ACT WorkKeys, Career Pathways, and STEM Learning Ecosystems

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Together we can bolster creative minds and smart hands and create future-ready, lifelong learners.
THE ROLE OF TECHNOLOGY IN THE WORKFORCE

IT IS ESTIMATED THAT BY 2030, 38% OF JOBS CURRENTLY HELD BY US WORKERS WILL BE AUTOMATED.

While tech advancements offer opportunity in the creation of new jobs, it also means employers don’t know exactly what skills they will require in the future.

WHAT EMPLOYERS ARE SURE OF IS THEY WILL NEED CRITICAL THINKERS WHO CAN FIND SOLUTIONS TO PROBLEMS THAT WILL NOT BE WRITTEN IN A MANUAL.
Our Connected World

By that time, there will be 500 billion devices in the world connected to the internet.

And as students interact with people less, they are missing opportunities to practice managing emotions, celebrating milestones, showing empathy, and building confidence.

Students are interacting with technology more, without much knowledge about the programming and moving parts that compose it.
THE ENGAGEMENT GAP

Plus, Houston... we have an engagement problem.

Only 49% of US public school students are engaged in school.

As teachers struggle to keep students engaged, they are also being asked to solve problems they’ve never had to before, such as providing safety for students and teaching social and emotional learning.
WHAT IS AN ECOSYSTEM?
Boston students enthused about Science, Technology, Engineering and Math
WHY ECOSYSTEMS?
LIFELONG AND LIFEWIDE LEARNING

16 WAKING HOURS

0-5 K  GR 1-12  UG GRAD  WORK  RETIREMENT

- FORMAL LEARNING ENVIRONMENTS
- INFORMAL LEARNING ENVIRONMENTS

9.25%  18.5%  7.7%  5.1%
...providing the architecture for all sectors to align opportunities for all learners to develop the skill sets necessary to thrive in a 21st century economy and beyond.
“No single individual or organization can influence the entire ecosystem alone.”

“There is no one solution that will create progress at scale.”

*Input to Impact: A Framework for Measuring Success the STEM Talent Ecosystem. STEMConnector. 2019*
The World is Complex.

We figure it out together.

STEM Ecosystems reimage learning for the future.
Establish and sustain cross-sector partnerships

Create and connect STEM-rich learning environments in diverse settings

Equip educators to lead active learning in diverse settings

Support youth to access pathways and exploration to further learning and careers

*Partnerships to Transform STEM Learning* (Noam & Tillinger, 2004)
NCEast Mission

To drive the region’s current and future economic development through three core strategies:

✓ Creating growth through targeted business attraction, retention and entrepreneurship promotion - branding, marketing, and professional prospect management

✓ Building Capacity by improving labor skills in the region, enhancing education rates, and supporting infrastructure improvements

✓ Advocating for our institutions, infrastructure needs and communities
American employers do not have enough applicants with adequate skills, especially in science, technology, engineering and math.

...most people don’t think of as STEM-related, including machinists, electricians, auto techs, medical technicians, plumbers and pipefitters.

...many applicants fail these basic tests, losing out on opportunities for good pay and good benefits

...only 35% of eighth graders performed at grade level or above in math.

Each year, approximately 30% of high-school graduates who take the Armed Forces entrance exam fail the test.

...many of these educational shortfalls are apparent before students reach high school.

...people, in many states where they have been adopted or are being considered, the Common Core needs
With approximately 1.4 million residents from the fringe of the Research Triangle to the Atlantic Coast

NCEAST FOOTPRINT

28 Counties

With approximately 1.4 million residents from the fringe of the Research Triangle to the Atlantic Coast
Regional Workforce Deficiencies Identified

North Carolina’s Eastern Region launched a visioning and strategic planning effort in 2004

Two of six strategies adopted included efforts to:
  • Promote value of education (culture of learning)
  • Improve skills of adult workforce

Employment growth in advanced manufacturing was going to place greater stress on the education/workforce delivery system
Workforce Innovation Network – 2005/06

Cooperative effort – regional collaboration
  • NC Eastern Region (NCEast predecessor)
  • Eastern Carolina Workforce & Turning Point Development Boards
  • 7 Community Colleges
  • ESC/JobLink Centers

Focused on:
  • Employer engagement and regional workforce needs
  • Attract and retain industry and connect exiting military personnel to jobs available in the region
At least 42% of the new jobs being created in NC will require some form of certification or post-secondary education, many in STEM (Science, Technology, Engineering and Math) disciplines.

