# Rising in Leadership: CTE, CCR and Making High School Matter

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# A leader has imagination & vision

- Has a Vision:
  - *It usually comes down to a few fundamentals. Vision is always one of them. Great leaders give real thought to the values, ideas and activities they're most passionate about--and those are the things they pursue…* (John Ryan quoted in Forbes, 2009)
- Has Information and Knowledge to Move that Vision Forward.
  - *Good performance within a company is the result of correct interaction of business management with its internal and external environment* (Houben & VanHoff, 1999).

# A vision for

- A 21st Century Curriculum that
  - engages students,
  - let's them achieve the skills necessary for productive adulthood
  - Facilitates their transition to further education and work
- Supported by evidence-based pedagogy
- Nested in Programs that link all key players
- Lead by you

# Here is what I will plan to do . . .

- Challenge assumptions about the emerging workplace
- Challenge assumptions about education "reform"
- Provide you information on:
  - What "average" CTE can do
  - What "high quality" CTE can do
  - What College and Career Ready requires
  - How College & Career Ready without CTE is _____
- Take notes, there will be a test

# Caution: Assumption Challenges Ahead

**College and Career Readiness**

- More math and Science
- Requiring more academics will raise the bar on academic achievement

**The Emergent Workplace**

- We don't have enough scientists & engineers
- All the good jobs require "college"
- All the good jobs are STEM
- The only jobs being outsourced are routine factory jobs and low skilled jobs

# Rigor= More

*A narrow curriculum*

*High school has become the new middle school*

**THIRTY YEARS OF COLLEGE FOR ALL "REFORM"**

# What does it take to obtain good jobs (Myth or Reality)?

Research by American Diploma Project indicates that regardless if students go on to college or into the workforce after graduation, they still need the same knowledge and skills, particularly in English and mathematics. At a minimum, high school course requirements need to cover four years of rigorous English and four years of math, including Algebra I, Geometry, Algebra II, and data analysis and statistics.

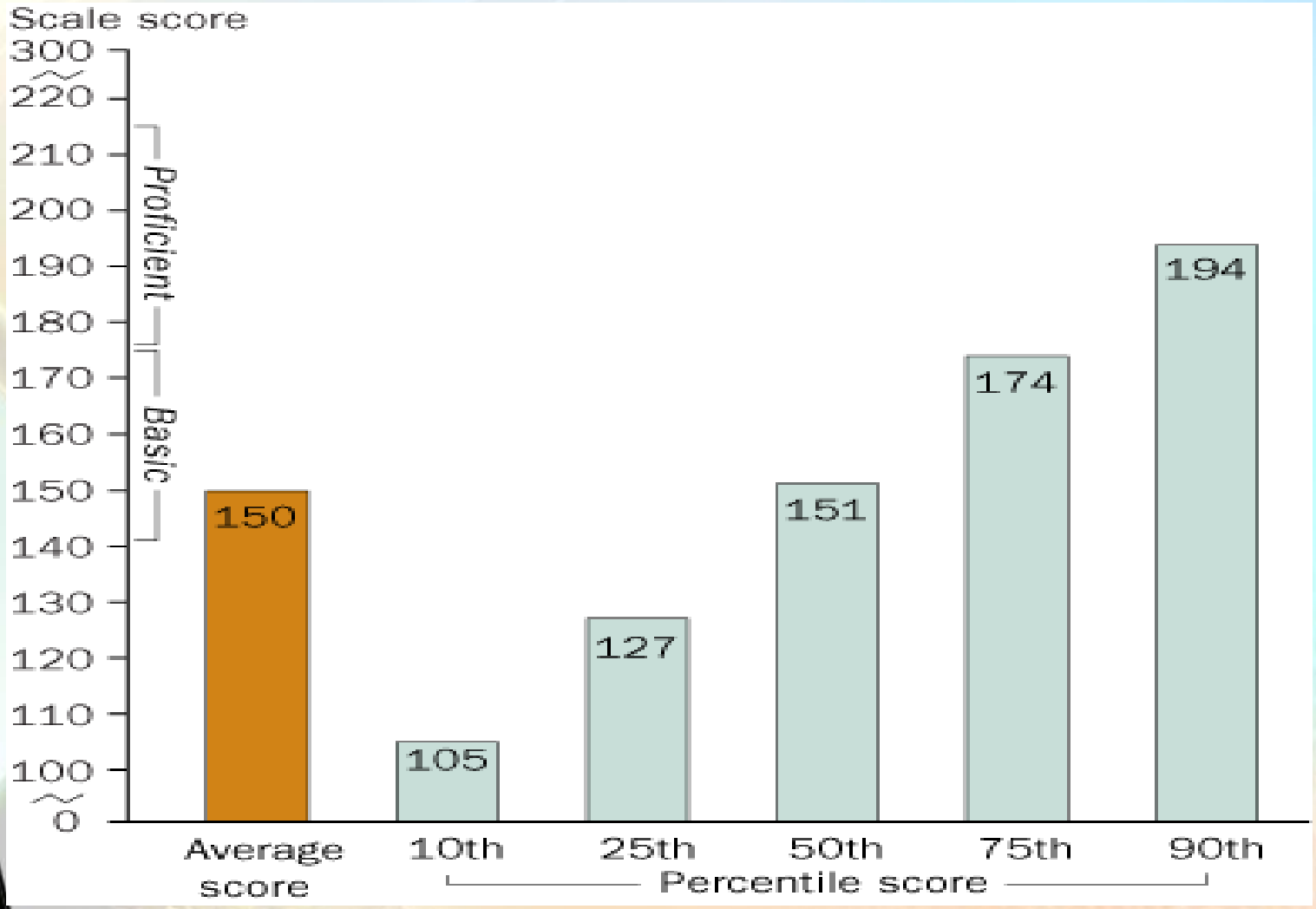
The 4x4 approach

# Since the mid-1980s we have

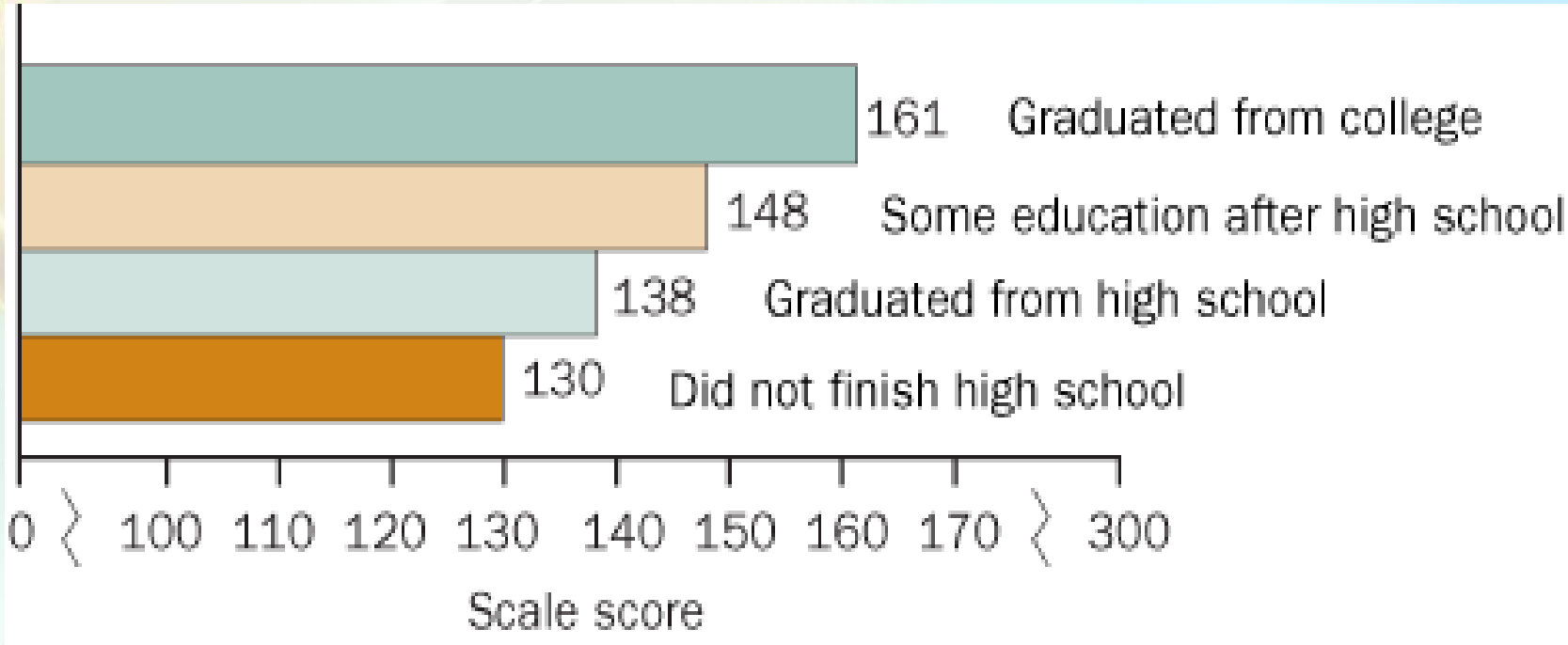
Added the equivalent of *one full year* of core academics (math, science, language arts) to high school graduation requirements.

- (NAEP) ***Reading scores have significantly declined***
- (NAEP) ***Science scores have significantly declined***
- (NAEP) ***math scores have remained relatively unchanged***

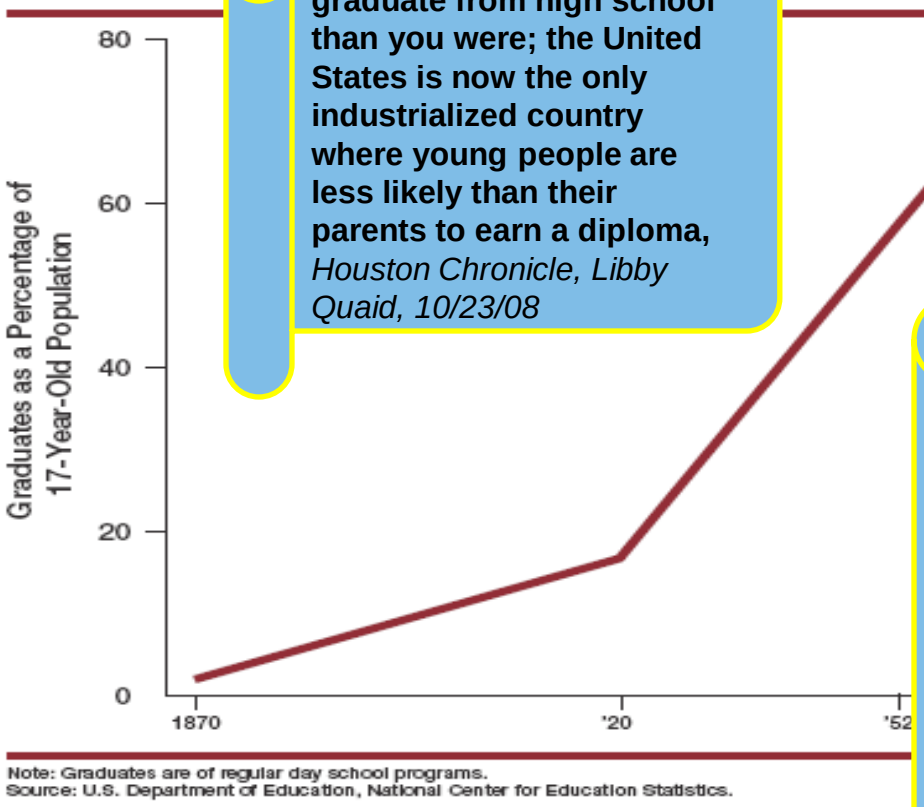
# 12th Grade Math Scores 2005



# One solution?



# It is getting worse




**Your child is less likely to graduate from high school than you were; the United States is now the only industrialized country where young people are less likely than their parents to earn a diploma,** *Houston Chronicle, Libby Quaid, 10/23/08*

**68%**

**US Trails 22 Nations in HS Completion**

*The United States, once the world leader in high-school completion, now trails 22 other leading industrialized countries that have graduation rates higher than the American rate of 72 per cent, according to a report released last week by the Organization for Economic Cooperation and Development.*

***Chronicle of Higher Education (December 4, 2008)***

Source: *One-Third of a Nation* (ETS, 2005

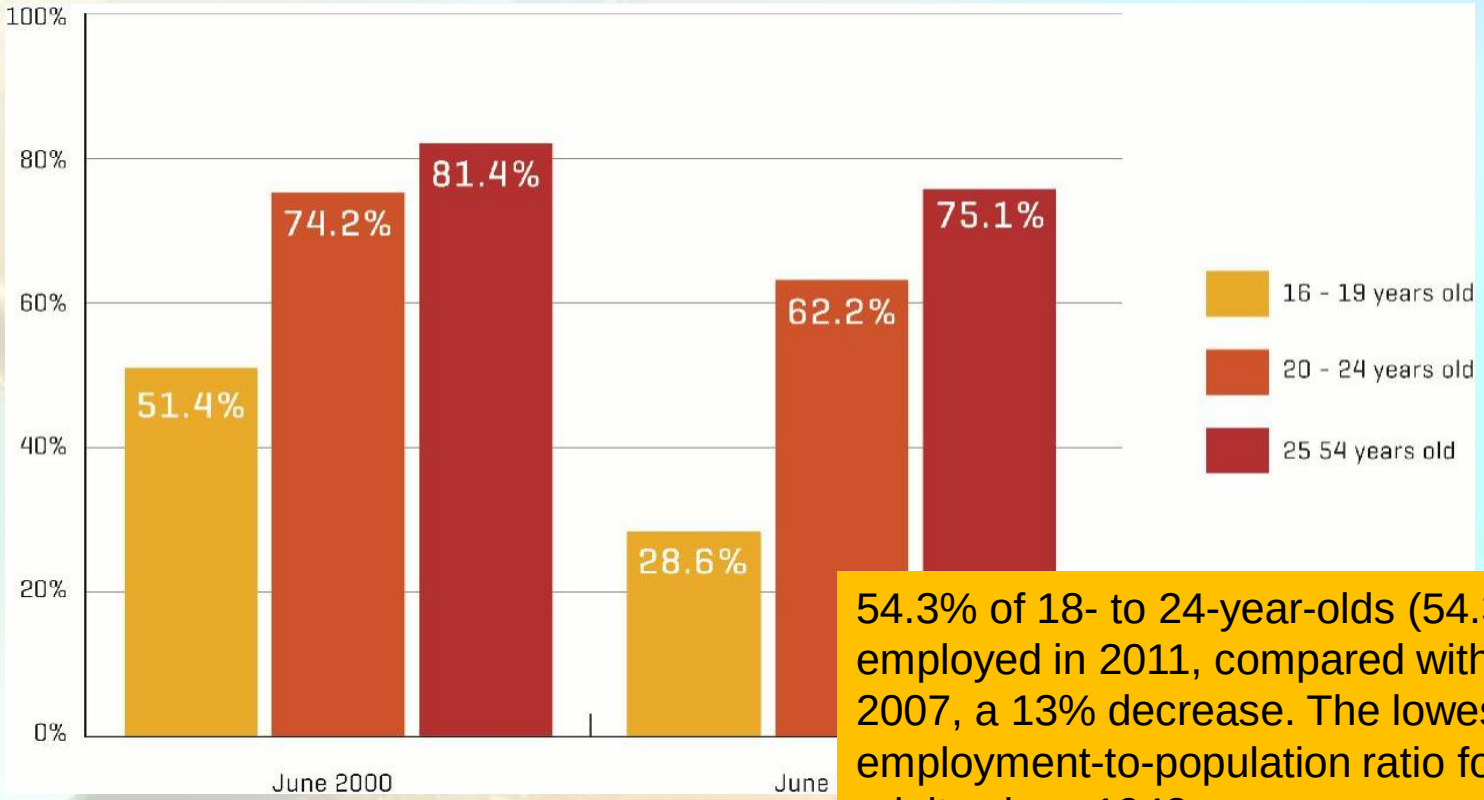
# The College & Career Dilemma

| 9th Grade Cohort | Benchmarks | Workforce Credentials |
|---|---|---|
| 100 enter 9th grade* | 70% complete HS[1] | 30% enter as HS drop outs |
| 70 complete HS | 62% start college immediately[2] | 25% enter as HS grad |
| 43 Start college | 47% drop out (31% with 0 credits) | 19% enter with some college & a lot of debt |
| | 57% complete within 6 years[3] | 18-24% enter with college degree (6/4;3/2) |

1. Greene et al, 2006
2. NCHEMS, 2009 (2006)
3. NCES, 2010

*An unknown number of pre-9th graders never make it to high school

# Teens and Young Adults have been hit the hardest by the Great Recession




54.3% of 18- to 24-year-olds (54.3%) were employed in 2011, compared with 62.4% in 2007, a 13% decrease. The lowest employment-to-population ratio for young adults since 1948.

