

# The Case for College and Career Pathways: A Research Summary



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NATIONAL CENTER  
FOR COLLEGE & CAREER TRANSITIONS

## I. Introduction

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K-12 education leaders have undertaken a number of reforms over the past few decades, some of which have been legislated (curricula standards) and some which have been cultural or instructional in nature (integration of technology, new strategies such as differentiated instruction). Yet student outcomes have changed little during this period.

The college/career pathways model, in contrast, continues to build a base of research indicating significant improvements in student outcomes. This report summarizes the challenges that the pathways model addresses and the impacts it has had in the schools and districts in which it has been implemented.

## II. The Challenges

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The college/career pathways strategy not only helps schools address several challenges but also allows communities – the business community in particular – to deal with challenges of their own.

### School/Student Issues

- **Declining Student Engagement:** According to Gallup, student engagement in school declines substantially over time: 76 percent of elementary school students are engaged in school, however, that number drops to 44 percent among high school students. ([Gallup](#))
- **Dropping Out:** Fortunately, overall on-time graduation rates have increased to about 80 percent in recent years. Yet each year, approximately 1.3 million students fail to graduate from high school; more than half are students of color. The graduation rate among students of color is as much as twenty-five percentage points below their white peers. ([Alliance for Excellent Education](#))
- **Mediocre International Standing:** American students fare poorly on international comparisons. According to the Organisation for Economic Co-operation and Development ([OECD](#)), the U.S. spends more on education as a percentage of gross domestic product (GDP) than almost every other country (only five spend more), and yet:
  - Among the 34 OECD countries, the United States performed below average in mathematics in 2012 and was ranked 26<sup>th</sup>. The United States ranked 17<sup>th</sup> in reading and 21<sup>st</sup> in science. There has been no significant change in these performances over time.
  - Mathematics scores for the top-performer, Shanghai-China, indicate a performance that is the equivalent of more than two years of formal schooling ahead of those observed in Massachusetts, itself a strong-performing state.
  - Students in the United States have particular weaknesses in performing mathematics tasks with higher cognitive demands such as translating real-world situations into mathematical terms and interpreting mathematical aspects in real-world problems.
  - Despite their below-average performance in mathematics, U.S. students feel relatively confident in their mathematics abilities compared with their counterparts in other countries. For example, 69 percent of U.S. students reported that they felt confident in a mathematical task such as calculating the petrol consumption rate of a car, compared with the 56 percent of the OECD students.

- **Weak Counseling Opportunities:** Students are not receiving sufficient counseling to prepare for their futures. The recommended ratio of counselors to students is 250:1; the current ratio in schools is 479:1. (*CTE's Role in Career Guidance*, 2008; ACTE)

### Workforce/Community Issues

- **Retirements:** One of the greatest challenges facing business is the retirement of the Baby Boomers; 32 million Americans are expected to retire between 2010 and 2030, tripling the retirement rate of the previous 30 years. The percentage of Americans 65 and older was 13 percent in 2010; it will be 19.3 percent in 2030. (DHHS *Administration on Aging*)
- **Increasing postsecondary demand:** The Georgetown University Center on Education and the Workforce shows that by 2018, we will need 22 million new college degrees but will fall short of that number by at least three million postsecondary degrees, associate's degrees or better. In addition, we will need at least 4.7 million new workers with postsecondary certificates. At a time when every job is precious, this shortfall means lost economic opportunity for millions of American workers. (*Help Wanted: Projections of Jobs and Education Requirements through 2018*; 2010; Georgetown University Center on Education and the Workforce)
- Between 1973 and 2008, the share of jobs in the U.S. economy that required postsecondary education increased from 28 percent to 59 percent. In the next decade, this is expected to increase to as much as 63 percent. (*Help Wanted: Projections of Jobs and Education Requirements through 2018*; 2010; Georgetown University Center on Education and the Workforce)
- **Postsecondary Mismatch:** While there is an overall need for workers with postsecondary education, there is a serious mismatch between workforce opportunities and the types of postsecondary credentials sought by students. Specifically, there is an oversupply of four-year degrees and higher and an undersupply of associate's degrees and professional credentials. Approximately 48 percent of employed U.S. college graduates are in jobs that the Bureau of Labor Statistics suggests requires less than a four-year college education. Eleven percent of employed college graduates are in occupations requiring more than a high school diploma but less than a bachelor's degree, and 37 percent are in occupations requiring no more than a high school diploma. (*Why Are Recent College Graduates Underemployed?*, 2013; Center for College Affordability and Productivity)
- The mismatch is evident in states such as New York where 33 percent of jobs are high-skill and 38 percent of the workforce is high-skill, yet 46 percent of the jobs are middle-skill and only 39 percent of the workforce is capable of that work. Furthermore, "New York's projected education trends for the subsequent fifteen years (to 2025) suggest that middle-skill worker shortages will continue." (*New York's Forgotten Middle-Skill Jobs*, 2011; National Skills Coalition)
- **Skills Mismatch:** In a Society for Human Resource Management (SHRM) poll of employers, more than half reported they were unable to recruit workers for open positions, and human resource professionals predict a lack of workforce readiness will impact employers for years to come. (*Career and Technical Education's Role in American Competitiveness*, 2013; ACTE)
- **Weak Career Awareness:** Unfortunately, today's students often do not understand the new world of work, and there are gaps in work readiness that must be addressed by educators and employers. Although workforce shortages are widely reported, "far too few of those available

