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THE STATE OF

# CAREER AND TECHNICAL EDUCATION:

Kansas City Regional Initiatives

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*An Analysis Commissioned by the Ewing Marion Kauffman Foundation  
and Mid-America Regional Council*

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# Executive Summary

Today the world of work is complex and changing at an exponential rate, which demands a deeper and more diverse workforce. The emerging economy will need very few workers who have not earned a postsecondary degree/training or a market-driven workforce credential. Artificial intelligence, 3D printing, resource-efficient sustainable production, and robotics are just some of the drivers reshaping the future of work.

Georgetown University's Center on Education and the Workforce reports that by 2020, more than 60 percent of all jobs in the United States will require college or postsecondary training of some sort and only 50 percent of those jobs will require a four-year degree. The needs of the job market require that students continue to pursue formal education after high school in order to obtain the skills and credentials necessary to access jobs with middle- to upper-class wages. All students will need to be prepared for postsecondary education, whether it is degree-bearing or credential-bearing in a different way.<sup>i</sup>

Currently, about 36 percent of all jobs in the Kansas City region require postsecondary education. Over the next ten years, the percentage is expected to reach 50 percent. Even more compelling, 73 percent of the jobs that pay an above-average wage will require postsecondary education by 2027.<sup>ii</sup>

Considerable debate and concern has been raised about the amount of student loan debt for postsecondary education/training: more than \$1.4 trillion. The Institute for College Access and Success reported 68 percent of 2015 bachelor's degree recipients graduated with student loan debt, averaging \$30,100 per borrower. This represents a 4 percent increase from the average debt of graduates in 2014. In Missouri, 61 percent of students graduated with an average of \$22,480 of debt and 63 percent of Kansas students graduated with an average of \$28,008 of college debit.<sup>iii</sup>

Compounding this concern is that many students acquire student loan debt but do not complete their postsecondary education/training. The six-year graduation rate for first-time, full-time undergraduate students who began seeking a bachelor's degree at a four-year degree-granting institution in

fall 2009 was 59 percent. Graduation rates varied at two-year degree-granting institutions; graduation rate was 22 percent at public two-year institutions, 56 percent at private nonprofit two-year institutions, and 60 percent at private for-profit two-year institutions.<sup>iv</sup>

The Pew Research Center report, "The Rising Cost of *Not* Going to College," found that the earnings gap between millennials with postsecondary education and those with just a high school diploma is wider than it was for prior generations. "The driver of that widening is not so much that today's college graduates are doing better than yesterday's college graduates are doing; it's that today's high school-only graduates are doing worse than yesterday's high school-only graduates," says Paul Taylor, senior fellow at the Pew Research Center. "The real story is the collapse in economic opportunity for people who do not continue their education beyond high school."<sup>v</sup>

Students have a choice of multiple pathways after high school that produce long-term positive results, e.g., associate degree, bachelor's degree, industry-recognized credentials, certifications, apprenticeships, on-the-job training, and "Earn While You Learn" employer-sponsored programs. It is clear that a high school diploma is no longer a guarantee for a good job and economic success. Today's complex economy demands a significantly more educated workforce than ever before; there is a "new minimum" to access a middle-class life or beyond, requiring a postsecondary degree or certificate with labor market value.<sup>vi</sup>

We know that students who leave high school with a diploma **and** market value assets, e.g., dual college credit applied directly to a degree, associate degree, industry-recognized credential, startup business, and internships have a leg up on those who leave high school with just a diploma. Students who leave high school with a diploma **and** market value assets are more likely to enroll in postsecondary education/training and more likely to finish. The Education Trust report, "Meandering Toward Graduation," finds that among recent high school graduates, fewer than one in ten have taken a set of courses and participated in career experiences that

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are necessary to be both college- and career- ready. Today's students are meandering through many disconnected high school courses that gets them to graduation, but nowhere else.<sup>viii</sup>

This report on career and technical education in the Kansas City region found that there are many innovative career and technical education programs throughout the region providing opportunities for students to earn more than just a high school diploma. For example, Independence high school students are required to choose a career pathway that results in an industry-recognized credential and/or dual college credit and 100 percent of Northland CAPS students leave high school with a robust internship experience in high-demand careers. High school students enrolled in Summit Technology Academy in Lee's Summit and meet the Missouri Innovation Campus (MIC) program criteria have the opportunity to complete their associate degree and participate in a paid internship before they leave high school. These students are on track to receive their four-year degrees from the University of Central Missouri.

Twenty-two percent of Olathe Public Schools high school students participate in 21st Century Academies and 3 percent of Olathe students participate in the Olathe Area Technical Center, leaving high school with the following types of market value assets: dual college credit, endorsements, industry-recognized credentials, robust job shadowing, internships, and real-world projects tied to job expectations. As it transitions to college and career academies, Kansas City Kansas Public Schools has launched a Diploma+ program requiring in 2017–2018 freshmen to graduate with a career focus linked to pathways into college, or to completion of industry-recognized credentials and certificates.