Source: Center for Labor Market Studies; U.S. Bureau of Labor Statistics, "CPS Labor Force Statistics".

Pew Research Center, 2012. ***Coming of Age, Slowly, in a Tough Economy***

# Why is this important?

- Lower lifetime earning
- Increased risk they will never engage in sustained full-time employment
- 6.1 million NEETs in the U.S. = $100 billion annual cost to U.S. taxpayers
- There are the social & emotional costs that are beyond dollars
- Higher risk of social conflict…look to Spain

McKinsey Global Institute, March 2012

*Aligning Education and Labor Market Needs*

# COLLEGE & CAREER READY FOR ALL?

# Defining College & Career Ready

- Whatever skills needed to succeed in credit bearing CC courses (Tucker, NCEE)
- Being ready for college means that a high school graduate has the knowledge and skills necessary to qualify for and succeed in entry-level, credit-bearing college courses without the need for remedial coursework. (Achieve Inc)
- 4 years of math, English; 3 years of science & social science (College Board)
- Skills needed for living-wage, entry level jobs are same as skill needed to succeed in college (ADP)

# *Another perspective*

- No support … that those not going to college need to be qualified to enter college credit courses in order to enter the workforce.
- Becoming qualified for college-level classes or for entering a job directly out of high school is not the sole purpose of a high school education, e.g. preparing citizens to participate in a democracy.

Barton, P (ETS, 2006)

# Too Many College Grads?

- …turning out vastly more college graduates than there are jobs in the relatively high-paying managerial, technical and professional occupations to which most college graduates traditionally have gravitated.
- Roughly one of three college graduates is in jobs the BLS says require less than a bachelor's degree.

Richard Vedder, director of the Center for College Affordability and Productivity WSJ /21/2012

- . … College graduates, on average, are smarter and more disciplined and dependable than high-school graduates—so much of the reported earnings differential has little to do with college learning.
- We have engaged in massive and costly credential inflation to certify competency for jobs.

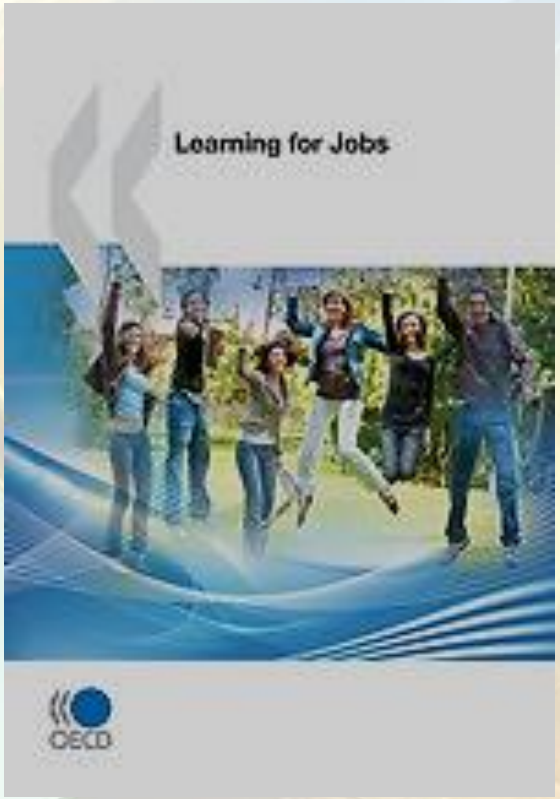
# Not Enough College Grads?

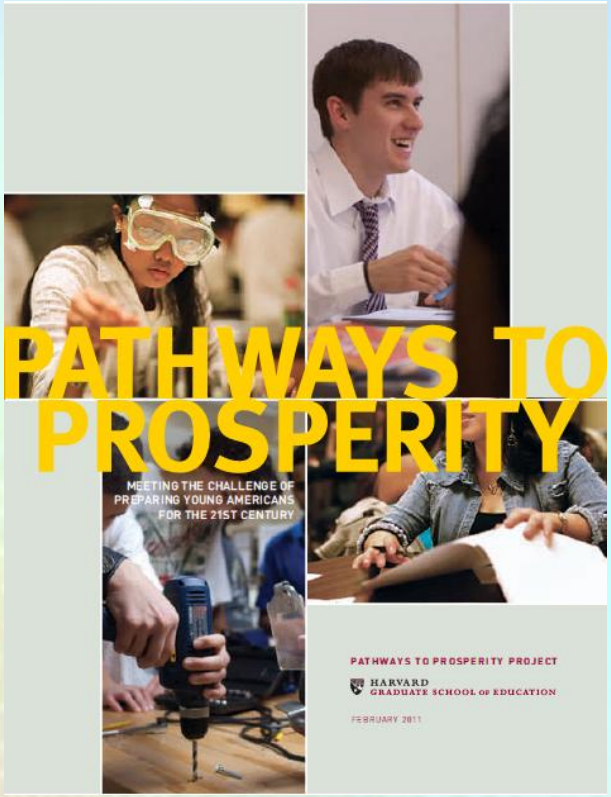
*By 2020, our research projects that the United States may have 1.5 million too few workers with college or graduate degrees and 6 million more without a high school diploma than employers will demand.* McKinsey Global Institute, 2012

# College Degree: At What Cost?

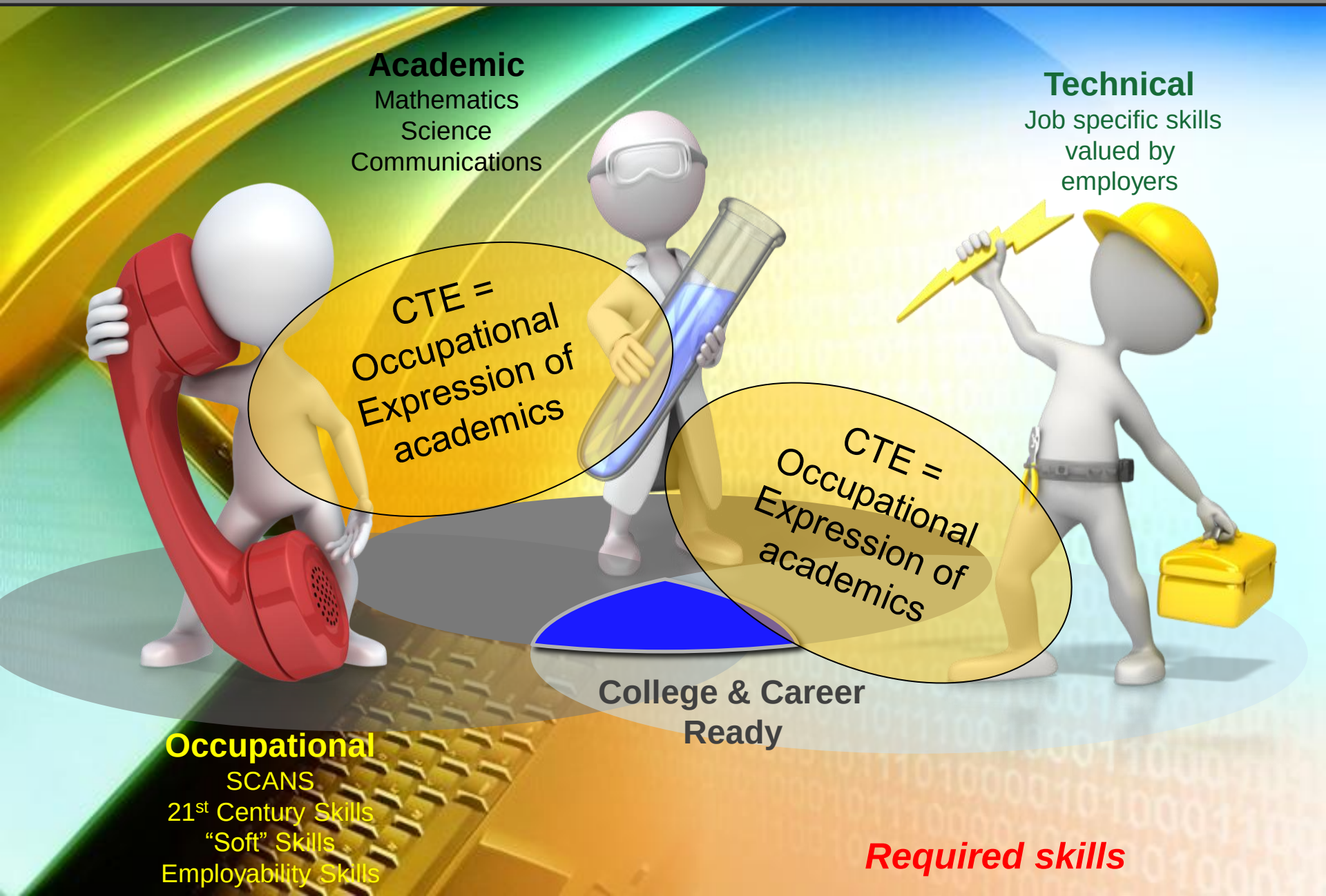
According to the Public Interest Research Group's Higher Education Project, 39 percent of new graduates with loans carry an "unmanageable debt,"

# Two New Reports
# Career & College Ready



# College & Career Ready for the 21st Century



# Two Key Questions for CCR:

1. What is the appropriate mix of academic, occupational and technical skills required for the emerging labor market?
2. How can schools help students develop these skills?

# To be college ready: What college, what skills?

**Academic**
Mathematics
Science
Communications

1. Framework
2. Where skills are learned

- Trade/Technical School?
- Apprenticeship?
- Community College?
  - Certificate? Diploma? Degree- Selective or not?
    - Nursing
    - Allied health
    - Law enforcement
    - Engineering technology
    - Computer technology
  - Cut scores?
- Baccalaureate College?
  - MN College Readiness Benchmarks set by ACT: an 18 in English, 22 in Math, 21 in Reading, and 24 in Science.
  - Only 32% of Minnesota's 2009 ACT-tested graduates met all four

# What Occupational Skills!!!!!

- (AKA Employability Skills)

- Frameworks: SCANS, 21st Century Skills

- *Critical thinking
- *Teamwork/ collaboration
- *Problem solving
- *Creativity
- *Technology-information application
- Oral & written communication skills
- Responsibility
- Professionalism
- Ethics
- Systems knowledge

# What technical skills

- Immediate specific job skills*
- Industry certifications
- 132 available through HS programs (n=14 states)

* Learning for jobs (OECD)

# MATH FOR COLLEGE
# MATH FOR WORK

# College Ready (ACT) Math=22

| ACT Score | Class | Common Core | ACT Topic/ Task |
|---|---|---|---|
| 13-15 | Alg. I | HS | Simplify ratios |
| 16-19 | Alg. I<br>Alg. I | 8th<br>HS | **Add, subtract, multiply, and divide rational numbers**<br>Use rational numbers to demonstrate knowledge of additive and multiplicative inverses |

| ACT Score | Class | Common Core | ACT Topic/ Task |
|---|---|---|---|
| 20-23 | Alg I | 8th | **Set up and solve problems following the correct order of operations with rational numbers** |
| | Alg I | 8th | **Give the domain and range of relations and functions** |
| | Alg I | 8th | **Evaluate functions at given values** |
| | Alg I | HS | Apply algebraic properties to simplify algebraic expressions |
| | Alg I | HS | Translate real-world problems into expressions using variables to represent values |
| | Alg I | HS | Identify the effect on mean, median, mode, and range when a set of data is changed |
| | Alg I | 8th | **Find the probability of a simple event** |
| | Geo | HS | Identify corresponding, same-side interior, same-side exterior, alternate interior, and alternate exterior angle pairs formed by a pair of parallel lines and a transversal and use these special angle pairs to solve problems (e.g., solve equations, use in proofs) |
| | Geo | HS | Use construction techniques, including straight edge and compass, to bisect and trisect segments and to create parallel and perpendicular lines, perpendicular bisectors, and angle bisectors |

# Taking more math is no guarantee

- Only 13% of students who took Alg I, II & Geometry scored a 22 on the ACT exam[1]
- Adding Trig increases to 37%[1]
- 43% of ACT-tested Class of 2005[1] who earned A or B grades in Algebra II did not meet ACT College Readiness Benchmarks in math[2] (75% chance of earning a C or better; 50% chance of earning a B or better in college math)


1. ACT, Inc (2004) *Crisis at the Core*
2. ACT, Inc. (2007) *Rigor at Risk*.

# College Ready Math:
# Liberal Arts Majors' Math Requirements

| | |
|---|---|
| Rutgers | One course in college-level mathematics. |
| University of Minnesota | One course, (Mathematical Thinking) |
| UC-Berkeley | Test out (basic understanding and competency in math, statistics, or computer science) or 2-unit course. |

| Course/ Common Core | ACT Topic | ACT Score |
|---|---|---|
| Alg I CC 8th | Add, subtract, multiply, and divide rational numbers, including integers, fractions, and decimals, without calculators | (16-19) |
| Alg I CC 8th HS | Use properties of exponents (including zero and negative exponents) to evaluate and simplify expressions | (28-32) |
| Alg I CC 8th | Find rational number square roots (without calculators) and approximate irrational square roots (with and without calculators) | (24-27) |
| Alg I CC 8th | Evaluate and simplify radical expressions | (24-27) |
| Alg I CC 8th | Use scientific notation when working with very large or very small quantities | (24-27) |
| Alg I CC 8th | Set up and solve problems following the correct order of operations (including proportions, percent, and absolute value) with rational numbers (integers, fractions, decimals) | (20-23) |
| Alg I CC 8th | Identify, formulate, and obtain solutions to problems involving direct and inverse variation | (24-27) |
| Alg I CC 8th | Recognize the concept of slope as a rate of change and determine the slope when given the equation of a line in standard form or slope-intercept form, the graph of a line, two points, or a verbal description | (24-27) |
| Alg I CC 8th | Translate between different representations of relations and functions: graphs, equations, sets of ordered pairs, verbal descriptions, and tables | (24-27) |
| Alg I CC 8th | Interpret data from line, bar, and circle graphs, histograms, scatterplots, box-and-whisker plots, stem-and-leaf plots, and frequency tables to draw inferences and make predictions | (28-32) |
| Alg I CC HS | Simplify ratios | (13-15) |
| Alg I CC HS | Solve formulas for a specified variable | (24-27) |
| Geo CC HS | Apply relationships between perimeters of similar figures, areas of similar figures, and volumes of similar figures, in terms of scale factor, to solve mathematical and real-world problems | (28-32) |
| Geo CC HS | Use cross sections of prisms, cylinders, pyramids, and cones to solve volume problems | (28-32) |
| Geo CC HS | Find the lateral area, surface area, and volume of prisms, cylinders, cones, and pyramids in mathematical and real-world settings | (28-32) |
| Geo CC HS | Find the surface area and volume of a sphere in mathematical and real-world settings | (28-32) |