are prepared to perform today's job duties...let alone the duties of the jobs that will emerge in the evolving future." (*CTE's Role in Career Guidance*, 2008; ACTE)

- Students over the age of 25 are now one of the fastest growing populations in community colleges; they often enroll to acquire additional skills to be competitive in the workplace. Many of these students have already completed some college or even a four-year degree, but have found it inadequate or inappropriate for the career opportunities available to them. (*CTE's Role in Career Guidance*, 2008; ACTE)
- **Declining U.S. Competitiveness:** Since 2008, the United States has slipped in the World Economic Forum's list of most globally competitive nations, down to number seven in 2012. (*Career and Technical Education's Role in American Competitiveness*, 2013; ACTE)

### III. Pathways as a Solution

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As an increasing number of schools and districts adopt a college/career pathways model, research on the impact of this strategy is becoming more available. Results to date have been significant, with positive impacts on graduation rates, academic outcomes, student behavior, and post-high school outcomes.

#### Boosting Graduation Rates

- According to a survey of high school dropouts, "Eighty-one percent of survey respondents said that if schools provided opportunities for real-world learning (internships, service learning projects, and other opportunities), it would have improved the students' chances of graduating from high school." (*The Silent Epidemic*, Gates Foundation; 2006)
- In 2005, the graduation rate in Nashville was 55%; in 2012, after full-scale implementation of the Academies of Nashville model, the graduation rate was 78.4%. (*Academies of Nashville presentation*; 2013) As seen in the case studies section of this report (Section IV), several other schools and districts implementing a pathways strategy saw similar graduation rate increases of 10% to 15%.

#### Improved Academic/Classroom Outcomes

- **Stronger Workplace Skills.** The Linked Learning Alliance reported in 2014 that on its surveys of 11<sup>th</sup> grade students, the students who participated in a pathways program were:
  - 23 percentage points more likely than comparison students to report that high school **prepares them for working with people in professional settings**, and for working in groups to achieve a shared goal.
  - 20 percentage points more likely than comparison students to report **improved presentation skills**.
  - 14 percentage points more likely than comparison students to report **improved ability to conduct online searches** to answer a question.
  - 12 percentage points more likely than comparison students to report growth in their **belief that they could reach their goals with enough effort**.
- **Increased Student Persistence.** CTE can strongly impact educational persistence, as illustrated by researchers such as Kulik; Grasso and Shea; and Plank, DeLuca and Estacion, who found that

a ratio of one CTE course to two academic courses minimized a student's dropout risk. (*Career and Technical Education's Role in American Competitiveness*, 2013; ACTE)

- **Academic Gains and College Preparation.** A 2008 report on students in the California Partnership Academies (*Evidence from California Partnership Academies: One Model of Linked Learning Pathways*, 2008; ConnectEd) noted the impact of academies on outcomes in two areas:
  - 10th graders enrolled in the California Partnership Academies were **more likely to pass the California High School Exit Exam** than the general state population. On the English Language Arts (ELA) exam, 84 percent of Academy students passed compared with 76 percent of students statewide. On the mathematics exam, 80 percent of Academy students passed, compared with 74 percent statewide.
  - Academy students were much **more likely to complete the 15 academic courses (the a–g requirements)** needed to be eligible for admission to California's public colleges and universities. The study found that 50 percent of graduating seniors in Academies had completed the a–g requirements, compared with 35 percent of graduates statewide.

