty exam (**Alcohol/drug screen**)*

*Complete **background checks** (job gaps, validate past employment, felonies, misdemeanors, education validation etc.*

Negotiate start date

*So What's the Problem? Why are we Profoundly
Disconnected?*

Eduspeak

Industry Language

“STEM”

Technical Competencies

Contextual

Applied

Soft Skills

Don't be a Bonehead

Eduspeak

Industry Language

Employability Skills

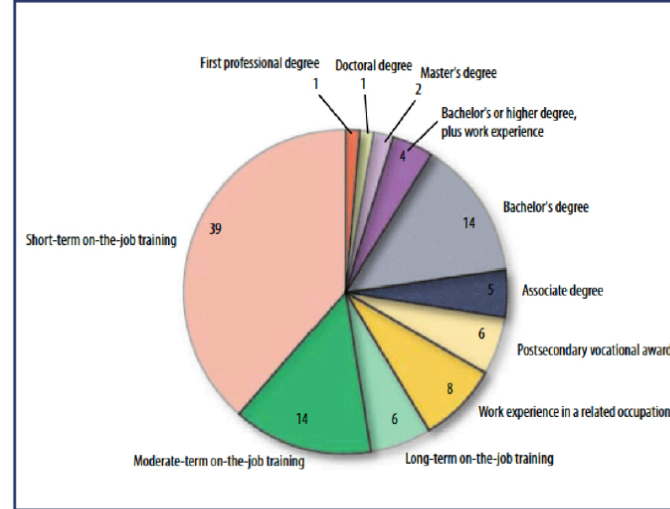
*Show up on time, fit
for duty, and ready
to learn, ready to
work!*

Career Ready

*Value added, drive
business to profitability*

*Employers expect their employees
to make them money.*

Percent distribution of job openings due to growth and replacement needs
by education or training level, projected 2008-18



Most job openings over the projections decade will be in occupations that require short-term on-the-job training. Occupations requiring moderate-term on-the-job training and those requiring a bachelor's degree are also expected to have a large share of the projected job openings.

Source:
Occupational Outlook Quarterly
U.S. Department of Labor
U.S. Bureau of Labor Statistics
Winter 2009-2010

Perceptions and Realities are way out of balance

Only 22% of our graduates will need a bachelors degree or higher.

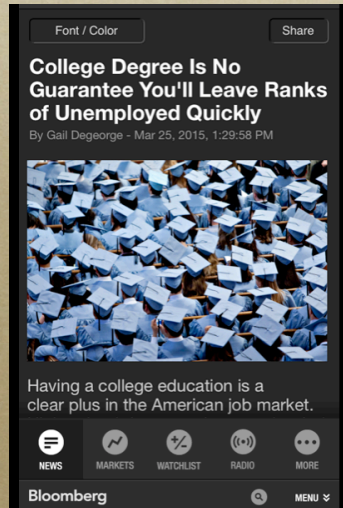
Additionally, 5% of high school graduates will need an Associates Degree.

Our Current Educational Policies are inconsistent with this data

If our goal is to send 100% of our students to college, we are not serving all of our students realistically

Data from a College Entrance Exam and sending 100% of our graduates to college should not be our measurement of school success

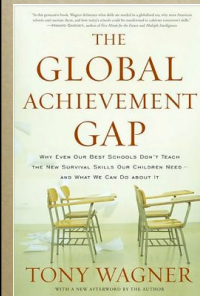
It helps to explain this



Yet once you're out of work, being better educated barely seems to improve your chances of finding a new job within half a year, a recent **analysis** by the Bureau of Labor Statistics shows. Of those ages 25 or older with at least a bachelor's degree who were jobless last year, 37.7 percent were out of work 27 weeks or longer. That compares with 38.3 percent for those who didn't finish high school.



We're STEM Crazy



"We can't teach them to think"

CTE Coursework Does!