# Career Ready Math Skills: Getting the job*

| | |
|---|---|
| **Algebra I** | Telecommunication Junior Technician |
| | Nursing |
| | HVAC |
| | Survey Technician |
| | Plumbing |
| **Geometry** | Survey Technician |
| | Plumbing |
| | Automobile Technician |
| | Nursing |
| | HVAC |
| **Algebra II** | Telecommunication Junior Technician |

*Preliminary analysis, NRCCTE 2012

# O'NET → WorkKeys

ONET Title

*Electronic Tech*

Applied Assessment

**Level 5 math:**

- Decide info needed
- Look up formula and perform single step conversations
- Calculate used mixed units
- Divide negative numbers
- Use one and two step calculations
- Calculate perimeters and areas of basic shapes
- Calculate % discounts

# THE LABOR MARKET: ASSUMPTIONS & REALITIES

# Urban Myths Driving Education Reform

- ***India & China are producing more engineers than U.S.***

US=222,000; India=215,000; China=352,000*

- ***We are not graduating enough engineers***

  S&E wages have actually declined in real terms and unemployment rates have increased**

* Duke University Study, 2006; **Rand, 2006;

# More Rhetoric…

- If trends in U.S. research and education continue, our nation will squander its economic leadership, and the result will be a lower standard of living for the American people…. By 2015 [the country needs to] ***double*** the number of bachelor's degrees awarded annually to U.S. students in ***science, math, and engineering***. (National Summit on Competitiveness 2005)

- The United States faces an unprecedented challenge to its long-term global economic leadership. And a fall from leadership would threaten the security of the nation and the prosperity of its citizens…. ***High school students in the U.S. perform well below those in other industrialized nations in the fields of mathematics and science*** … [and thus we need to make] STEM education a national priority. (Council on Competitiveness 2004).

# More STEM or . . .

- S&E occupations make up only about one-twentieth (5%) of all workers (5.3%) in 2018 Urban Institute, 2007; (6%) in 2018, Carnevale, 2010.

- **435,000** U.S. citizens and permanent residents ***a year*** graduated with bachelor's, master's, and doctoral degrees in science and engineering. Over the same period, there were about **150,000** jobs added ***annually*** to the science and engineering workforce. .
  **http://www.businessweek.com/print/smallbiz/content/oct2007/sb20071025_827398.htm**

Murray said that none of the companies she has talked with has suggested that there is a shortage of qualified chemists or life scientists. She said that ***employers' greatest concern "is not numbers, it is training***." She cited the example of managers who told her they could interview hundreds of candidates for an organic chemistry position but wish they knew how to identify those candidates who ***"can behave collaboratively"*** and have the other broad competencies discussed at the workshop. She argued that the degree to which scientists have these other capabilities "really seems to be the problem."

# IS THERE A SHORTAGE OF SCIENTISTS?

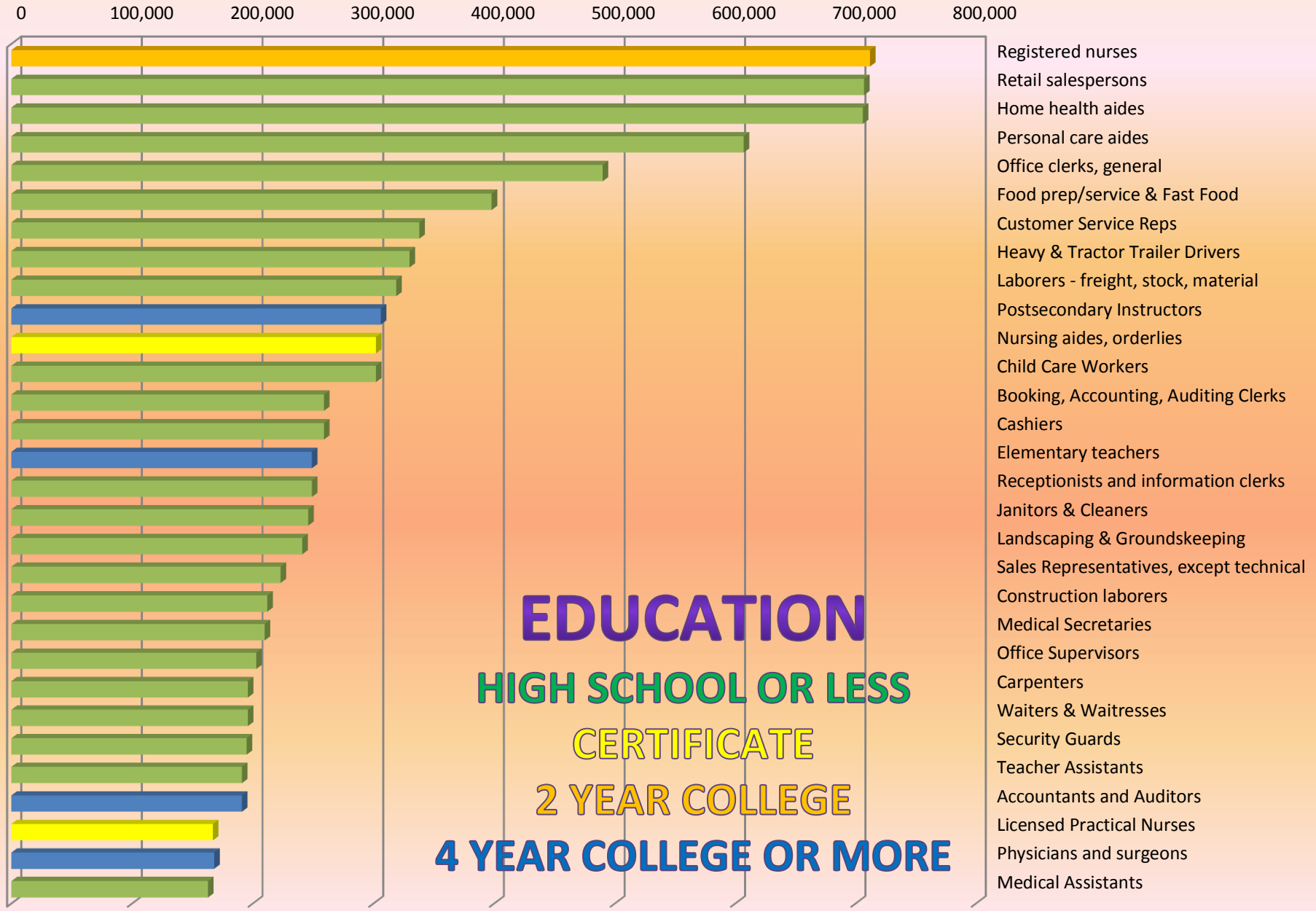
National Research Council. (2008). Research on Future Skill Demands: A Workshop Summary. Margaret Hilton, Rapporteur. Center for Education, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