In the Blue Valley School District, 35 percent of all high school graduates participate in one or more CAPS courses, resulting in dual college credit, robust internships, industry competency checklists, development of provisional patents, and startup companies. School Districts across the Kansas City region, e.g., Liberty, Shawnee Mission, Kearney, Excelsior Springs, Kansas City Public Schools, and many more, are

taking strong, intentional steps to provide students with opportunities to leave high school with more than just a diploma.

Kansas City's education intermediaries like PREP-KC, Hire KC Youth, Full Employment Council, and KC STEM Alliance are committed to providing students with career awareness and readiness activities, e.g., internships, career academies, mentoring, and Project Lead the Way coursework. GradForce KC is focused on postsecondary attainment as part of Lumina Foundation's Community Partnership for Attainment. Kauffman Scholars and KC Scholars award thousands of college scholarships. Business partners stand ready to collaborate with educators to create seamless workforce pipelines for talent development. Nonprofit, non-partisan coalitions of business leaders like the Alliance for Childhood Education (ACE) believe that the business community has the obligation, opportunity, and capacity to increase college and workforce readiness for all students. KC Rising, the business-led initiative launched in 2014, has identified human capital as one of three key drivers of a globally competitive region, information technology, and life sciences.

With all of the essential elements and strategic partners ready to convene at a shared table to create and accelerate the KC regional talent development network, why are we only producing results with a very small number of students? Fragmentation of effort inhibits scale, but if our region could come together, focus on quality, alignment, and sustainable systems, it would truly give Kansas City a competitive economic advantage.

Promising practices in other states are successfully taking their efforts to scale. For example, Denver Public Schools has created an "easy button" with multiple entry points for community and business partners to be involved in the CareerConnect Program, taking work-based learning to scale. South Carolina has a comprehensive, customized workforce solution to meet employers' needs. South Carolina high school students participate in Youth Apprenticeship, which combines high school curriculum and career and technology training with critical on-the-job training. Students earn a



paycheck through part-time work while earning a national credential in high-demand occupations. Nearly 18,177 apprentices have been placed in the following targeted industry clusters: advanced manufacturing, construction technologies, information technology, energy, tourism, health care and transportation/distribution/logistics.

States like New Hampshire, Maine, Virginia, and many others have moved away from “seat time” to awarding high school credit based on mastery, therefore freeing up time for students to participate in career and technical education, internships, and dual credit, and acquiring other market value assets before graduation. Indiana has capitalized on sector strategies, which are regional collaborations of employers, government, education and training, economic development, labor, and community organizations to focus on the workforce and other competitiveness needs of specific industries. Township High School District, located in Illinois, places equal value on college readiness and career readiness, as evidenced by its launch of a national campaign called Redefining Ready!, in partnership with the National School Superintendents Association.

It is clear that scaling high-quality, market-driven CTE programming throughout the Kansas City region remains a challenge for education, business, and community leaders. So, the question remains, what are the barriers that inhibit scaling high-quality, market-driven CTE programming?

Based on the data collected, barriers to scalability are generally the same across the Kansas City region and, quite frankly, across the United States, due to the fact that high school systems use the same long-standing framework. For the purpose of this report, six barriers are highlighted:

- 1) Perceived stigma of career and technical education
- 2) Culture of high schools and accountability systems
- 3) Need for multiple ways of acquiring high school graduation credit
- 4) Limited number of CTE educators in the workforce
- 5) Lack of career awareness and counseling
- 6) Lack of systemic collaboration between business and education

An increasingly complex economic and social environment makes the journey from education to employment a complicated one, and students have many different routes available to them. Listening to Kansas City educators, parents, business, and community leaders, they believe that too many young people are getting lost along the way. Evidence supports that our education-to-employment systems lack the frequency and scale required to support our youth effectively and yet there exists many quality programs that meet the needs of a small number of youth. Many questions are still unanswered, but the hope is that this report will stimulate others to continue the investigation of this essential issue.

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# Introduction

## ***What this report shows:***

1. Innovative and transformative approaches in Kansas City of how students are prepared for education, life, and work after high school are not just emerging; they are flourishing across multiple districts and in many ways.
2. There is a desire on the part of educators, business leaders, and community organizations to align effort and support to ensure the conditions for new approaches can be sustained and programming and policy that works can be scaled.
3. Efforts are taking place across the nation to ensure students exit high school with evidence of readiness for further formal education and/or career-ready credentials. We can learn from these initiatives.
4. There is momentum based on recent collaborative education efforts in Kansas City to bring people together and explore how resources, information, relationships, and support can be leveraged toward long-term education outcomes in the region.

## ***Purpose and methodology of this report***

This report was commissioned by Mid-America Regional Council and the Ewing Marion Kauffman Foundation to gain an understanding of the current state of CTE in nine counties of the Kansas City region: Missouri counties of Cass, Clay, Jackson, Platte, and Ray; and Kansas counties of Johnson, Leavenworth, Miami, and Wyandotte. Additionally, there is a desire to find evidence of promising practices within other states that are responsive to the needs of the economy and to articulate any barriers and/or incentives that inhibit or support scaling CTE efforts.