May underestimate need - employers are accelerating replacement lower-skilled workers with automation requiring more highly educated or trained employees.

Economic drivers (manufacturing, logistics, finance, technology) are heavily dependent on STEM – and STEM-based occupations and more likely to survive recessions and receive higher pay.
STEM-RELATED EMPLOYMENT IN NC

Figure 3. Unemployment Rates in STEM and Non-STEM Occupations, 1994-2010

Note: The estimates are for the civilian labor force age 16 and over. Shading indicates recession.
Table 1. Average Hourly Earnings of Full-Time Private Wage and Salary Workers in STEM Occupations by Educational Attainment, 2010

<table>
<thead>
<tr>
<th>Educational Attainment</th>
<th>Average hourly earnings</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>STEM</td>
<td>Non-STEM</td>
</tr>
<tr>
<td>High school diploma or less</td>
<td>$24.82</td>
<td>$15.55</td>
</tr>
<tr>
<td>Some college or associate degree</td>
<td>$26.63</td>
<td>$19.02</td>
</tr>
<tr>
<td>Bachelor's degree only</td>
<td>$35.81</td>
<td>$28.27</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>$40.69</td>
<td>$36.22</td>
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</tbody>
</table>

The Common Thread

Career Readiness Certification & Economic Development

- **Economic Development** – documenting workforce quality
- **Business and industry** – communicating needs for a productive workforce
- **Individuals** – understanding which skills are required by employers
- **Policy makers** – addressing skills gap at the national, state and local levels
- **Educators** – closing the skills gap with stackable industry-recognized credentials
- **Economic developers** – marketing the quality of their workforce
Private/public partnerships

REGIONAL JOURNEY BEGAN BY EMBRACING ACT® WORKKEYS® AND NCRC IN 2005
BETTER JOBS.
BETTER WORKERS.
BETTER ECONOMY.
WORKFORCE READY.

North Carolina’s Eastern Region is leading a WorkReady initiative to elevate our region’s workforce into our number one competitive advantage. By ensuring our workers have the best skills and training, we can guarantee businesses we have the talent they need to succeed now and in the future.

This ambitious plan, funded by a grant from the NC Rural Center, and in partnership with the Eastern Carolina Workforce Development Board, Corporation for Enterprise Development (CFED), and the North Carolina Community College System, will improve the skills and marketability of our workforce and ultimately bring growth to our communities. This plan is based on a model that serves as a blueprint for WorkReady communities across the state.

This project will assess and award communities that meet WorkReady thresholds, evaluate the standards proposed for certification, motivate rural county participation, introduce the WorkReady initiative to employers and capture the lessons learned at the regional level for potential application across the state.
Career Readiness Certificates

Capacity building to address #1 site location issue:
Workforce

CRCs Awarded
From < 20 employers recognizing the CRC to over 150
Educational Attainment

Source: US Census Bureau, 2007-2011 American Community Survey 5-Year Estimates
STEM Education

Community engagement survey in 2010
  • Conclusion – need to focus on middle schools (create pipeline)

Convened regional team to develop Golden Leaf Foundation application on regional scale

Launched STEM East in 2011 with $750k
  • Initially 4 counties with 5 middle school STEM Learning Centers with overall goal to be in all middle schools in all 13 counties
CONNECTING EMPLOYERS & EDUCATORS through a network of private/public partners to align innovative education programs with industry initiatives to support student career pathways, develop an educated workforce and add value for relocating and expanding companies.
NC’s Eastern Region: STEM Results

Math Proficiency (Grade 8)

Science Proficiency (Grade 8)
Pitsco’s middle level STEM curriculum was the first curriculum profiled by ACT against the WorkKeys assessments.
Measures of Academic Progress (MAP) Testing Results

Higher science scores two years in a row
  • 2016-17 and 2017-18 School Years

North Carolina schools
  • Year 1: Craven County (military district)
    • 20 percentile point increase
  • Year 2: Bertie County (21% of population lives under the poverty line – national average is 14%)
    • 7 percentile point increase
North Carolina STEM Centers

- 14 School Districts Participating in the STEM East Network
- 71 Elementary Middle-Level Careers exposed to students in STEM Centers
- 55 Sites 60 Programs STEM Centers in the network
- 144,900 Students Served In the STEM Centers
- 70 Business & Industry Partners Involved in the STEM East Network

STEMEast
- Science Technology Engineering Math

NCEast Alliance
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Questions?