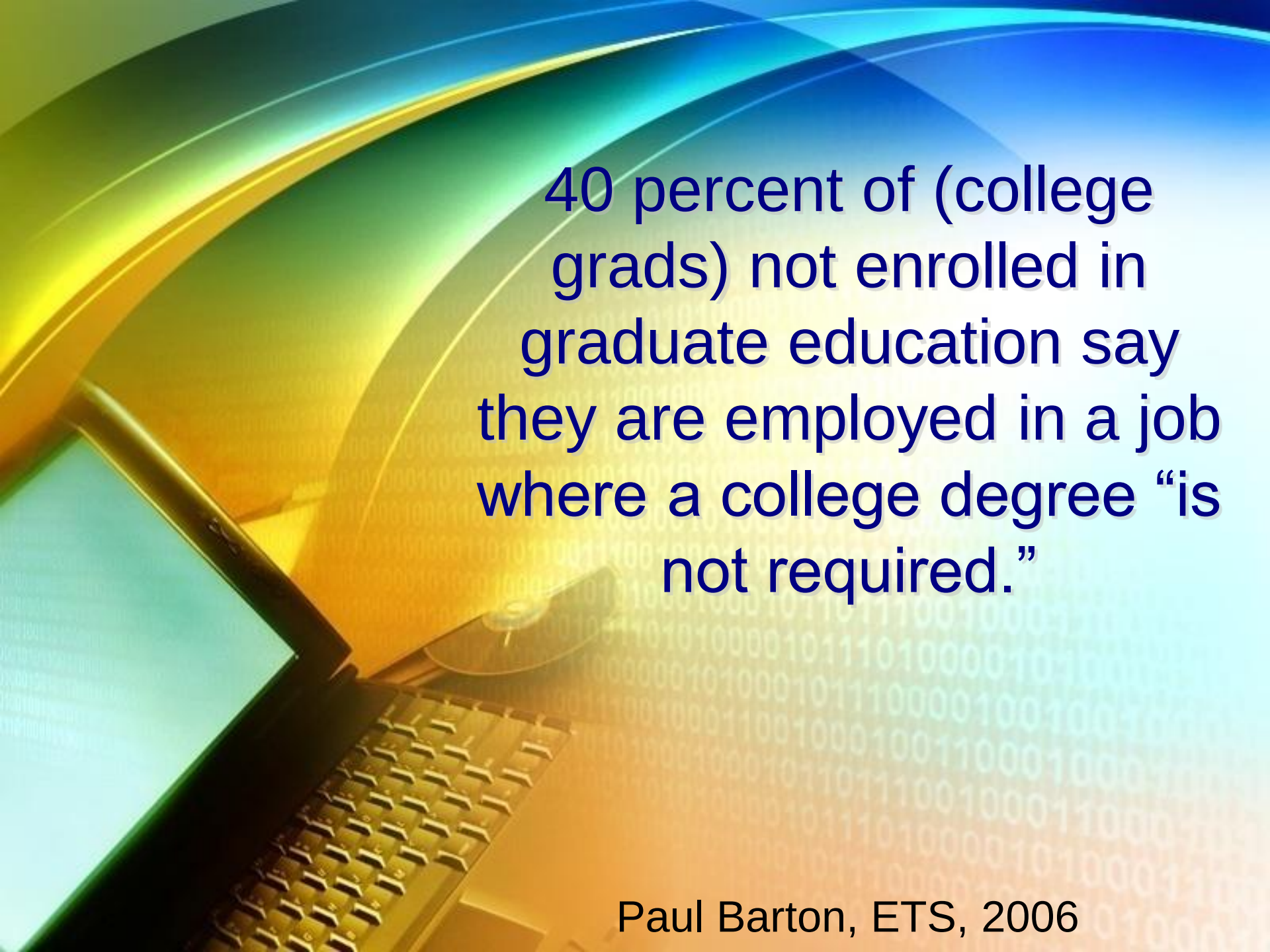
Three contested views of the future

# THE EMERGING WORLD OF WORK

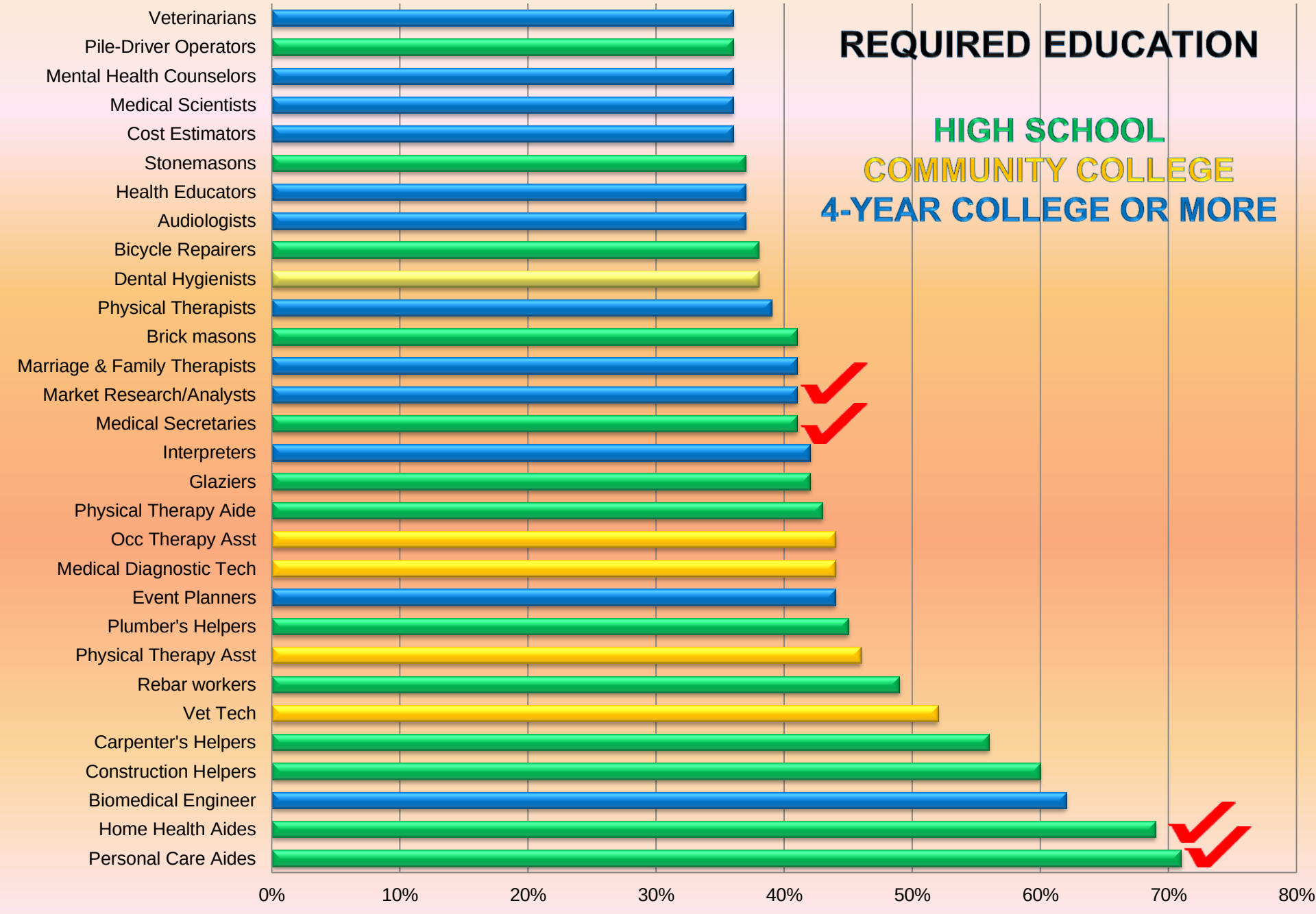
# *High Demand* Occupations 2010-2020

## *The BLS Perspective*



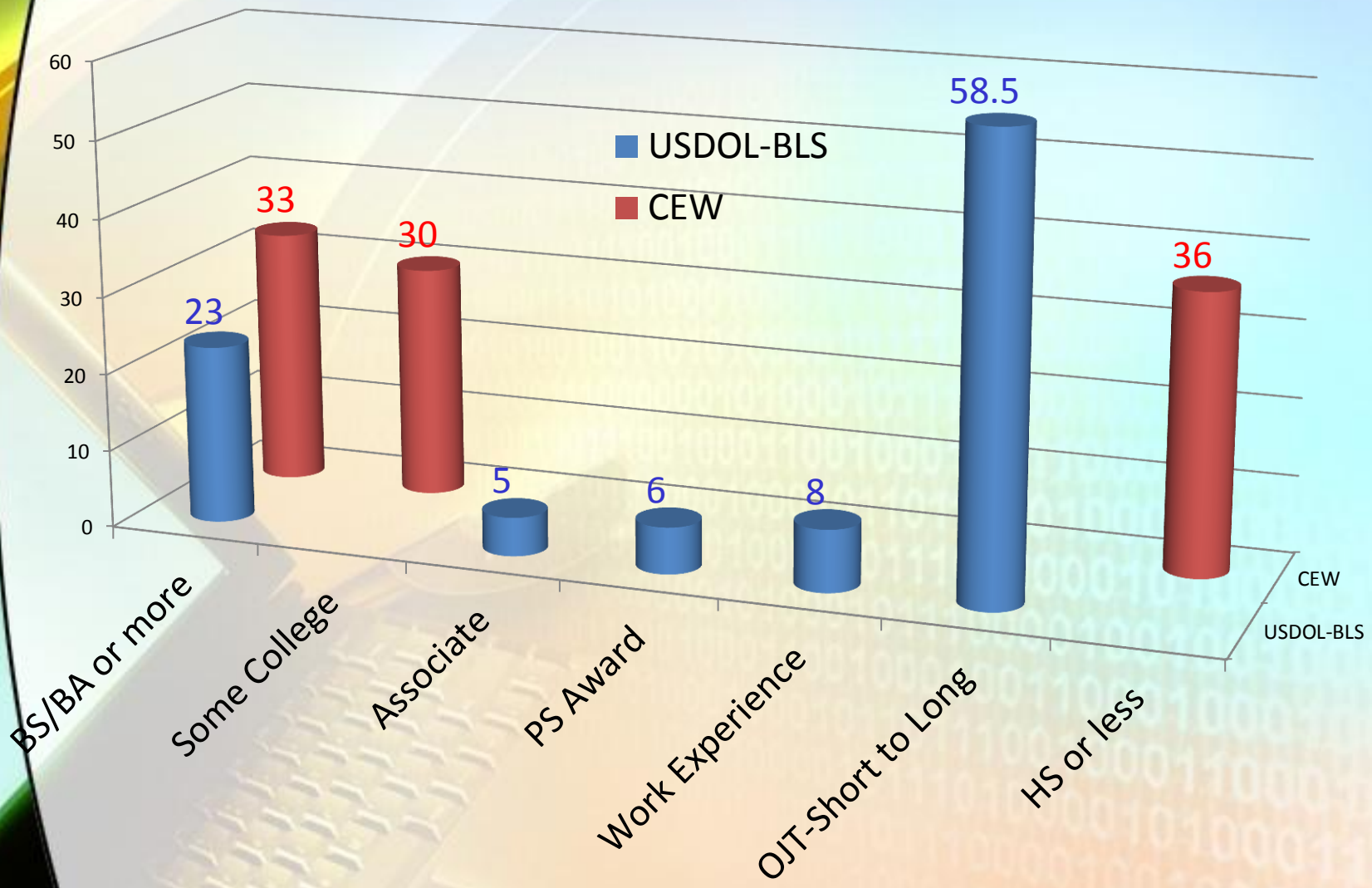

40 percent of (college grads) not enrolled in graduate education say they are employed in a job where a college degree “is not required.”
Paul Barton, ETS, 2006

# *High Growth* Occupations 2010-2020

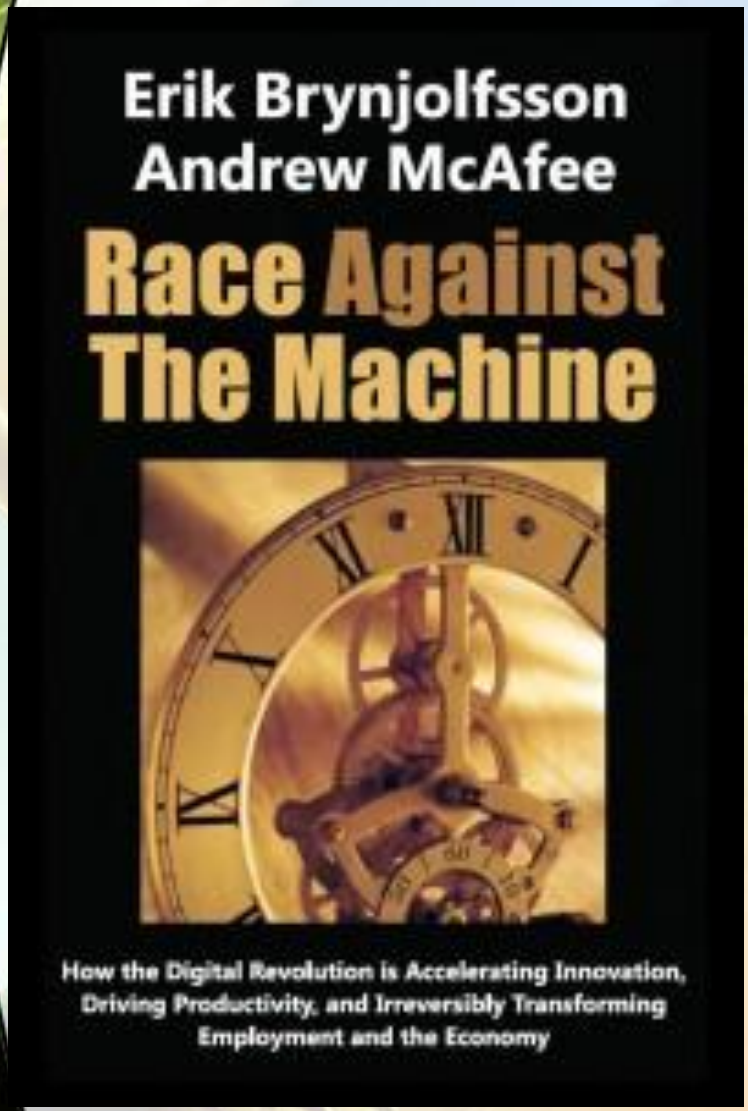


# A Second Perspective

# Education and Future Work: BLS & CEW



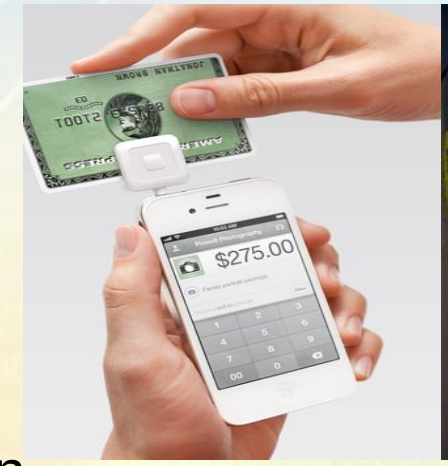
# A 3rd Perspective




Computers now exhibit human-like capabilities not just in games such as chess, but also in complex communication such as linguistic translation and speech. These new abilities stem from “pattern recognition” technologies – the same techniques that underpin, for example, the Siri voice recognition tool in Apple’s iPhone 4S.

# A 3rd Perspective: The Race Against the Machine (The Machines are Winning?)

- The Google car (truck?)
- IBM Watson
- Deep Blue
- The “Square”
- Text readers/ Pattern recognition (goodbye legions of lawyers-only 60% accurate)
- Automated ‘call centers’ (goodbye India)
- GeoFluent (goodbye translators)
- Vending machines for … everything



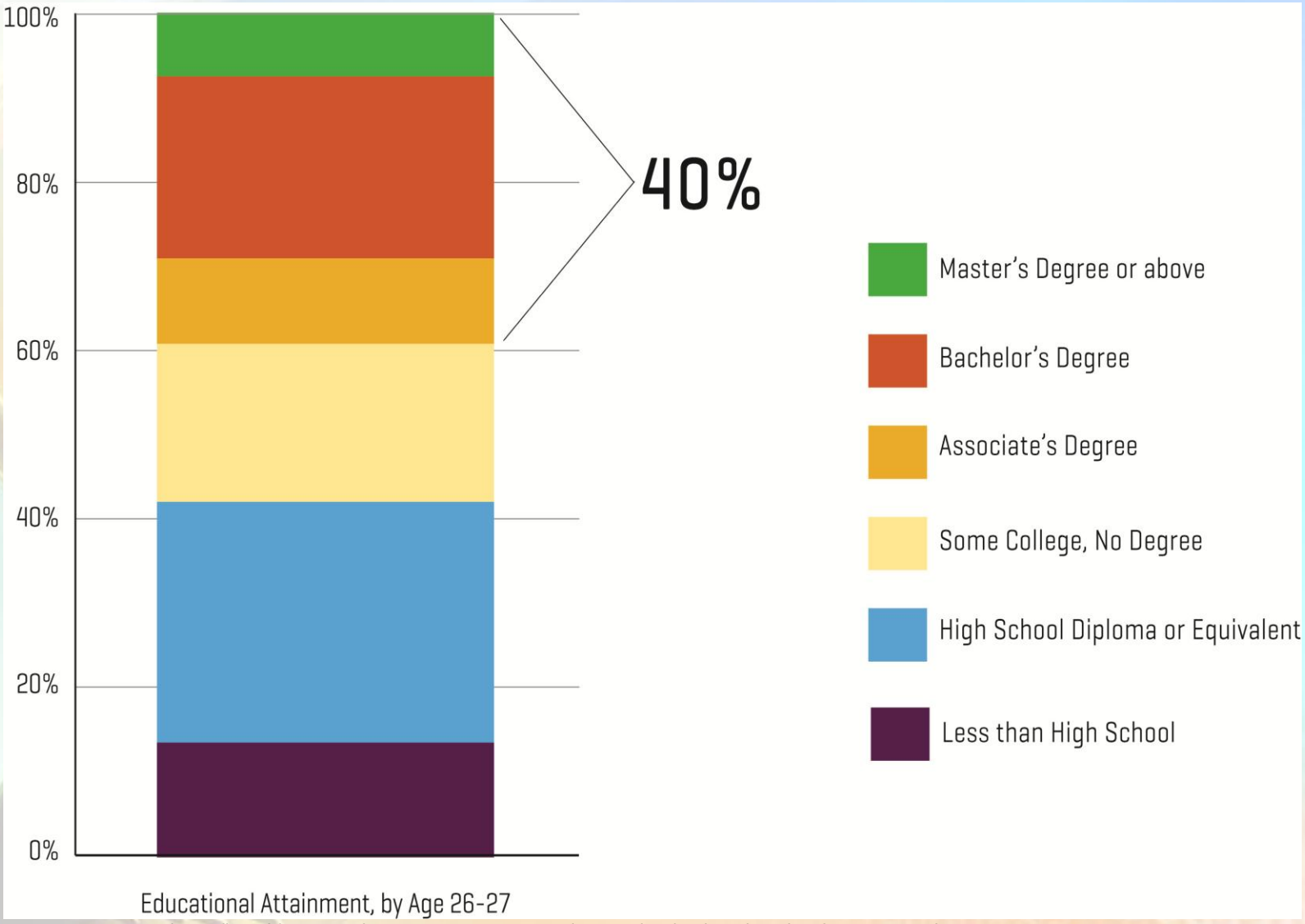


# Can People Win?

- Instructional methods
- Softer skills
- Instructional focus
- The Human Advantage (for now)
- Khan Academy
- CTSOs/WBL
- Hyperspecialists, entreprenuership
- Physicality of work
- Advanced pattern recognition
- General problem solving
- Creativity

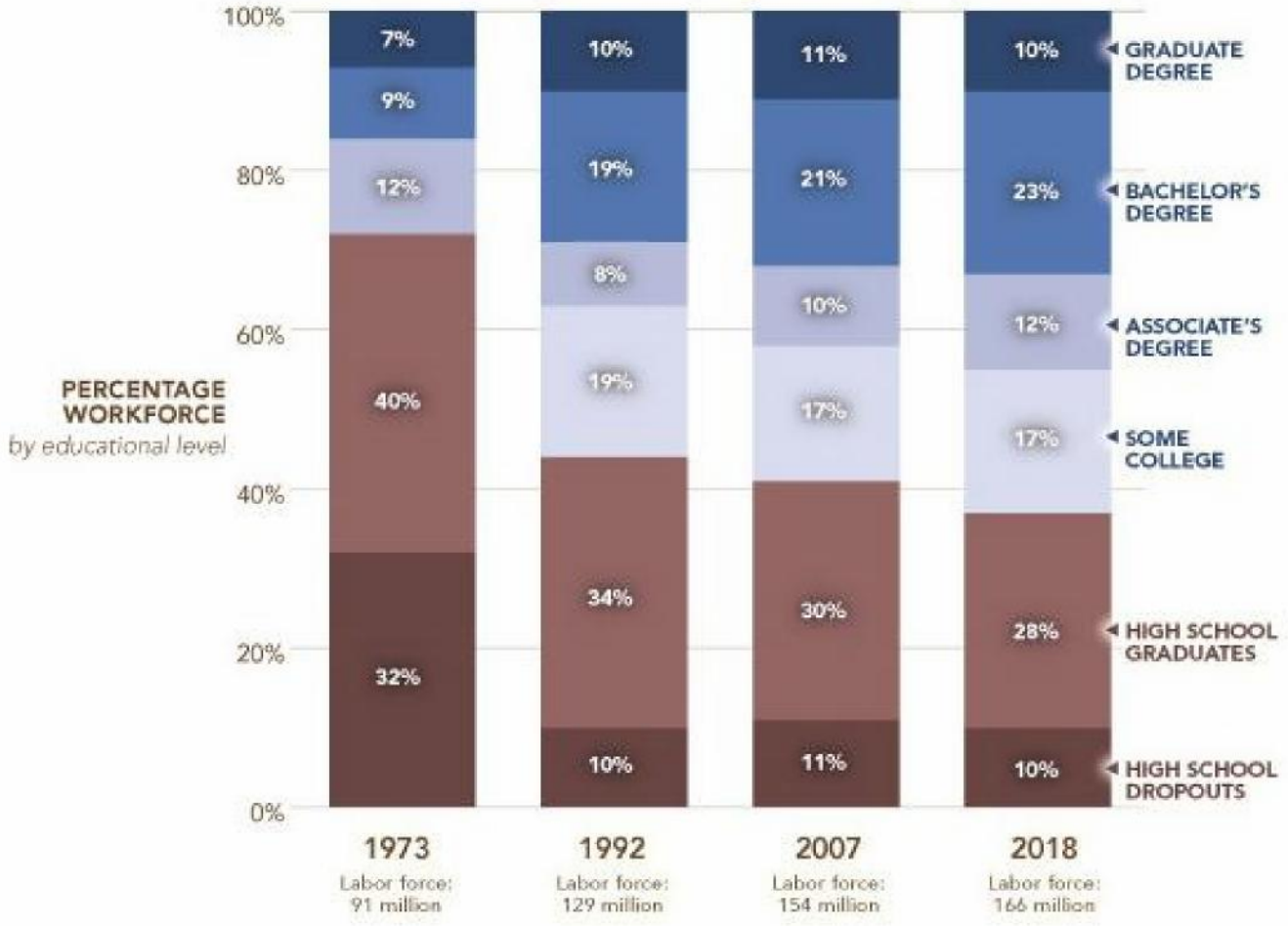
# EDUCATION AND EARNINGS

# College for all? Only 40% of 27-year olds have earned an A.A. degree or higher




Note: Represents data collected in surveys between 2006-2008; GED is approximation based on data from GED Testing Program.
Source: Current Population Survey Annual Social and Economic Supplement.