To develop this report, the researcher engaged education, business, government, and community leaders to gather the current state of CTE and incorporated extensive input from a wide variety of sources.

- Relevant research reports, policy conceptual frameworks on CTE reform and success from Kansas, Missouri and national sources
- Approximately sixty interviews and site visits with stakeholders and experts inside and outside of the CTE system, including:
  - Superintendents
  - CTE program leaders
  - Students and CTE alumni
  - Higher education leaders
  - State Board of Education leaders
  - Representatives of business and industry
  - Representatives of state workforce development systems
  - Policy and finance staff at the state level
- Previous CTE-related surveys of student, parent, and teacher satisfaction
- CAPS Network Summer Huddle (thirty-three school districts)
- CTE data from Kansas and Missouri State Departments of Education
- Programs that support postsecondary credentialing (KC Scholars, Full Employment Council)
- Foundations and other organizations that provide support to educational innovation.

This report is organized into five sections. The first section begins with an accounting of the current state of CTE in the Kansas City region (nine counties) by reviewing major CTE programs. The second section explores best practices of business-education partnership and examples of business and industry partnerships. The third section introduces evidence of promising practices of other states, focusing on a handful of statewide and/or district level actions like conversion charter schools, workforce development centers, waivers, tax incentives, apprenticeships, sector-level partnerships, and effective high school programming efforts like personalized learning, competency-based learning, and value-add diplomas. The fourth section is a comprehensive view of the barriers and headwinds to scaling the access of high-quality, market-driven CTE programming for 85 percent to 90 percent of the student population. The final section explores what we have learned and offers recommendations for going forward.

**Section One:**

# Career Technical Education Landscape: Kansas City Region (Nine Counties)

In this section, we will examine the results of engaging key stakeholders within the nine counties to gather a current state of CTE programming and the access high school students have to acquire market value assets prior to graduation, e.g., internships, industry-recognized credentials, work-based learning experiences. A market value asset (*Source: PREP-KC 2017*) is defined as industry-valued and recognized skills acquired in high school that create a more seamless transition from school to postsecondary education and/or the workplace. Students who leave high school with a diploma **and** market value assets are more likely to enroll in postsecondary education/training and successfully navigate his/her journey from school to employment without getting lost along the way. Market value assets make further education and training, and, ultimately, a job, more affordable and more attainable. Examples of market value assets achieved in high school

are: internships, micro-internships, dual college credit toward a degree or certification, industry-recognized credentials, completion of authentic client project, robust job shadowing tied to job expectations, starting a business, provisional patent, and a job leading to a livable wage.

Within the current landscape of the Kansas City region, four categories of market value assets were identified, but none are at scale.

- College credit (credit gained through CTE/Academy programming supporting postsecondary degrees and/or certifications)
- Industry-recognized credentials
- Career experiences
- Entrepreneurial experiences

College Credit	Industry-Recognized Credentials	Career Experiences	Entrepreneurial Experiences
Dual Credit	Certified Nursing Assistant (CNA)	Apprenticeships	Launch a business, LLC
Eligible for Advanced Standing	American Welding Society (AWS)	Internships	Provisional patent on product or service
College Now	Phlebotomy	Professional portfolio, e.g., digital media, graphic design	Startup company team member
Associate Degree	Basic Cardiac Life Support	Completion of client-driven project	Active participation within an incubator environment
	Licensed Practical Nurse (LPN)	Endorsements, e.g., Olathe 21st Century Academies	
	Certified Medical Assistant	Technical Competency Checklist	
	Forklift Operator	Mastery of Common Sector Competencies	
	Automotive Service Excellence (ASE)	Robust job shadowing tied to job expectations	
	Emergency Medical Technician (EMT)	"Serious" Games at work simulators	
	Certified Coding Specialist (CCS)	Skills-based competitions, e.g., SkillsUSA	
	HVAC, CAD		

## Methodology of Data Collection

Using the interview template below, data was collected on the following educational providers:

- Olathe Public Schools
- Blue Valley School District
- Shawnee Mission School District
- Kansas City Kansas Public Schools
- Northland CAPS and Northwest Missouri State University
- Liberty School District
- Independence School District
- Summit Technology and Missouri Innovation Campus
- Excelsior Springs School District
- Kansas City Public Schools and Manual Career and Technical Center
- KC STEM Alliance
- Prep-KC
- Hire KC Youth