*Experiential training (learning) in a STEM setting
requires critical thinking and problem solving*

From a March 10, 2015 GALLUP Editorial

**“Career and Technical Education
Should Be the Rule, Not the Exception”**

by Tim Hodges for GALLUP

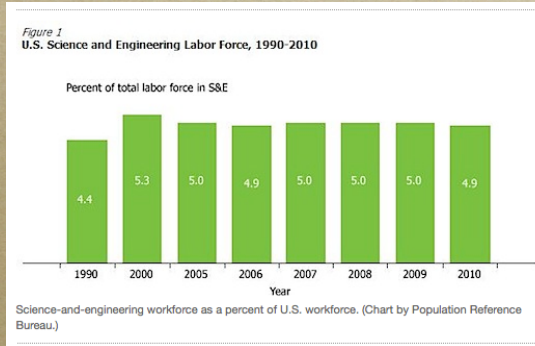
An excerpt:

“a recent study found that 80% of students taking a college preparatory academic curriculum with rigorous CTE met the standard for college and career readiness, compared with 63% of students taking the same academic core without rigorous CTE.”

Scientists and Engineers are an important, but small percentage of the workforce (including the STEM workforce)

As a percentage of the total labor force, S&E workers accounted for 4.9% of the workforce in 2010, a slight decline from the three previous years when these workers accounted for 5% of the workforce. That percentage has been essentially flat for the past decade. In 2000, it stood at 5.3%.

Science-and-engineering workforce as a percent of U.S. workforce. (Chart by Population Reference Bureau.)



http://www.computerworld.com/s/article/9224823/Science_and_engineering_workforce_has_stalled_in_U.S._report_says

The Majority of STEM Jobs

- Overall, BLS estimates that nearly half (45%) of all job openings in the next ten years (21 million openings) will require middle level skill. (STEM technicians that are high skill, high wage and high demand in the workforce)
- Many potential STEM technicians **may be in the middle quartiles of math and science achievement**. These students are interested in math and science (applied) and are “hands on” or “contextual/applied” learners.

“Career Pathways for STEM Technicians” - Dan Hull

STEM definition and application in Industry

Educational "Overview"

(STEM) Trans-disciplinary approach to education (multi-faceted whole)

(STEM) New sphere of understanding that ensure the integration of disciplines

Industry Realities

Industry pays for SKILLS!

Industry is no longer willing to allocate funds to train workers from ground zero

Industry uses validated "aptitude exams" to ensure applicants have basic skill sets needed for industrial applications

Industry uses "behavior based interview questions" to ensure applicant has the necessary soft skills/technical skills for industrial applications

Industry assumes past behavior is representative of future behavior (behavior based??)

Industry Expectations for Employees : on time, fit for duty, ready to learn, value added, drive business to profitability

Let's Be Smart about STEM

Gold Collar Jobs/Today's Focus

Types of Jobs (\$35K to \$100K) needing these skills in these Industries are as follows:

- Instrument and Control Technicians
- Manufacturing Technicians
- Electrical Maintenance
- Mechanical Maintenance
- Radiation Protection Technicians
- Chemistry Technicians
- Operators/Operating Engineers
- Engineering Technicians
- Pipefitters/Plumbers
- Carpenters/Construction Maintenance
- Boilermakers/Welders
- Factory Work/Manufacturing

*Number of these jobs
requiring more than
an Associates*

0

That's Zero

*Most of these don't require an Associates but
do require industry training.*

These Jobs In 4 Industries

- *Utilities* (Nuclear, Coal, Gas, Renewables, etc...)
- *Trades* (All Skilled Trades)
- *Manufacturing* (Across the Spectrum)
- *Process Plants* (Chemical, Oil, Gas, etc...)

Jobs Like These

North American Lighting Hiring Now

[Subscribe](#)

[Read another news item](#)

Leading automotive lighting manufacturer is currently seeking hundreds of employees for their vastly expanding hi-tech, state-of-the-art Paris, Illinois facility.