# 63% of all jobs will require some college or better by 2018.




GEORGETOWN UNIVERSITY
Center on Education and the Workforce

- Source: Analysis of March CPS data, various years,
- Center on Education and the Workforce forecasts of education demand to 2018.

**Council on Competitiveness 2008 Report: The Skills Imperative**

**Meet the Demand for Middle Skills**

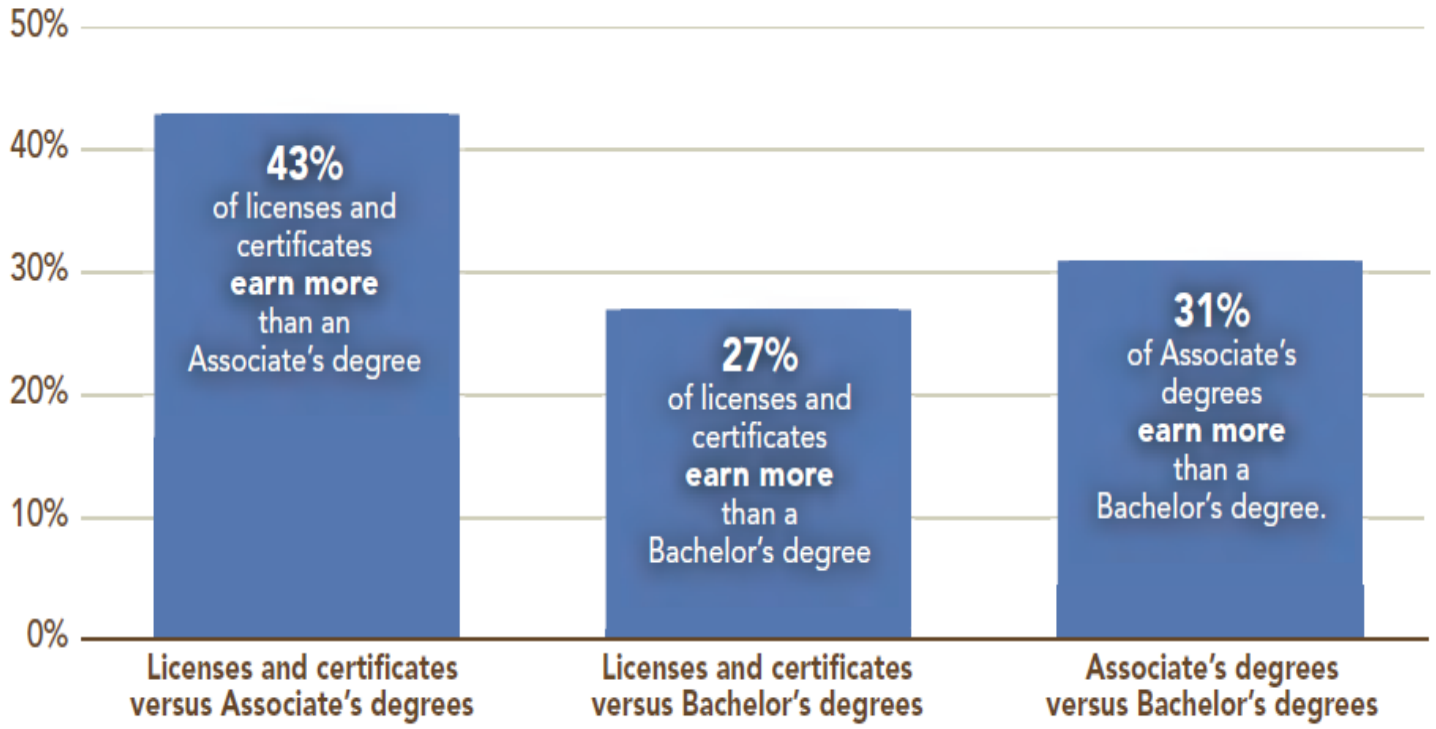
- Middle-skilled jobs represent the largest number of total openings in the United States until 2016, and the United States is failing to adequately train Americans to take advantage of this opportunity.
- These jobs do not always require a college degree, but most require training, technical sophistication and initiative.
- They pay well and do not offshore easily.

# Reality
# Middle Skill Credentials Pay Off

FIGURE 5.12

Earnings are not just a function of postsecondary attainment. Occupational choice also influences earnings potential.

*Source: National Education Longitudinal Study 2000*

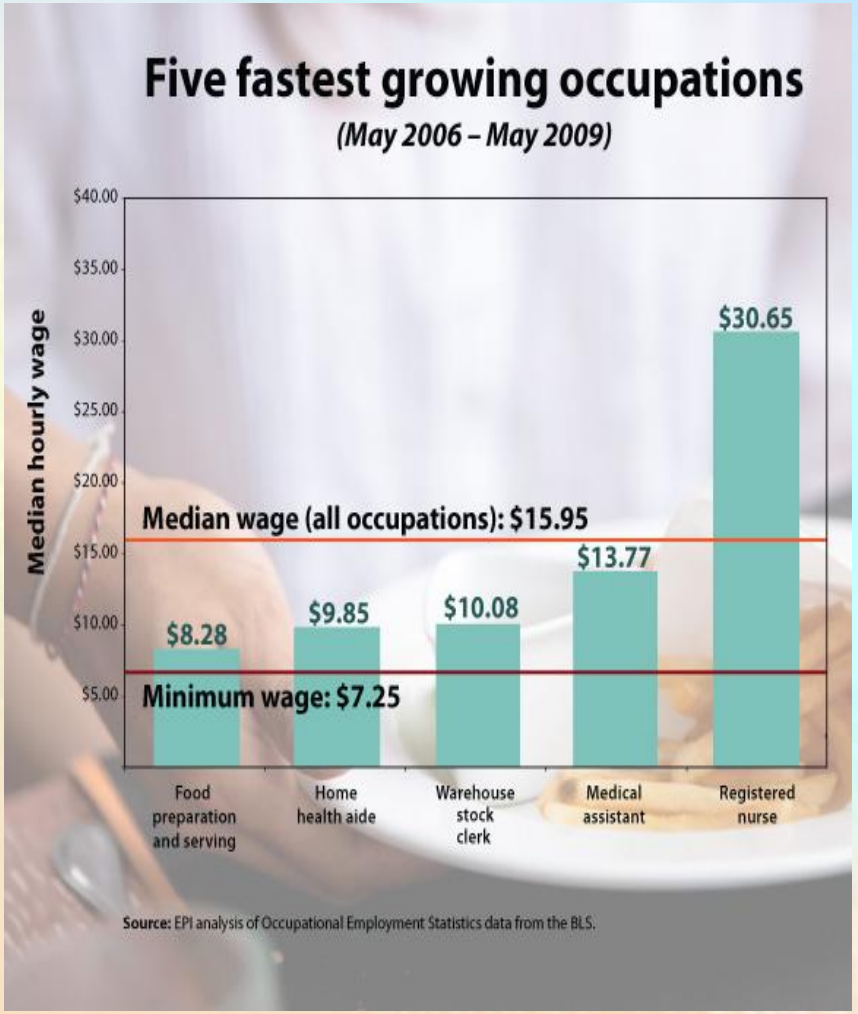


# Middle Skill Occupations (B.A./B.S. NOT Required)

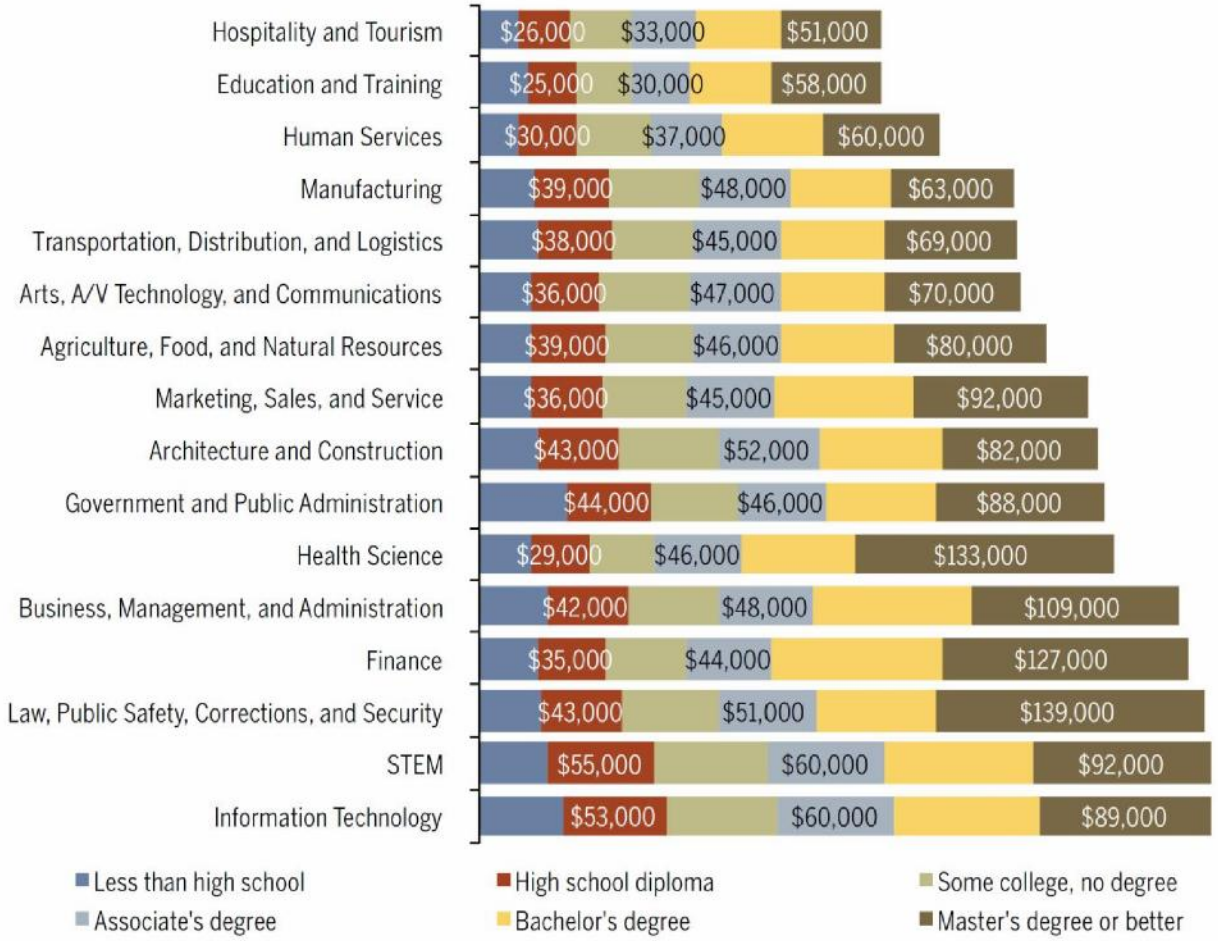
| Occupation | Salary |
|---|---|
| Air Traffic Controller | 102,300 |
| Storage and distribution manager | 66,600 |
| Transportation manager | 66,600 |
| Non-retail sales manager | 59,300 |
| Forest fire fighting/prevention supervisor | 58,920 |
| Municipal fire fighting/prevention supervisor | 58,902 |
| Real estate broker | 58,720 |
| Elevator installers and repairer | 58,710 |
| Dental hygienist | 58,350 |
| Immigration and Customs inspector | 53,990 |
| Commercial pilot | 53,870 |

Farr, M. & Shatkin, L. (2006) *The 300 Best Jobs That Don't Require a Four-Year Degree.* (US Department of Labor, Bureau of Labor Statistics)

# In the total labor market . . . Another indicator

# Education still determines wages, but occupation also matters.




SOURCE: Analysis of ACS data, 2006

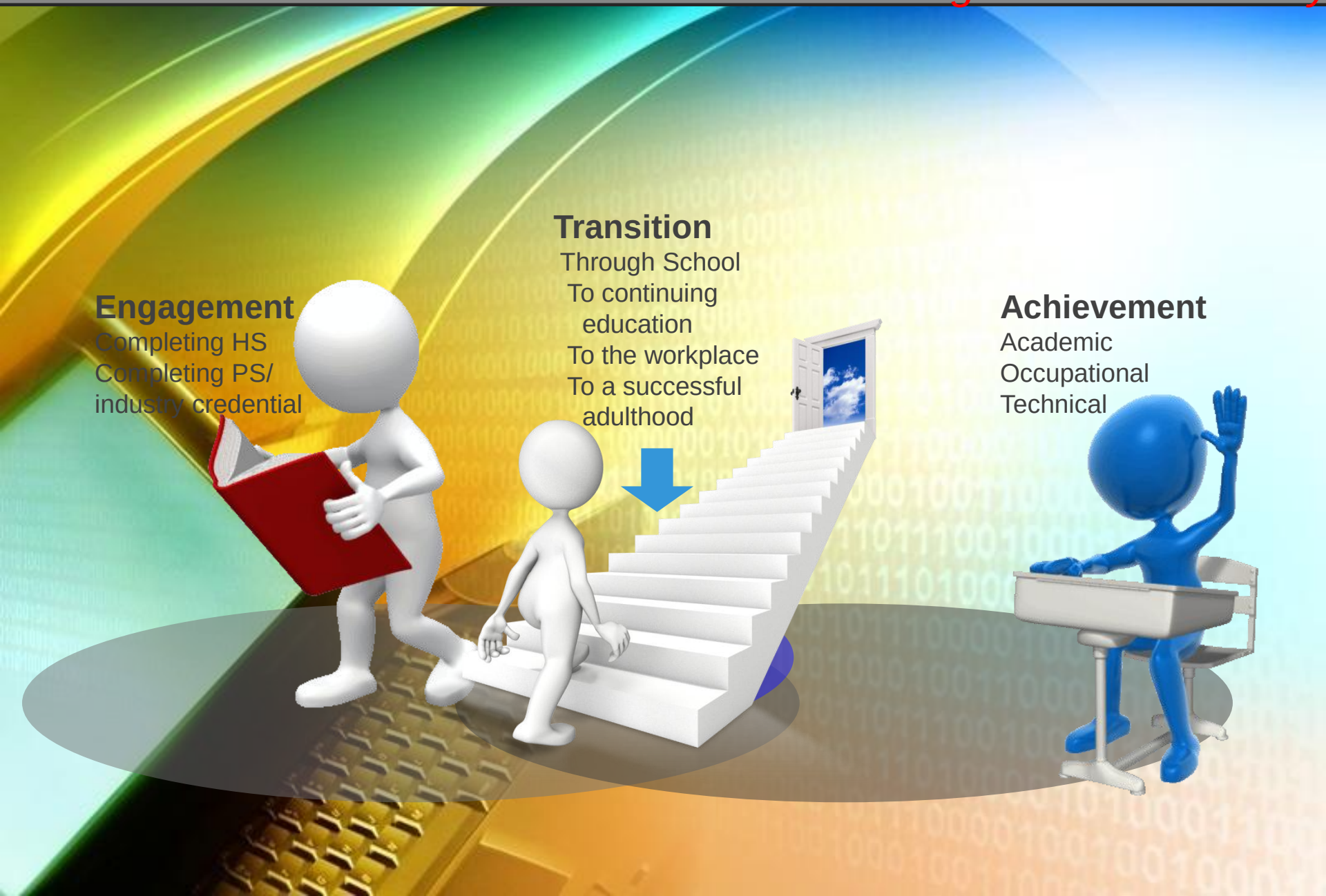
Reduce curriculum requirements that do not build employment skills