Example of Interview Template Used to Gather CTE Program Data	
<b>Name of Organization</b>	
<b>Demographics of District</b>	Enrollment, demographics of students, free and reduced percentage, graduation rate, number of schools—elementary, secondary
<b>Career and Technical and Entrepreneurial Programming</b>	Name of program and high-level summary and history/launch date
<b>Credential Outputs</b>	Define the types of outputs students receive from your programming, e.g., college credit tied to career track, industry-recognized credential, internships, robust job shadowing tied to job expectations, technical competency checklists, endorsements, on-the job training, certifications, etc. Do you have any data that you are willing to share for this report?
<b>Audience Serving</b>	Geography serving, percentage of the total population, demographic of who you are serving
<b>Enrollment Data</b>	Current enrollment for each of the programs, maximum capacity
<b>Future Growth Projections</b>	Ideal growth as well as planned growth
<b>Location of Programming</b>	Separate building, HS, co-located with business partners
<b>Success Metrics</b>	How do you measure the success of the programs? Would you be willing to share any of your data for the purpose of this report? Do you have any longitudinal data on your students after graduation? Do you have any satisfaction data from parents/students/ teachers/business partners?
<b>Admission Practices</b>	What type of process do you use to accept students into these programs? Do you have to deny any students? Do you have a dismissal process?
<b>Demographics of Instructors</b>	Describe the type of certifications you are using, e.g., visiting scholars, CTE certifications, industry instructors, etc.
<b>Instructor Development</b>	What type of professional development is provided for these instructors? What type of instruction (pedagogy) do your instructors use?
<b>Parent Development</b>	Do you provide any type of training and/or informational sessions for parents in the area of CTE?
<b>Curriculum Development</b>	How is your curriculum developed? How quickly can curriculum and programming be changed, eliminated, and/or created based on changing workforce landscape, emerging technologies, and emerging demand?
<b>Business and Industry Partners</b>	Describe how you utilize business and industry partners to support your students, teachers, curriculum, and programs.
<b>Targeted Industry Sectors</b>	Do you have programming and student outputs in targeted industry sectors?
<b>Professional Skills</b>	Do you have any formal professional skills/employability skills training and expectations for students?
<b>Authentic Client Projects</b>	Do students perform project work for clients, business partners?
<b>Funding</b>	Describe how your programming is funded.
<b>High School Diploma</b>	Do the high school diploma and/or transcript look any different due to the student's participation in the programming?
<b>Core Graduation Credits</b>	Do any of your programs have core graduation credits embedded?
<b>Barriers to Scaling</b>	List any barriers that limit the number of students that have access to these programs, e.g., state department or district-level practices, resistance in the culture, graduation credits, resources.

## Definition of Credential Output

- **College Credit:** College credit available for some coursework in the academy/program
- **Industry-Recognized Certificate:** A credential and/or certification, usually issued by an industry, verifies that an individual has met the skill standards established by that industry, as minimal requirements to be successful in an entry level position.
- **Career Experience:** Internship, client project or robust job shadow related to employment expectations.

	Credential Output		
Industry Sectors	College Credit	Industry-Recognized Certificate	Career Experience
Advanced Manufacturing			
Architecture & Engineering			
Construction & Building Trades			
Finance & Insurance			
Information Technology			
Life Sciences			
Supply Chain & Logistics			

## **Olathe Public Schools, Johnson County, Kansas**

Olathe Public Schools is the second largest school district in Kansas with an enrollment of nearly 30,000 PK–12 in 2016–17 and a graduation rate of nearly 96 percent. The district serves a wide variety of students with the racial/ethnic make-up of the three largest group of students being 69 percent Caucasian, 15 percent Hispanic, and 7 percent African American. The free/reduced status of the district is 28 percent, with individual schools ranging from less than 2 percent to more than 85 percent. Eleven of the thirty-six elementary schools receive Title 1 services. The English Language Learner (ELL) population has grown to more than 3,000 students.

The Olathe School District believes in student choice for high school education, providing three different models: Comprehensive High School, 21st Century Academies, and two-year CTE programming. The 21st Century Academies are four-year programs and the two-year CTE programs are for juniors and seniors. Each 21st Century Academy is located in one district high school, with all high schools having two to five academies each. The two-year CTE programs are located predominantly at the new Olathe Advanced Technical Center (OATC). District transportation is provided for both the 21st Century Academies and two-year CTE programs. Approximately, 25 percent of the high school students participate in 21st Century Academies (22 percent) and OATC (3 percent), leaving high school with the following types of market value assets: dual college credit, endorsements, industry-recognized credentials, robust job shadowing, internships, and real-world projects tied to job expectations. All of the CTE pathway program options involve extensive career focus and training. The comprehensive CTE programs in the high schools have college credit, industry-recognized credentials and Professional Learning Experiences (PLE) opportunities available. Many of the PLEs involve mentoring and shadowships, as well as extended internships at local business and industry. The list of industry-recognized credentials options is growing each year as more credentials are added to the state recognized list.

In 2003, Olathe Public Schools were the first in the region to redefine high school education, launching the 21st Century Programs, beginning with four in-demand 21st Century careers: Aerospace and Engineering, eCommunication, Geoscience (originally known as Earth Science Frontiers), and Biotechnology/Life Sciences. Today, there are fifteen four-year 21st Century Academies, with specialized course work and career-focused and real-world opportunities. Specific academies are located in the five high schools and the district provides transportation for students who are accepted into an academy that is not provided in their home high school. Students have access to four years of specialized content knowledge, technical skill development, industry-standard resources and equipment, industry-recognized certification,