NOW HIRING:

- Operators
- Technicians
- Material Handlers
- Tool and Die
- Shift Supervisors

NAL offers employees:

- Competitive Wages with Promotional Opportunities (Entry level wages ranging between \$14-\$18 / hour plus benefits)
- Health Benefits
- Advanced Training Opportunities
- College Course Reimbursement
- Holidays
- Clean, Safe, State-of-the-Art Working Environment

Applicants must:

- Complete an application on the [NAL Website](#)
- Have earned a High School Diploma or GED
- Pass a drug screening
- Have a background check



NORTH AMERICAN LIGHTING, INC.

But did you catch one very notable benefit?

- College Course Reimbursement

They will pay for you to go to school and they are not alone. We will give another example in a while.

Do our counselors tell students there are employers out there that will do this? Do our counselors know?

Mike Rowe before the Senate Commerce, Science, and Transportation Committee



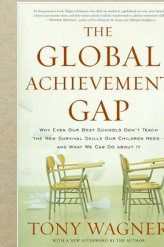
*It is too bad it was not before all of Congress or
at least an Education Policy Committee*

<http://www.iseek.org/careers/stemskills.html>

Employers want workers who are able to reason and solve problems using some math, science, or technology knowledge.

Key STEM skills include:

- **Analytical skills** to research a topic, develop a project plan and timeline, and draw conclusions from research results.
- **Science skills** to break down a complex scientific system into smaller parts, recognize cause and effect relationships, and defend opinions using facts.
- **Mathematic skills** for calculations and measurements.
- **Attention to detail** to follow a standard blueprint, record data accurately, or write instructions.
- **Technical skills** to troubleshoot the source of a problem, repair a machine or debug an operating system, and computer capabilities to stay current on appropriate software and equipment.



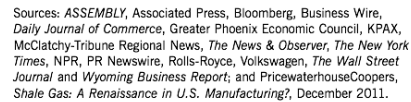
Manufacturers may be among the biggest beneficiaries of the natural gas boom

Sources: *ASSEMBLY*, Associated Press, Bloomberg, Business Wire, *Daily Journal of Commerce*, Greater Phoenix Economic Council, KPAX, McClatchy-Tribune Regional News, *The News & Observer*, *The New York Times*, NPR, PR Newswire, Rolls-Royce, Volkswagen, *The Wall Street Journal* and *Wyoming Business Report*; and PricewaterhouseCoopers, *Shale Gas: A Renaissance in U.S. Manufacturing*, December 2011.

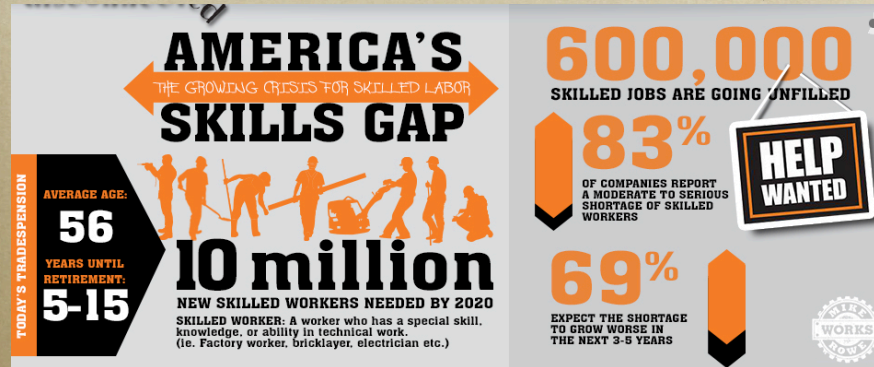
STEM Jobs!

Utilities

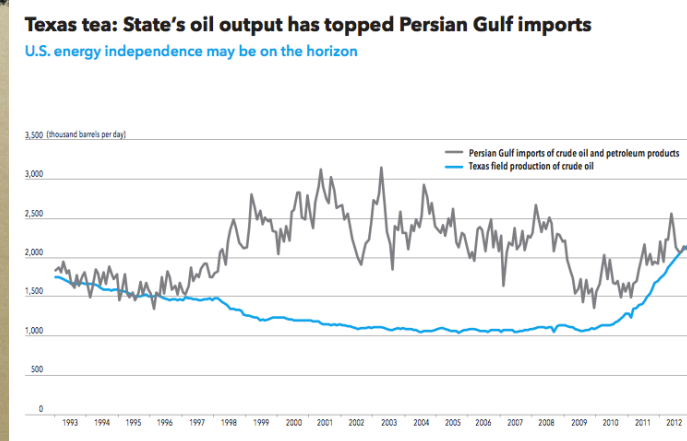
According to a PricewaterhouseCoopers study, high rates of shale gas recovery could result in a million new U.S. manufacturing jobs by 2025.