(McKinsey Global Institute, 2012)

# A VISION FOR HOW TO MAKE HIGH SCHOOL MATTER

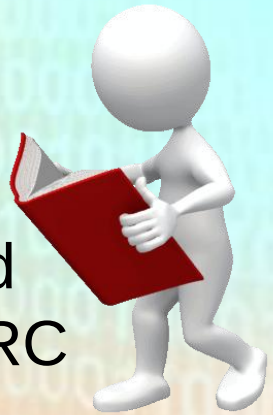
# Making High School Matter

*College & Career Ready*

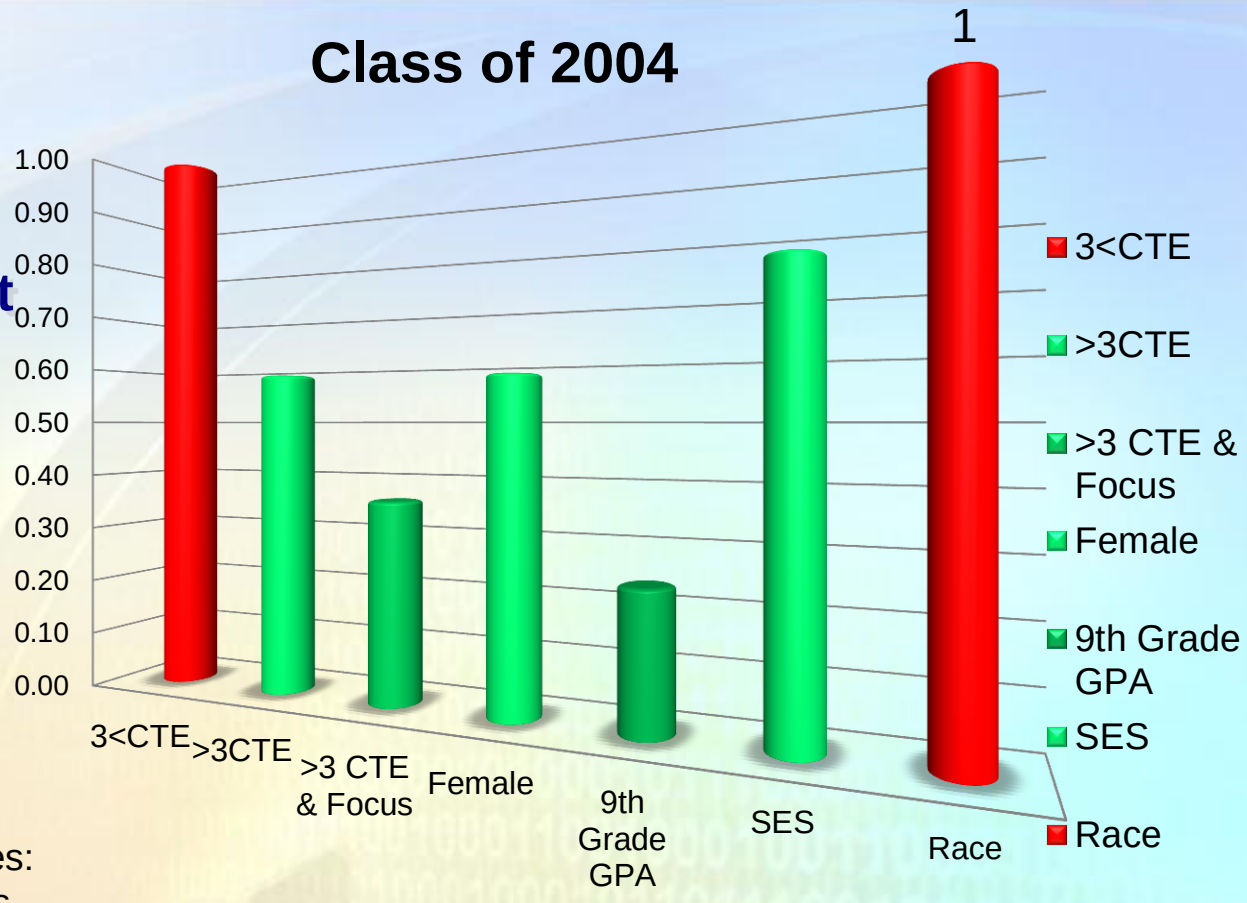


# Finishing High School: A Necessary First Condition for College OR Careers

- Plank (2001) found CTE a significant factor in reducing the likelihood of dropping out of high school (NELS 88 data): a 1:2 ratio
- Plank, DeLuca, & Estacion (2005) found CTE a significant factor in reducing the likelihood of dropping out of high school (NLSY97): a 1:2 ratio
- Castellano, Stone, Stringfield & others (2007) found CTE course taking in 3 high poverty communities significantly increased the likelihood of high school graduation (NRC longitudinal data).



## CTE & Engagement




Preliminary Analyses: Comparison Groups Matter

CTE is the 2nd strongest predictor of completing high school

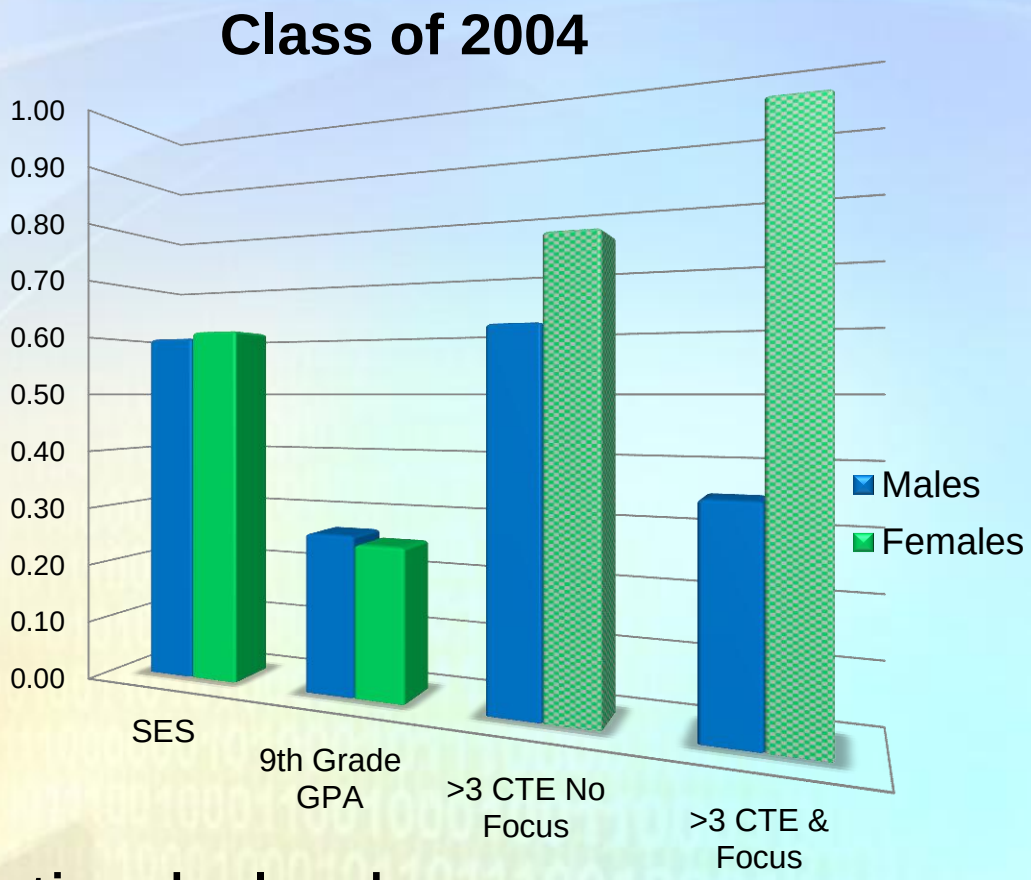
# We have a boy problem

*… but many of the people who don't fit in are boys. A decade or so ago, people started writing books and articles on the boy crisis. At the time, the evidence was disputable and some experts pushed back. Since then, the evidence that boys are falling behind has mounted. The case is closed. The numbers for boys get worse and worse.*

David Brooks, NYT July 5, 2012

- By 12th grade, male reading scores are below females'
- 11th grade boys write at an 8th grade girl level
- Boys used to have an advantage in math and science, but that gap is nearly gone.
- Boys are more likely to have discipline problems
- Boys account for ¾ all D's and F's
- Men are a minority in college (40%)
- 2 million fewer men graduate from college over the past decade than women
- Grad school gap is even higher

# A Survival Analysis



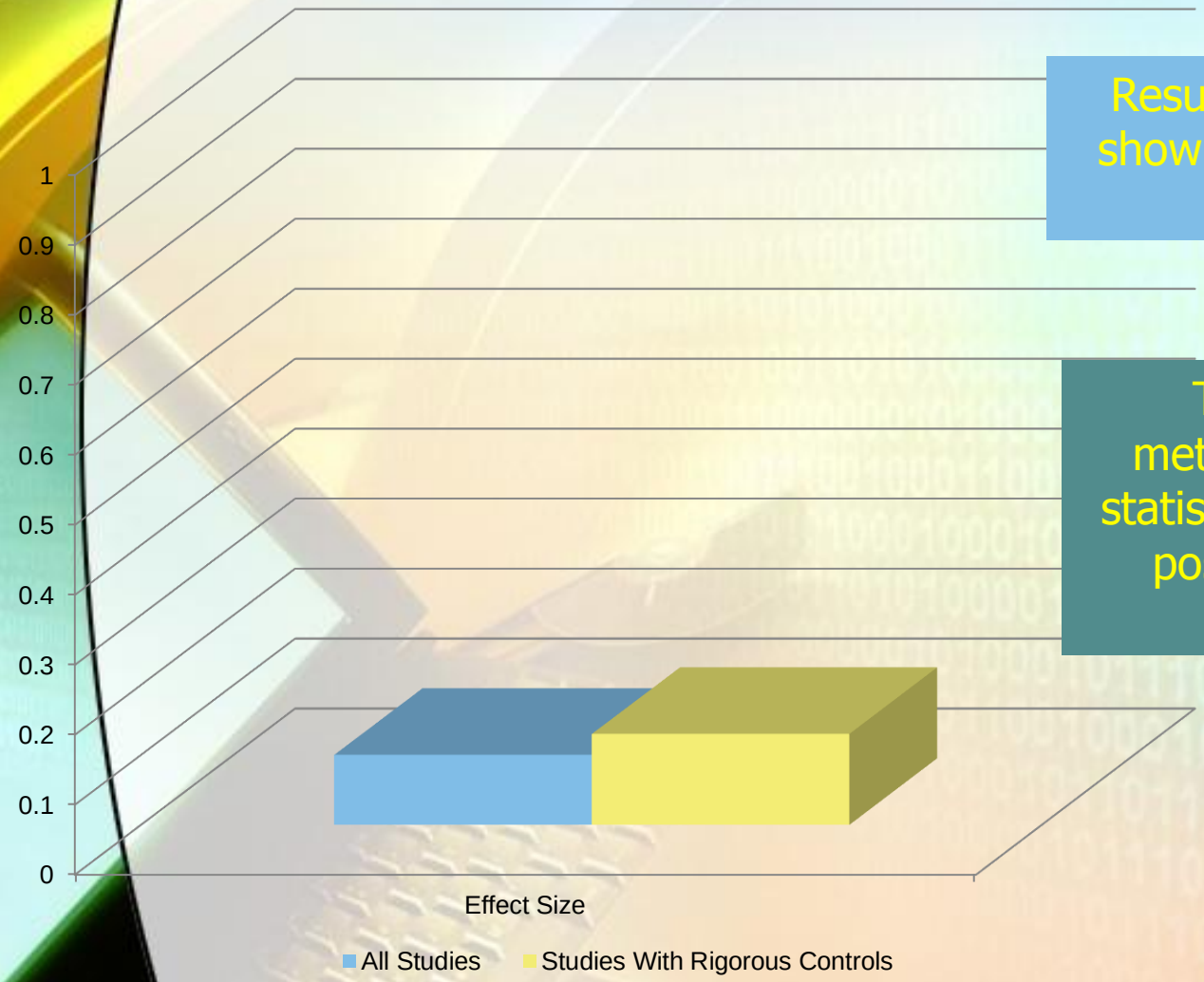

CTE Participation helps boys "survive" high school

There is no CTE "survival" effect for girls; but it "does no harm"

Findings from National Data

# CTE & ACHIEVEMENT

# Meta Analysis of CTE & Test Scores: Average Effects




Results from all studies show a positive effect of .10 (p=.16)

The studies with methodological and/or statistical controls show a positive effect of .13 (p=.19)

NRC CTE
National Research Center for Career and Technical Education

# *High Quality CTE: Curriculum Integration*

- ***Math-in-CTE*** - A study to test the possibility that enhancing the embedded mathematics in Technical Education coursework will build skills in this critical academic area without reducing technical skill development.

# Career Ready
# Electronic Technician – Level 5*

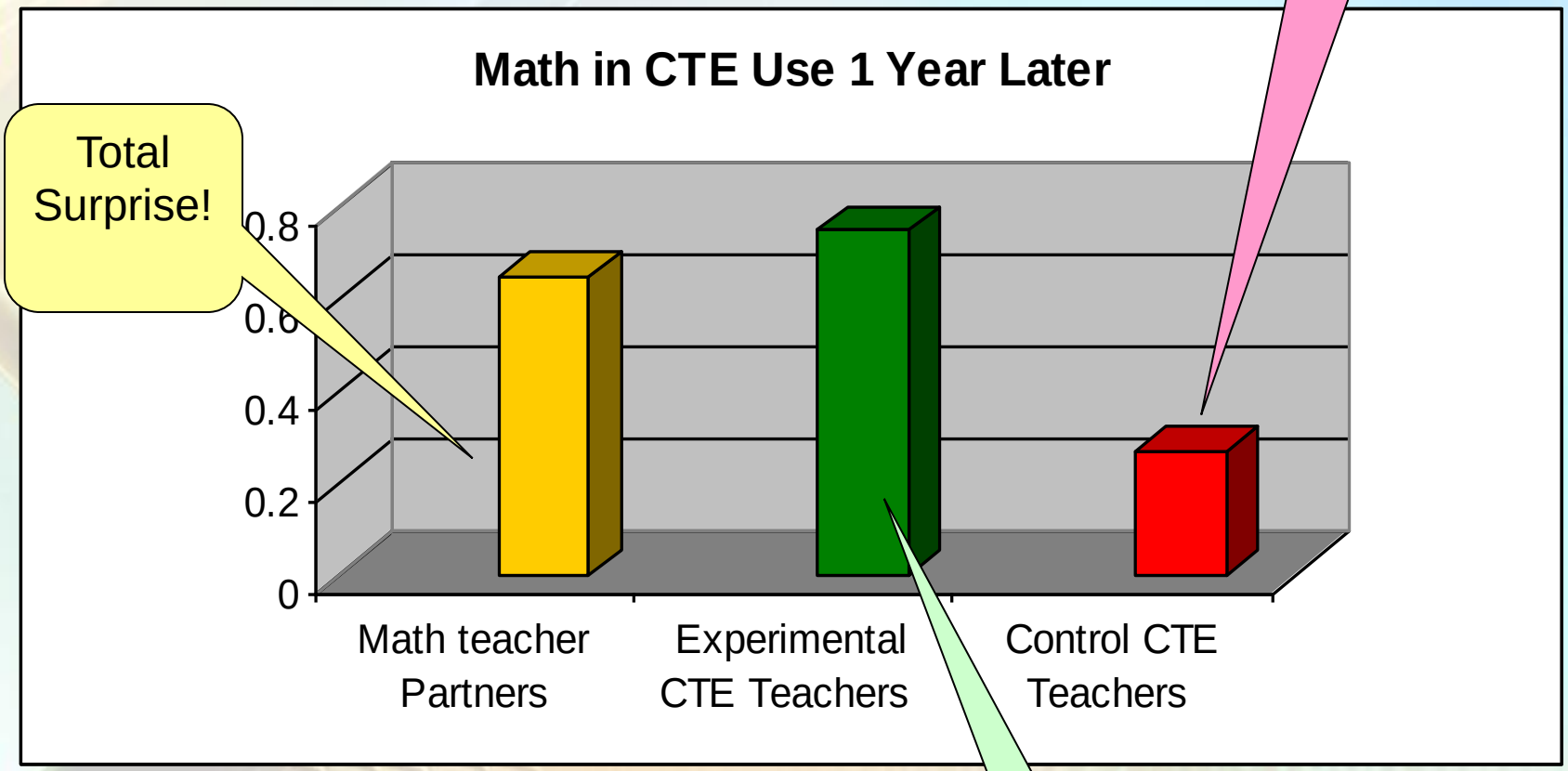
| Requirements | Skills |
| --- | --- |
| Fundamental knowledge of PC and Server Operating Systems. | Tech Skills |
| Fundamental knowledge of networking principles. | Tech Skills |
| Strong Electronics and Mechanical background | WBL |
| Highly motivated and energetic | Soft Skills |
| Strong communication skills and work ethic | Soft Skills |
| Strong organizational skills | Soft Skills |
| Working knowledge of Microsoft Office applications | Tech Skills |
| Excellent troubleshooting skills | Tech Skills |
| Experience with IBM POS equipment | WBL |
| Experience with Lexmark printers | WBL |
| Experience with Toledo and Hobart scale systems | WBL |
| Experience with Nortel BCM and Toshiba CTX systems | WBL |
| Experience with Fujitsu Self Checkout systems | WBL |
| Experience with Cisco routers and HP network switches | WBL |