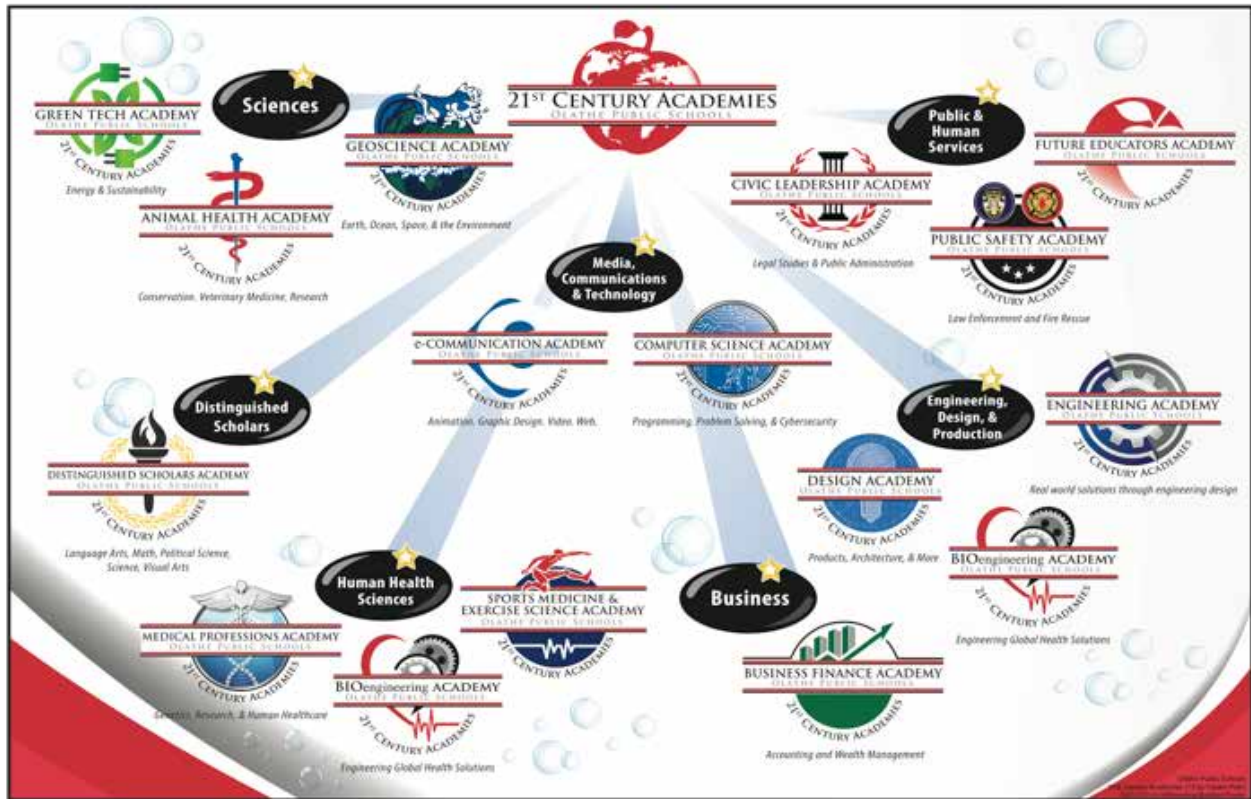
professional experiences all four years, and a senior capstone experience. Endorsements can be earned by the 21st Century Academy students and are a part of the students' graduation transcript. The following link is to an example of 21st Century Academy-Geoscience Academy Endorsement Requirements, resulting in three different levels: <http://teachers.olatheschools.com/pmcwilliamson/files/2014/07/GEO-Endorsement-Requirements-Table-.pdf>.

21st Century Academies (see page 10) include:

- Animal Health Academy (located at Olathe North High School)
- BIOEngineering Academy (located at Olathe South High School)
- Business Finance Academy (located at Olathe South High School)
- Civic Leadership Academy (located at Olathe East High School)
- Computer Science Academy (located at Olathe South High School)
- Design Academy (located at Olathe East High School)
- Distinguished Scholars Academy (located at Olathe North High School)
- e-Communication Academy (located at Olathe Northwest High School)
- Engineering Academy (located at Olathe Northwest High School)
- Future Educators Academy (located at Olathe East High School)
- Geoscience Academy (located at Olathe North High School)
- Green Tech Academy (located at Olathe West High School)
- Medical Professions Academy (located at Olathe North High School)
- Public Safety Academy (located at Olathe West High School)
- Sports Medicine and Exercise Science Academy (located at Olathe North High School)

### **Olathe Public Schools 21st Century Academies**

Students participate in professional learning experiences throughout the four years, e.g., working and conducting research alongside industry professionals, observing medical/hospital procedures, and developing/implementing community workshops. Students learn, practice, and receive feedback on eight essential employability skills developed by a group of more than 500 business, higher education, and community leaders. Lesson plans and rubrics for these employability skills are being developed and implemented. District leaders are aware of the Common Sector Competencies and are actively using the document to inform their work.



District leaders stated that the programming would not be possible without their business and community partners. Partnership opportunities range from guest speakers to internship sites, teacher externships, senior capstone support, to membership on 21st Century advisory committees. Each 21st Century Academy has an advisory committee consisting of industry experts in the field of study and higher education and community members. The district-level 21st Century Academy advisory committee consists of some eighty-five business, industry, higher education, and community members. Partner input informs instructional materials, projects, and specific curriculum standards.