www.profoundlydisconnected.com



More From The Pricewaterhouse Cooper report..

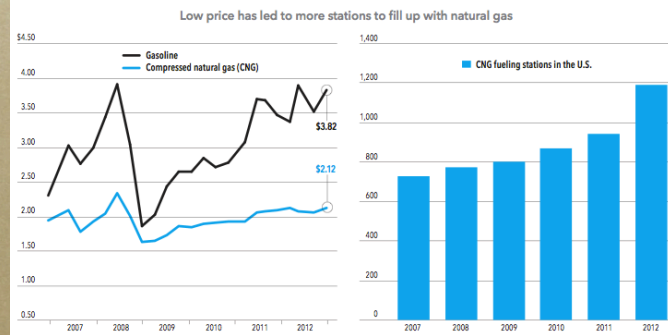


By The Way, Reading this chart is PARCC Friendly and consistent with industry exams

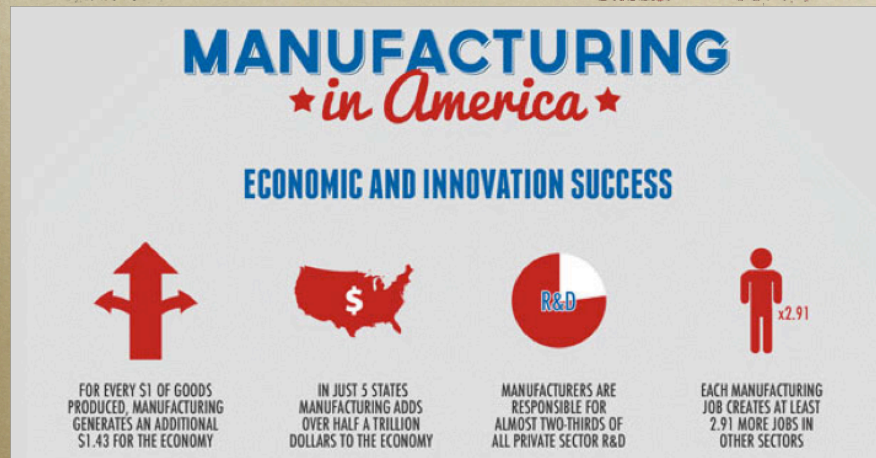
And one more - Natural Gas Powered Vehicles are coming
in a big way.

Fueling change: Some fleets converting to natural gas

From big rigs to school buses, fleets are in transition to gas of a different kind



The Impact of Manufacturing Jobs



Source: Illinois Manufacturers' Association <http://www.ima-net.org/>

- *STEM Jobs are Plentiful and very well paying.*
- *Most (the overwhelming majority) require an Associates Degree or less.*
- *Yet employers struggle to find good candidates.....*

But.....

From the National Association for Manufacturing web site -

* **Close the Skills Gap! Take Action Now!**

- 82% of manufacturers report a moderate or serious shortage in skilled production workers.
- 75% of manufacturers say the skill shortage has negatively impacted their ability to expand.
- 600,000 jobs in manufacturing are unfilled **today** because employers can't find workers with the right skills.
- The average manufacturing job pays \$77,000 and 90% of them offer benefits.

And a Million more are coming back?!?!