#### Addressing Behavior/Social Issues

- **Reduced Teen Gang Membership.** In 2005, before instituting the Academies of Nashville, the average age of a gang member in Nashville was 16; in 2012, the average age was 22. (*Academies of Nashville presentation*; 2013)
- **Better Discipline.** Nashville saw a 13 percent decrease in discipline referrals between 2005 and 2012. (*Academies of Nashville presentation*; 2013)
- **Better Attendance.** Attendance in Nashville increased from 89 percent to 93 percent between 2006 and 2012. (*Academies of Nashville presentation*; 2013)

#### Improved Student Lifetime Outcomes

- **Earnings Gains.** A long-term MDRC study of career academies found that these programs produced **substantial earnings gains for participants**. Academy students in the study averaged an 11 percent salary increase per year (\$2,088). For young men, the increases were significantly higher and totaled almost \$30,000 over eight years through a combination of increased wages, hours worked and employment stability. These earnings increases were achieved after more than 90 percent of the academy students graduated from high school, and the results were most concentrated for at-risk populations that are often difficult to impact. (*The Role of Career Academies in Education Improvement*, 2009; ACTE)
- A 2004 National Assessment of Vocational Education (NAVE) report showed that students who participated in postsecondary CTE coursework, even without earning credentials, earned a **higher yearly salary** than high school graduates who do not take postsecondary CTE courses. (*CTE: Education for a Strong Economy*; ACTE)
- The Career Academies produced sustained **earnings gains that averaged 11 percent (or \$2,088) more per year** for Academy group members than for individuals in the non-Academy group — a \$16,704 boost in total earnings over the eight years of follow-up (in 2006 dollars). These labor market impacts were concentrated among young men, a group that has experienced a severe decline in real earnings in recent years. Through a combination of increased wages, hours worked, and employment stability, real earnings for young men in the Academy group increased by \$3,731 (17 percent) per year — or nearly \$30,000 over eight years. (*Career Academies: Long-Term Impacts on Labor Market Outcomes, Educational Attainment, and Transitions to Adulthood*, 2008; MDRC)

- **Increased Student Motivation and Better Decision-making.** In 2010, an organization in the UK compiled a summary of the research on the ways in which students benefit from working with employers (*What Is to Be Gained through Partnership*, 2010; Education and Employers Taskforce). They found evidence of the following impacts:
  - There is evidence to show that employer engagement typically **makes learning more enjoyable and interesting for young people**. A 2008 IEBE-led survey of young people who had recently completed a work placement showed that 49 percent found it “very enjoyable” with a further 31 percent calling their experience “mostly enjoyable.”
  - Professor Andrew Miller’s in-depth investigation of the impact of business mentoring found that the “majority of students said that **mentoring has affected their wish to do well at school**. Three quarters of these said that mentoring has had a lot of impact on their motivation in GCSE subjects.” In addition, the best engagements of employers have “significantly enhanced” pupil “learning and enthusiasm for the subject” of study.
  - A 2010 survey by KPMG of 151 primary and secondary school leaders indicated that 75 percent of respondents agreed or strongly agreed that **involvement of employers in pupil learning specifically has a positive impact on attainment**.
  - A series of studies in the UK indicate that there is evidence to show those young people who have had most chance to interact with employers at school **are better placed to make informed and confident choices about future careers**.
  - Evidence suggests that there is an important link between employer engagement in education and **ultimate social mobility**.
  
- **Ability to Live Independently.** Career Academies produced an increase in the percentage of young people living independently with children and a spouse or partner. Young men also experienced positive impacts on marriage and being custodial parents. (*Career Academies: Long-Term Impacts on Labor Market Outcomes, Educational Attainment, and Transitions to Adulthood*, 2008; MDRC)
  
- **Academic and Earnings Benefits.** According to the latest research from the National Academies Foundation, students attending academies saw the following outcomes:
  - 52 percent of NAF graduates earn bachelors degrees in four years compared with 32 percent nationally.
  - Of those who go on to post-secondary education, more than 50 percent are the first in their families to attend college.
  - 90 percent of students report that the academies helped them to develop career plans.
  - 85 percent of five and 10-year alumni are working in a professional field.
  - Career-academy graduates sustained \$16,704 (11 percent) more in total earnings over the eight years following high school than non-academy group members who were also studied.