Career planning, interest inventories, and exploration begin in sixth grade with Career Cruising™, and in eighth grade all students participate in the eighth grade Career EXPO held at Johnson County Community College. As eighth graders, students participate in the application process, which consists of 1) three essay questions, 2) examination of grade point and attendance, and 3) two recommendations from teachers. Interested students are interviewed, resulting in being invited to participate, not being invited to participate,

or being placed on a wait list. A similar application process is part of the process for students interested in the two-year career technical programs.

Future initiatives for the 21st Century Academy programs are weighted grades and College Now credit for academy coursework. The district also is increasing cross-curriculum collaboration (core and academy courses) to create deeper context for the coursework and professional experiences.

The 21st Century Academy teachers from industry are certified using the restrictive vocational licensure process, often through Pittsburgh State University. Each new educator is assigned an instructional resource teacher as a mentor.

Olathe Advanced Technical Center, a two-year career and technical program for juniors and seniors, focuses on preparing leaders for the future workforce. Each year, a College and Career Day is provided for students and parents. Each program has its own business advisor to provide guidance. All OATC students are members of the SkillsUSA Career and Technical student organization. Many students have assumed leadership opportunities (classroom, building,

Program of Study	Industry Recognized	Program Numbers for 2017–18
Auto Collision	I-CAR (Inter-Industry Conference on Auto Collision)	40
Auto Technology	ASE (Automotive Service Excellence)	80
Construction Trades	None	34
Culinary Arts	Servsafe, ProStart	53
Welding Technology	American Welding Society	36

district, and state options). A career resource counselor leads weekly lessons that emphasize leadership, employability skills, resume development, and the interview process. In the 2016–17 school year, the OATC students completed the ACT WorkKeys, and 94 percent of the students tested received a certificate. Five programs of study are offered and are shown in the table above:

District leaders stated that they have already outgrown the OATC building and would like to begin discussion about a consortium of districts and business partners coming together to offer programming in high-demand technical jobs, such as aviation technician, dental hygienist, medium- and heavy-diesel electrician, lineman, motorcycle technician, pharmacy technician, and vet technician, and workers in HVAC and medical information systems. They also stated that a shortage of CNA instructors limits the numbers of students that can be served.

The district is continually evaluating the 21st Century Academies, comprehensive CTE pathways, and OATC student success through examining the following metrics:

- Program completion
- ACT results
- KS Assessment Results
- Student perception data (survey)
- Parent perception data (survey)
- ACT WorkKeys data
- Scholarship dollars earned for postsecondary
- Perkins Federal Accountability
- Student CTE Completer status
- CTE competency percentages
- Industry-recognized certifications earned

	Olathe Public Schools Credential Output		
KC Rising Industry Sectors	College Credit	Industry-Recognized Certificate	Career Experience
Advanced Manufacturing	Yes	Yes	Yes
Architecture & Engineering	Yes		Yes
Construction & Building Trades	Yes		Yes
Finance & Insurance	Yes		Yes
Information Technology	Yes		Yes
Life Sciences	Yes	Yes	Yes
Supply Chain & Logistics			



## **Blue Valley School District, Johnson County, Kansas**

Blue Valley School District, with an enrollment of 22,078 K–12 in 2016–17 and a graduation rate of 97 percent, has students that identify more than seventy-five languages as their primary home languages, with 10.67 percent of students reporting a home language other than English. The top five non-English home languages reported are Spanish, Telugu, Chinese, Urdu, and Korean. The ethnic breakdown of the students is: 73.99 percent Caucasian/White, 12.62 percent Asian, 5.54 percent Hispanic, 3.18 percent African American/Black, 0.33 percent American Indian/Alaskan Native American, 0.08 percent Hawaiian/Pacific Islander. The district's free and reduced population is 8 percent.

Career and technical education opportunities are offered in all five high schools and the Center for Advanced Professional Studies (CAPS), a profession-based program for juniors and seniors driven by business partners and workforce and economic development. Twelve pathways served 6,180 students in 2016–17: Architecture Construction and Design, Business and Entrepreneurship, Business Finance, Engineering and Applied Math, Hospitality and Culinary, Programming and Software Development, Web and Digital Communications, Marketing, Multi-media Communications, Graphic Design, Education Training, and Health Science. Johnson County Community College offers articulated credit and concurrent enrollment. Students engage in authentic work experiences with business partners, such as job shadowing, mentoring, entrepreneurship, and short-term internships. Blue Valley students also can participate in the CTE programs that are offered at Olathe Advanced Technical Center and Shawnee Mission Broadmoor Technical Center. Forty-four students participated in this programming in 2016–17.