*Most ads call for 2-years of ed/training & experience

# Improving math skills in context

- Students in the experimental classes scored significantly higher on Terra Nova and Accuplacer
- The effect: 71st percentile & 67th percentile
- No negative effect on technical skills
- 11% of class time devoted to enhanced math lessons

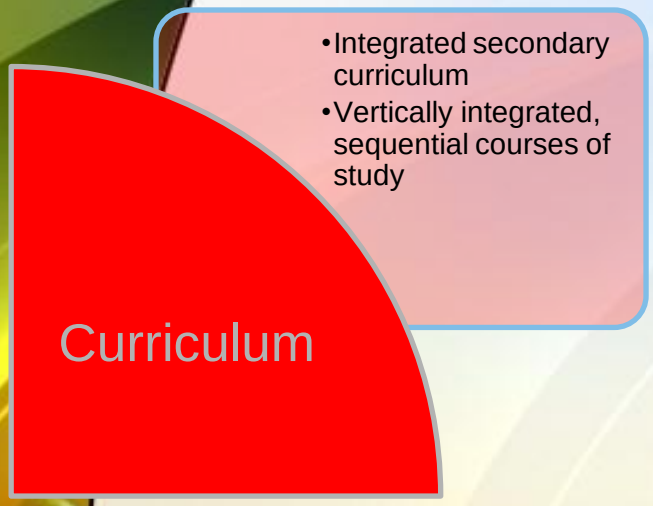
# Power of the New Professional Development Model




Total Surprise!

Old Model PD

New Model PD

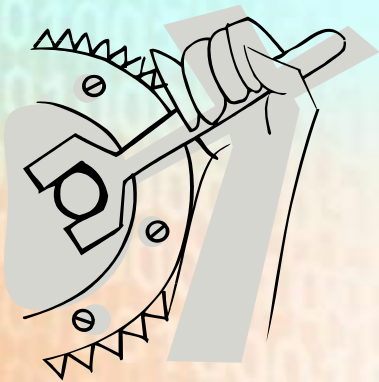



- Academically infused health care curriculum
  - Mathematics, science and literacy taught in the context of technical health care content
- Vertically integrated curriculum
  - Articulated HS/PS Curriculum
  - Dual/Concurrent enrollment courses

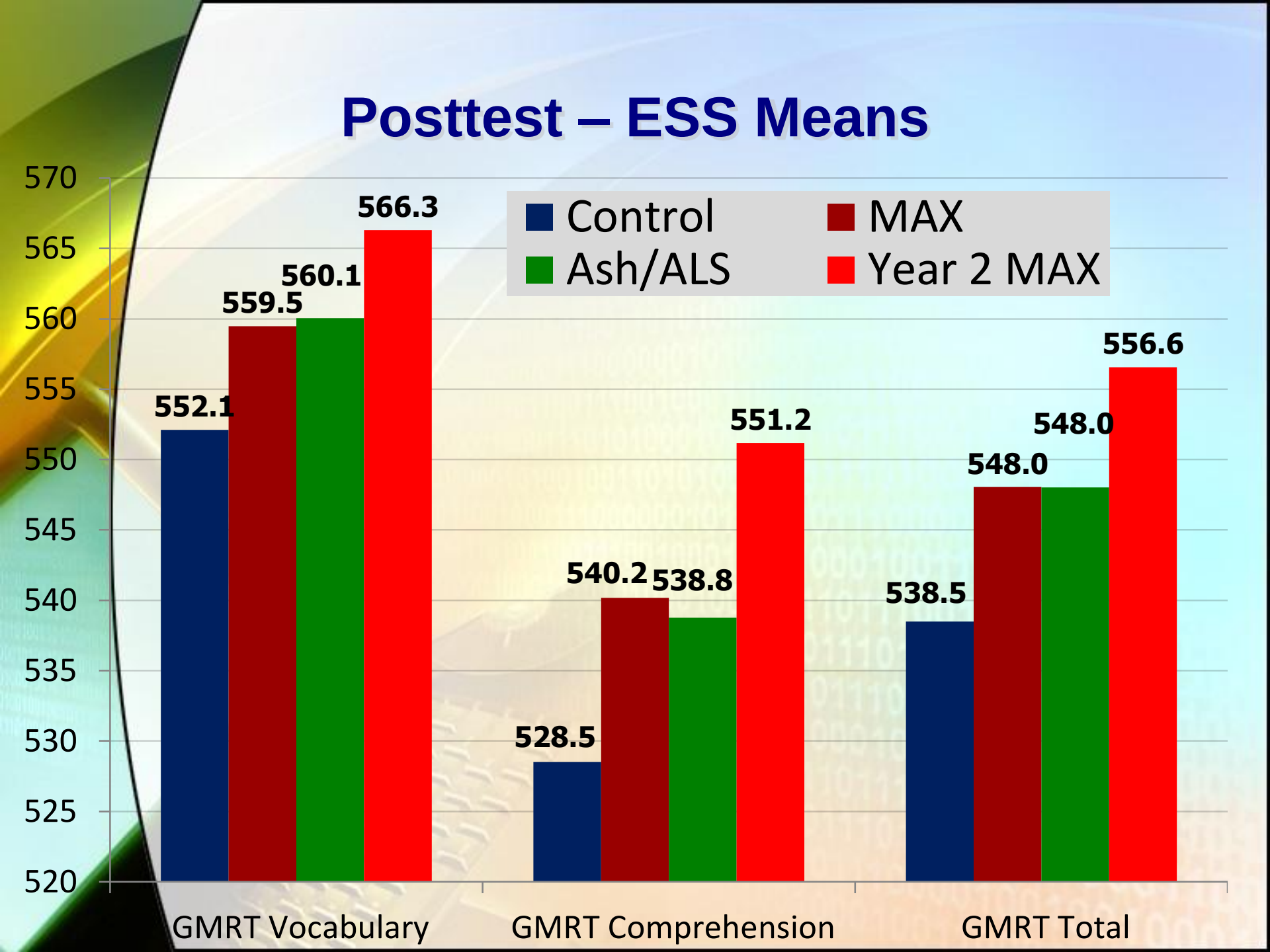
# Building Reading Literacy through CTE

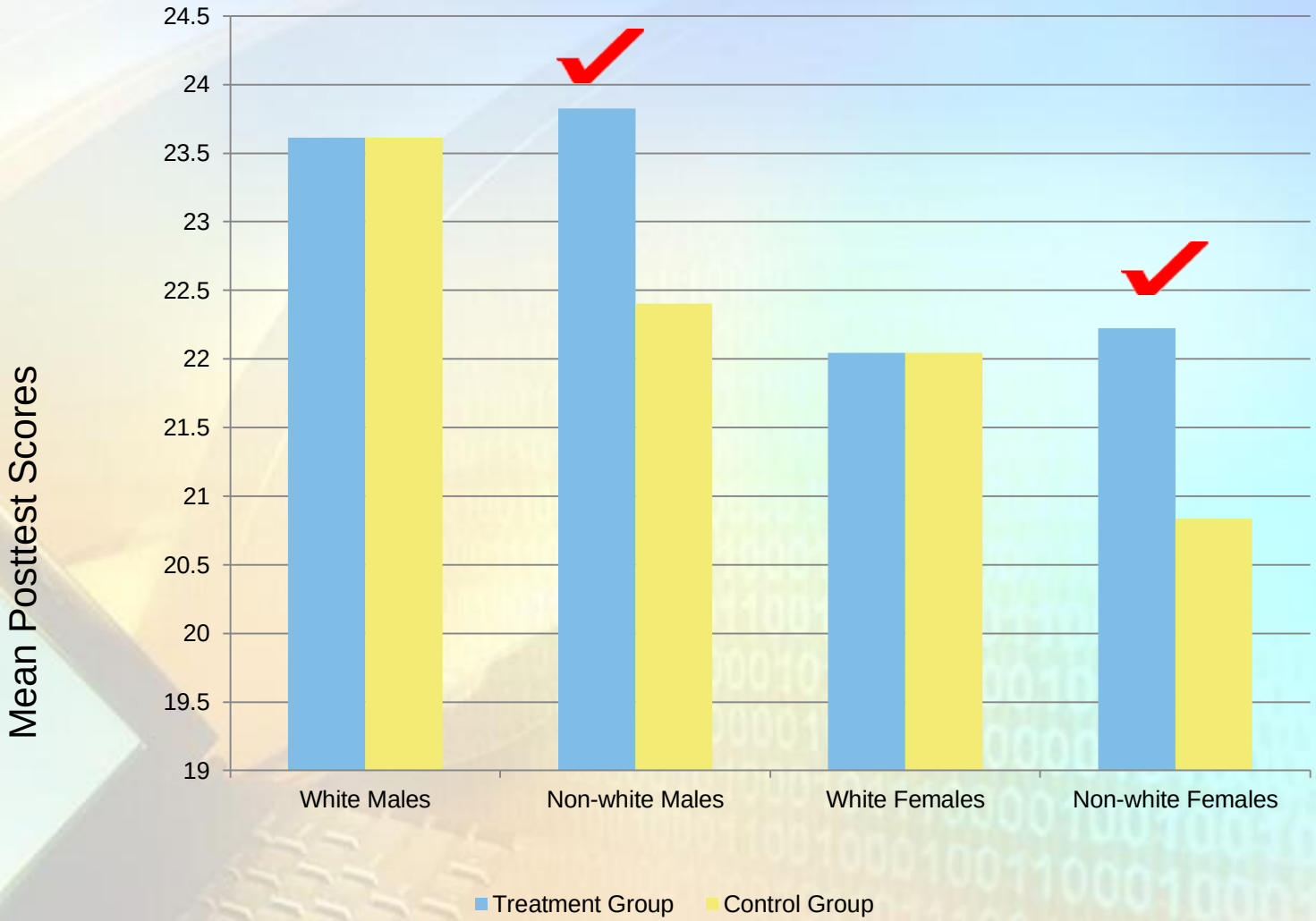
A study to evaluate two reading interventions that CTE teachers can employ to improve reading skills of students in occupational programs

Travis Park
Cornell University



# Posttest – ESS Means

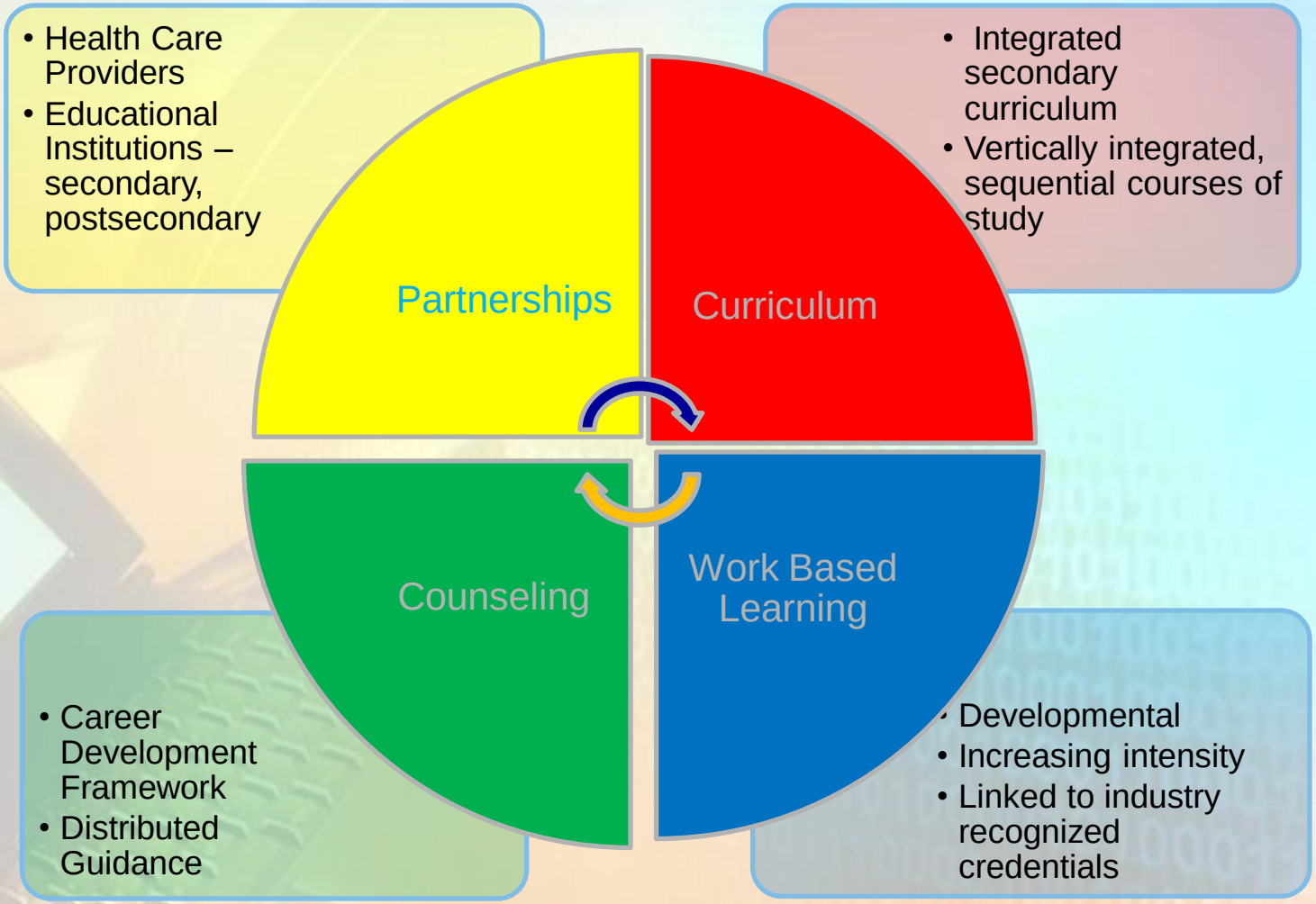





## Science-in-CTE

*Significant, Effect Size= .31 (roughly 1/3 standard deviation)

# Building the Model Health Care Education Program



# Unique Cognitive Skills

## Academic Foundations

- Use a knowledge of human structure and function to conduct health care role.
- Use a knowledge of diseases and disorders to conduct health care role.