Our Guiding Questions

- *If we are trying to prepare people for work in business and industry, why do we so seldom ask business and industry what they (our students) actually need to know?*



- *Or worse, why do we ignore their answers?*

We did ask industry

- *This presentation is the result of several employment screening exams from fortune 200 “STEM” employers, screening exams from smaller companies, review manuals for skilled trades positions, and the Work Keys review manual.*
- *The majority of the jobs highlighted here pay from \$35,000 to well in excess of \$100,000. Many of these jobs require only on the job training. Others may require an Associates or Certificate program.*

The Too Often Ignored Option

- *Ironically, many of the employers that require these types of skills will pay for their employees' tuition costs in an effort to obtain an associates or bachelors degree. **But you have to get in the door!***
- *Morton Industries tour Example*

For millions of college graduates, degrees aren't paying off

Meagan Pant, Dayton Daily News

POSTED: 02/06/2013 01:00:00 AM MST

PRINT EMAIL
27 COMMENTS
STORY STATS



Torix F. Buckley Jr.

16 days ago

Part of the problem that recent college graduates may have in obtaining gainful employment may arise from the following, based on my own experience with hiring recent college graduates:

Inability to construct a grammatical sentence.

Inability to spell correctly.

Inability to write legibly.

Inability to do basic arithmetic.

Lack of manners; inability to interact with others in a civilized manner.

Inability to communicate orally without resorting to pop-culture jargon.

Generally unintelligible speech.

Slovenly, unkempt appearance.

Disdainful attitude. Lazy. Unwilling to put forth effort.

Dishonest. Unabashed about stealing or falsifying hours.

Undependable. May or may not show up for work. May or may not work the required hours.



Torix F. Buckley Jr.

16 days ago

If a kid could come in without all of that baggage,
he'd be head and shoulders above the rest. **If I
could find someone like that, they could pretty
well name their own price, degree or no degree.**

You can teach people job skills.

**You can't teach character, integrity
and ambition.**

Sometimes, it is the obvious answer

There are 300 students in the 10th grade.

Mary and Mark want to find out the 10th grades favorite color.

Mary asks 30 people.

Mark asks 150 people.

Mark says, "My conclusions are more likely to be reliable than Mary's."

Why does Mark think he is right?

Because Mark is a man

From the Book: F In Exams by Richard Benson

*It is Actually This type of analytical thinking that
our STEM jobs require - (Maybe not that answer)*

Math, Science, or Both?

Q.29) The physician has ordered 50 mg of Demerol be given to a patient. The concentration on hand is 100mg/ml. How many cc's of Demerol will be injected?

A. 0.5 cc

B. 1.0 cc

C. 1.5 cc

D. 0.25 cc

What Standard of "Rigor" for Math?

CC Standard 4.MD.1 Standard CC.5.MD.1

CC Standard 5.MD.1

That's 4th/5th Grade - Measurement and Data!

Math Practices Standard CCK-12.MP.6

Attend to Precision - This is tremendously important to INDUSTRY

LA = CC.11-12.L.6 Vocabulary Acquisition and Use Tier 3 Word

*Source: National Certified Medical Assistant Practice Exam - On-line at:
<http://www.proprofs.com/quiz-school/story.php?title=ncct-offical-practice-test-m>*


What would industry do with this guy?

Steve is driving his car. He is travelling at 60 feet/second and the speed limit is 40 mph. Is Steve speeding?

He could find out by checking
his speedometer.

From the Book: *F In Exams* by Richard Benson

He might just be the guy they are looking for!



*Operations Practice Test Question
from a Fortune 200 Company*

Tolerance Check

Out of Range

- ☐ Line Temperature
- ☐ H₂O Pressure
- ☐ Oil Temperature
- ☐ Transfer Speed

[Next Group of Gauges >>](#)

Frames Completed: 0

Select the out of range gauges.

Tolerance Limits:

Line Temperature:	25° to 35°	H ₂ O Pressure:	20 PSI to 28 PSI
Oil Temperature:	75° to 100°	Transfer Speed:	134.22 to 136.34

ELA CC.11-12.R.ST.7 (Reading in Science and Tech)

Compare the readings for each labeled gauge display. (Line Temperature, H₂O, Oil Temperature, Transfer Speed) to the tolerance limits provided.

Where, if anywhere, do we find this in our schools?