### **Center for Advanced Professional Studies (CAPS)**

Students from all five high schools have the opportunity to participate in the Center for Advanced Professional Studies, which began in 2009 and represents the collaboration of education, business, and community, providing students with a unique, immersive experience and resulting in highly skilled, adaptable global innovators and leaders. CAPS is an example of how private industry—including Black & Veatch, Cisco, Cerner, Sprint, Bayer, Burns & McDonnell, and Garmin—and the public education system can partner to produce personalized learning experiences that educate the workforce of tomorrow, especially in STEM-related industries. High school juniors and seniors can apply to the program, and their course selection will be balanced with their home high school schedule as well as CAPS course availability. Students interested in the CAPS program need to 1) desire to work in a profession-based, real-world environment with other Blue Valley high school students, 2) be willing to comply with business ethics (e.g., attendance) and a professional dress code, and 3) provide their own transportation to CAPS and business partner sites.

In 2017–18, CAPS serves 750 students, with 1,200 seats from all five Blue Valley High Schools, eight private high schools, and homeschool students that reside in the Blue Valley boundaries. CAPS serves an even demographic distribution of approximately 35 percent of all students who graduate from Blue Valley schools. This number reflects the percentage of students who will take at least one semester of a CAPS class during their high school careers. CAPS has surpassed the enrollment benchmark set by the Blue Valley School District and industry visioning team. CAPS is an inclusive program that does not deny students an opportunity; it does, however, have a dismissal process.

### **Curriculum Development**

All curricula are evaluated every year through a partnership with the Blue Valley School District, industry, and postsecondary partners. Students can choose their strand: Bioscience, Engineering, Human Services, Medicine and Health Care, Business/Technology/Media, or Accelerator. Each strand contains a series of courses that result in high school and college credit. Some courses provide students with core graduation credits. For example, discrete math is embedded in the CAPS Technology strand and can substitute for a core math graduation credit, or CAPS Bioscience coursework can substitute for science graduation credit. Careful attention was paid to align the CAPS course standards to the core standards of the Blue Valley curriculum, with approval from the Kansas State Department of Education. Additionally, the National Student Clearinghouse carefully looked at the program to ensure that the 'name' of the CAPS courses on the students' transcript would pass the audit, thus not harming a student who wanted to be eligible to play college athletics. CAPS students receive weighted credit for completing courses in the same career focus multiple times; 1.0 of the 1.5 credit are weighted.

### **Professional Skills**

CAPS' professional skills development program is generalized for all professions as well as specified to meet particular industry needs. Business and Industry partners provide mentorship, industry and professional skill feedback, curriculum development, internship opportunities, authentic project partners, and teacher professional development.

### **Access to Market-Value Assets**

CAPS students have access to the following assets:

- Profession-based internships
  - 15 percent to 20 percent of the students participate in traditional internships, where students are placed at an industry site for an extended period of time.
  - 100 percent of the students are engaged with business partners, with instructors as the liaisons for ensuring their work meets or exceeds the depth and/or quality of a traditional internship.

- Client-based projects, in which 95 percent of student participate
- Robust job shadowing based on job expectations. Law and Exploring Health students are the most intentional about robust job shadowing.
- "Serious games" work simulations—for example, with medical manikin simulators
- Industry competency checklists developed by industry experts and employers
- More than thirty provisional patents and many LLCs
- Industry-recognized credentials: CNA, CMA, pharmacy tech (CVS provides curriculum and placement), EKG certification, phlebotomy, and technology (Microsoft certification, Cisco, A+, C++, JAVA Swift, and Network Security through the CyberPatriot program). CAPS is working toward offering an allied health certification.
- Welding certification (due to small numbers of students, CAPS contracts with a professional to teach and test students for the certification)
- College credit, dual college credit through Johnson County Community College and other universities.

The CAPS program is funded primarily from district funds on a per-pupil allocation. The program is housed

in a separate building and, generally speaking, students transport themselves from their high schools. Since 2009, Black & Veatch has hosted a CAPS engineering classroom at its headquarters building. To break down the "what is the CAPS program?" barrier, program leaders have secured endorsements from colleges and universities, with endorsement letters assisting students in the college application process.

Working on a report with outside agencies to assist in determining its longitudinal impact, CAPS utilizes confidence surveys to measure satisfaction among parents, students, teachers, and business partners. CAPS leaders attempt to follow students through multiple avenues: collecting contact information for alumni and parents, reviewing students' LinkedIn profiles, and hosting an annual alumni event (100–200 participants). Because parent education is crucial, CAPS provides multiple venues of information sharing: presentations at enrollment events, open houses every month, eighth grade tours with parent communication follow-up, counselor awareness sessions, articles in district communication channels, articles in local news publications, observations opportunities for parents and students, and individual counseling sessions with CAPS staff.