#### IV. Examples/Case Studies

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Several communities across the country have adopted a pathways strategy and seen significant outcomes, including the following:

##### **Long Beach Unified School District, Long Beach, CA**

Long Beach high schools are organized around pathways with small learning communities; all students identify themselves with future career options by the time they are sophomores. Long Beach Unified

School district won the national Broad Prize for Urban Education and was a finalist for the award five times. Long Beach was also identified as one of five most effective education systems in the world by Battelle. The district's graduation rate has been steadily climbing and is currently over 80 percent across all schools; several schools have graduation rates over 90 percent.

*Source: [Battelle for Kids, GLOBAL Education Study: Six Drivers of Student Success and from the Long Beach schools website.](#)*

### **Linked Learning Pathways, California**

In schools with Linked Learning pathways there have been early indicators of academic growth. API scores at the small high schools have experienced relatively steady increases in base API scores between 2008 and 2011; the other two have posted relatively high API scores in the first two years of their existence. The implementation of Linked Learning pathways at comprehensive high schools is still largely in the early stages of development. Of these schools, Hiram W. Johnson has the highest percentage of students enrolled in Linked Learning pathways (69 percent) and has shown marked improvement in several measures of academic achievement in the past three years. Early indicators of improved academic achievement outcomes at Johnson include:

- State high school exit exam: A 20 percent increase in 10th grade students passing CAHSEE exams in math and English language arts
- Achievement on state test: A 56 percent drop in students scoring "below basic" or "far below basic" on the CST test
- Base API Score increased from 611 in 2008 to 669 in 2011
- Dropout rates decreased 49 percent from 2008-09 to 2010-11

*Source: [Stanford Center for Opportunity Policy in Education \(2013\), \(SCOPE\) Cross-Case Study of Linked Learning in California.](#)*

### **California Partnership Academies (CPA)**

These themed academies are integrated CTE/academic pathways and are targeted at economically and educationally disadvantaged students. Recent data includes:

- 96 percent attendance rate for CPA students
- 95 percent of CPA seniors graduate versus 85 percent of seniors statewide
- 57 percent of CPA graduates fulfilled the state's college-prep course requirements (referred to as a-g courses) compared to just 38 percent of graduates statewide
- California High School Exit Exam/English Language Arts:
  - 83 percent of CPA 10th grade students passed compared to 81 percent statewide
  - Hispanic CPA students out-performed non-CPA Hispanic students by more than seven percent in math and six percent in English Language Arts

*Source: [Pro Profile of California Partnership Academies.](#)*

### **Metro Nashville Public Schools, Nashville, Tennessee**

Metro Nashville Public Schools, a high poverty urban district, implemented wall-to-wall academies across all of its 15 high schools. *See the [MNPS website](#) for more information.*

- Graduation rates: Nashville's graduation rate was 68.8 percent in 2005-06 and has risen steadily. Most recent graduation rates are 78.4 percent.
- ACT scores over 21 (college ready level) increased from 27 percent of students in 2010 to 29 percent of students in 2012.

*Source: PowerPoint provided to NC3T by Jay Steele, Director of High Schools*



**Volusia County Public Schools, Daytona Beach, Florida**

Volusia School District is a suburban/rural district in the county that includes Daytona Beach, Florida. The district runs 36 pathway programs, or career academies, across eight high schools. At present, approximately 28 percent of the student population is enrolled in a career academy; the program's goal is to increase student participation to 35 percent by 2014-15. Data from the 2009-2010 school year indicates:

- 90 percent graduation rate for career academy students, 78 percent district-wide
- 2.94 unweighted grade point average for career academy students, 2.71 district-wide
- 3.12 grade point average for Advanced Placement/International Baccalaureate courses for career academy students, 2.86 district-wide
- 30 percent of career academy students had 10 or more absences, 39 percent district-wide
- 30 percent of career academy students had discipline referrals, 49 percent district-wide

Source: Margo Pierce (2012), "*A Community Affair in Florida*," University of Central Florida, May 2012.

**Mountain Home High School, Mountain Home, Arkansas**

This rural, small town high school implemented wall-to-wall academies in 2003. Results include:

- Student attendance at Mountain Home High School Career Academies (MHHSCA) averages 94 percent
- Graduation rate reached 85.5 percent in 2011-2012
- Eighty three percent of students score Proficient or Advanced in literacy, a 20 percent improvement since forming the academies

Source: *Education Nation*.

Updated May 20, 2014