## Systems Knowledge

- Explain systems theory as it applies to the health care environment.
- Explain the health care delivery system.
- Health care workers will understand the existing and potential hazards to clients, co-workers, and self. They will prevent injury or illness through safe work practices and follow health and safety policies and procedures.
- Explain the concept of system change as it applies to the health care environment.

# More Unique Skills: Safety & Environmental Knowledge

- Explain infection control practices and procedures.
- Employ personal safety practices.
- Use techniques to insure environmental safety.
- Identify common safety hazards.
- Use emergency procedures and protocols.
- Describe healthy behaviors.

# One CD Model

## Steps to Success

**Employment: Career Advancement**
Continuing Education and Lifelong Learning

**Postsecondary: Career Preparation**
Achieving credentials: college, certification, apprenticeship, military

**9-12: Career Preparation**
Academics and technical courses, intensive guidance, individual graduation plans

**Grade 8: Transition**
Choosing a  health career focus (can change easily at any time later)

**6-8: Career Exploration**
Discovering interest in health careers -  Begin Individualized Graduation Plan

**K-5: Career Awareness**
Introduction to health careers

# Workbased Learning

Work Based Learning

- Developmental
- Increasing intensity
- Linked to industry recognized credentials

WBL Approach

- *Labs*
- *Shops*
- *Job shadowing*
- *Internships*
- *School-based enterprise*
- *Cooperative education*
- *Apprenticeships*

- Service Learning

Potential Learning

- All aspects of an industry-curriculum integration
- Relevance of academics
- SCANS/21st Century Skills
- Skills leading to industry certifications
- Career development

# CTE-WBL and Achievement

- ***No WBL; 2.99 college GPA***
- ***No community service; 3.02 college GPA***
- ***58% with NO HS WBL; college GPA above 3.0***
- ***HS WBL; 3.08 college GPA***
- ***Community service; 3.11 college GPA***
- ***64% of with HS WBL; college GPA above 3.0***

Swail, Watson S., and Kampits, Eva (2004). Work-Based Learning and Higher Education: A Research Perspective. Washington, DC: Educational Policy Institute, Inc.

# The Value of WBL

Nations enrolling a ***large proportion of upper-secondary students in vocational programs that include heavy does of WBL*** have significantly higher:

- school attendance rates
- higher upper-secondary completion rates
- college attendance

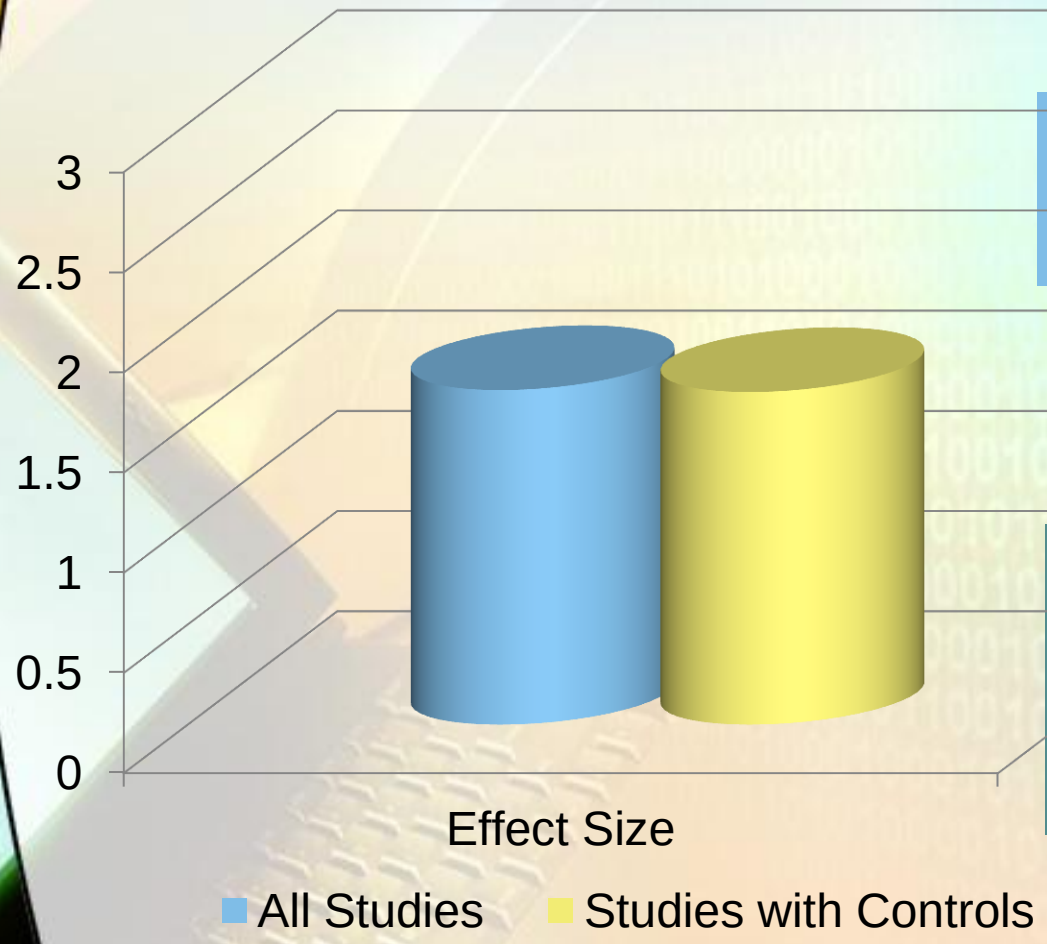
Bishop & Mane, 2004

To the workplace, to continuing education

# CTE & TRANSITION

## Findings from National Data

# Meta Analysis CTE Participation & College Enrollment: Average Effects

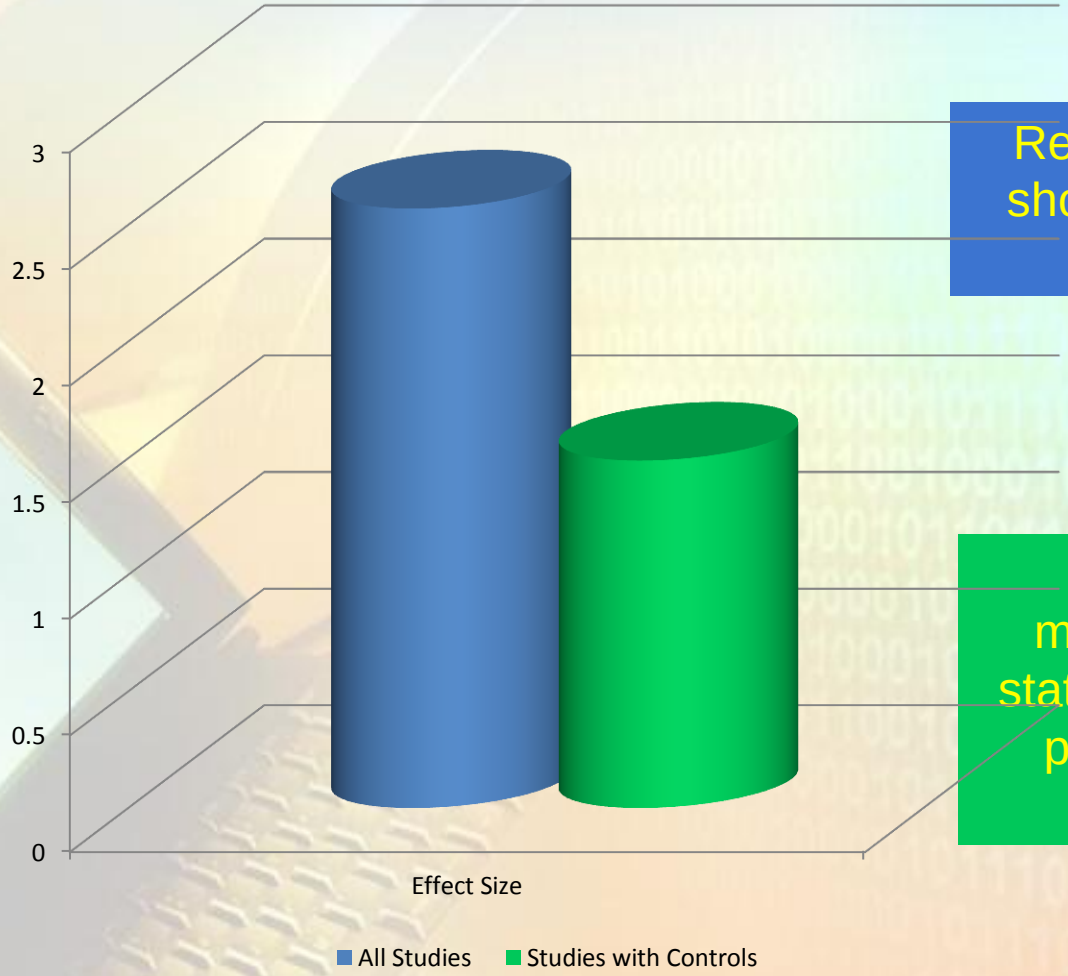



Results from all studies show a positive effect of 1.67(p=.00)

The studies with methodological and/or statistical controls show a positive effect of 1.66 (p=.02)

NRC CTE
National Research Center for Career and Technical Education

# Meta Analysis CTE Participation & Employment




Results from all studies show a positive effect of 2.57(p=.00)

The studies with methodological and/or statistical controls show a positive effect of 1.49 (p=.00)

Making High School Matter:

# YOU - TAKE A LEADERSHIP ROLE IN MOVING CTE TO THE NEXT LEVEL

# To change this reality, I Imagine the future CTE …

- *World class curriculum…*
  - Critical thinking developed by using academic skills to solve real problems in class and on the job
  - Builds related academic, occupational and technical skills
- *Delivered by world class teachers who:*
  - are technical masters
  - can link related academics to technical content
  - supported by employers who engage your students

# A future where students benefit from . . .

- Classroom instruction

- *Project based learning*
- *Contextualized learning*

- Work based learning- WBL

- *Labs*
- *Shops*
- *Job shadowing*
- *Internships*
- *School-based enterprise*
- *Cooperative education*
- *Apprenticeships*

- CTSOs

- *Leadership development*
- *Professional development*
- *Service/social engagement*
- *Competitive events*

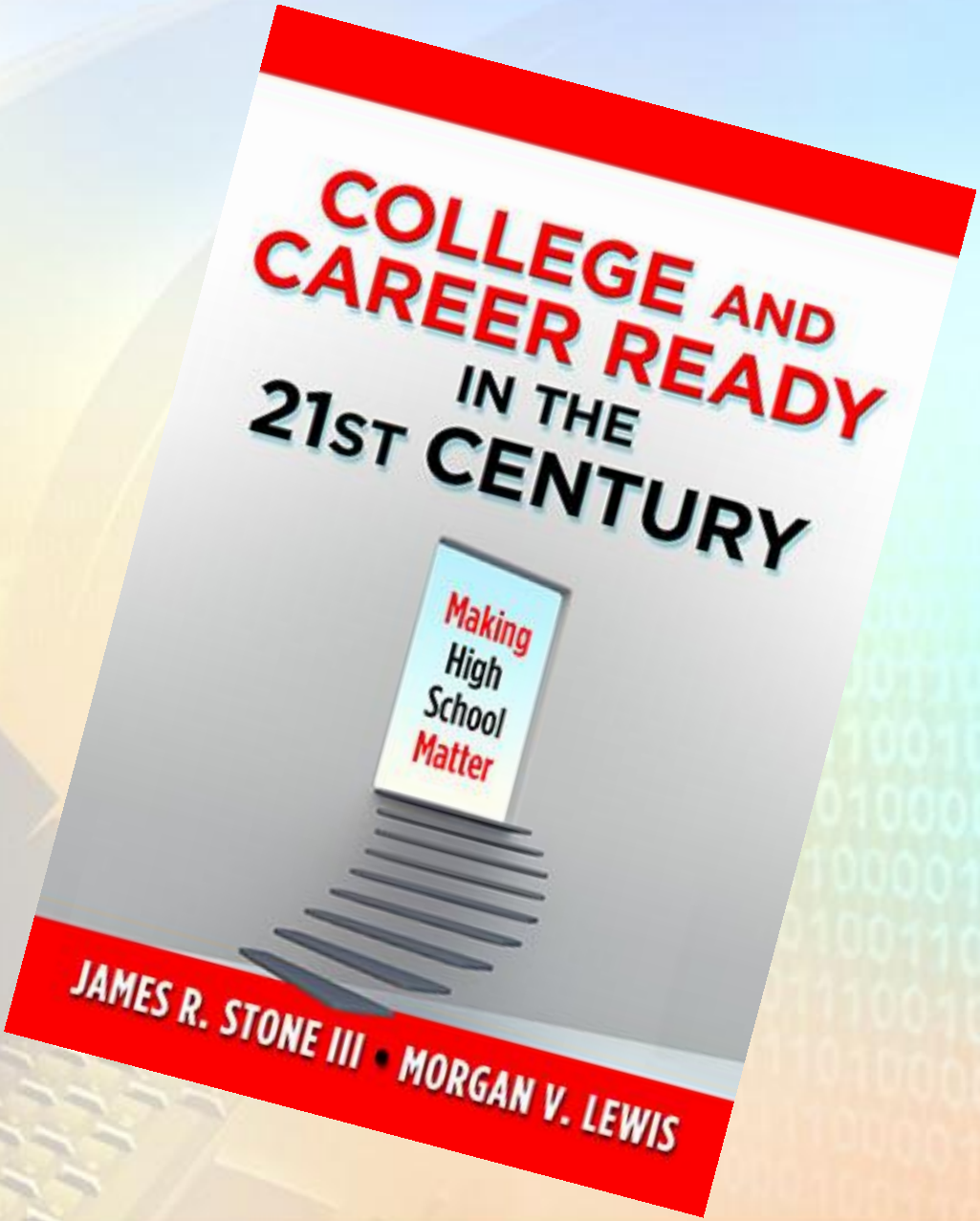
# A future CTE that is nested in . . .

- Rigorous Programs (Such as):
  - Programs of Study (early NRCCTE evidence)
  - Career academies – some evidence
  - Toyota model – early evidence
  - HSTW – strong correlational evidence
  - Project Lead the Way – strong internal evaluations
  - NCEE Board Examination Model-new
  - Linked Learning (CA)
- That incorporate:
  - Robust Career Development
  - Integrated learning
  - Link to industry credentials
  - Dual/Concurrent Enrollment
  - Entrepreneurship
- Built around Consortia
- Supported by Professional Development

***High school is the last education opportunity paid for wholly by the public. It's purpose has to be to do the best it can to provide all who leave it the foundation necessary to enter, or further prepare for, adult life.***

Barton, 2006

# Shameless Promotion . . .



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www.nrccte.org

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