	Blue Valley School District Credential Output		
KC Rising Industry Sectors	College Credit	Industry-Recognized Certificate	Career Experience
Advanced Manufacturing	N/A	Limited	Significant Internship opportunities
Architecture & Engineering	Five hours of articulated CTE credit	Limited	Significant Internship opportunities
Construction & Building Trades		Limited	Significant Internship opportunities
Finance & Insurance	Economics (six credit hours), nine other credit hour opportunities Fourteen hours of articulated CTE credit AP coursework	Kauffman FastTrac Certification	Significant Internship opportunities
Information Technology	Eight hours of articulated CTE credit AP coursework	Various; dependent on student interest (e.g., Syntax dependent, CISCO, cybersecurity, Microsoft)	Significant Internship opportunities
Life Sciences	Nine hours of college credit offered AP coursework	CNA or CMA certification; possibilities for others, such as pharmacy tech, phlebotomy tech, electrocardiogram	Significant Internship opportunities
Supply Chain & Logistics	N/A	N/A	N/A

## **Shawnee Mission School District, Johnson County, Kansas**

Shawnee Mission School District, with an enrollment of 27,512 pre-K–12 learners in 2016–17, has students that identify more than seventy languages as their primary home languages with 11 percent of students reporting a home language other than English. The district's free and reduced population is 37 percent, with a graduation rate of 87 percent. Shawnee Mission serves learners in thirty-three elementary campuses, five middle schools, five high schools, one alternate high school, an Early Childhood Education Center, and Broadmoor Technical Center. Opening in 2017, the Center for Academic Achievement serves as the new home for five Signature Programs in the district.

All five Shawnee Mission School District high schools offer career and technical education programming aligned with the sixteen National Career Pathways. Career pathways offer high school elective courses in a range of subjects and career fields for students to explore, serving 5,365 students, which represents 45 percent of the secondary student population. The career pathways offered in Shawnee Mission high schools include:

- Architecture and Construction
- AV Communications/Journalism
- Business Management and Entrepreneurship
- Construction and Design
- Engineering and Applied Mathematics
- Fashion Apparel and Interior Design
- Global Systems (Agriculture/Natural Resources)
- Graphic Design
- Health Science
- Information Technology
- Law and Public Safety
- Manufacturing
- Marketing
- Mobile Equipment Maintenance
- Restaurant and Event Management
- Teaching and Training
- Visual Arts
- Web and Digital Communications

Students can earn college credit and industry-recognized credentials in a number of the pathways. The Shawnee Mission School District has two other areas of CTE interest: Broadmoor Technical Center and Signature Programs, with initial courses available in each of the high schools. Students can transfer into any high school based on their interest in the Signature Programs. Transportation is not provided to the Signature Programs, but is provided for the Broadmoor Facility.

Enrollment is open to any student completing the prerequisite coursework.

With a strong futuristic vision aligned to workforce development, the district has disbanded most of the traditional vocational Broadmoor programming and is moving the Signature Programs to a centralized facility, the Center for Academic Achievement, serving all five high schools, with transportation provided by the district. It combines three administrative centers into a single location to create operational efficiencies, including space for the Board of Education and its meetings.

The new Center for Academic Achievement is home to laboratories, a student union area, and collaborative spaces for Signature Programs, including medical health sciences, biotechnology, Project Lead the Way engineering, and culinary arts. Students and instructors in the culinary arts program operate a restaurant that is open to the public, Broadmoor Bistro, along with a sustainable urban farm and indoor living wall. Shawnee Mission Signature Programs provide high school students the opportunity to explore unique areas of study in preparation for specialized academic and future career opportunities. Students participating in Signature Programs receive rigorous and relevant targeted instruction. In the majority of programs listed below, introductory courses are offered at each of the respective high schools, with advanced coursework offered at the Center for Academic Achievement and Broadmoor Technical Center.

Enrollment is building in these programs. For example, more than 400 students are enrolled in the introductory engineering courses for the 2017–18 school year. Approximately 100 students will complete advanced courses in the Engineering Pathway (Advanced CAD, Engineering Design and Development, and Civil Engineering and Architecture) while attending the first year at the Center for Academic Achievement.

District leaders have placed high importance on each of the Signature Programs, offering students access to an industry-recognized credential:

- Engineering (Autodesk)
- Medical Health Sciences (CNA)
- Culinary Arts (ServSafe, ProStart)
- Computer Applications (Microsoft Office Specialist)
- Biotechnology located at Center for Academic Achievement (currently working with CEVA Biomune to create a competency-based industry assessment)
- Project Blue Eagle—Law, Public Safety, and Security, located temporarily at Broadmoor Technical Center due to more than 1,000 students enrolled (EMT, CPR/First Responder/AED)

Initial plans are being discussed about moving the Blue Eagle Pathway to another site that will better support program growth. The District is working on a three-year plan to identify areas for program expansion, with initial targets including Automotive Technology, Welding Technology, and Broadcast/Mass Media Communications. Students are eligible to receive a Signature Program designation on the diploma after completing three courses in the sequence. Additional designations are offered for Kansas Career and Technical Education Scholar and Project Lead the Way Scholar.

### Curriculum Development

Curriculum Cadres led by teachers develop the curriculum using the Kansas State Department of Education state competencies and any national standards, as applicable. Curriculum focuses on career development in the pathway/course based on workforce needs and includes relevant performance tasks. Curriculum is on a three-year review cycle, but is reviewed by teachers annually and updated based on input from advisory committees. Common Sector Competencies have been communicated and shared with building leaders, counselors, and teachers.

### Professional Development

All instructors are licensed in Kansas utilizing the Career and Technical Education and STEM Licenses to employ instructors from industry. Professional learning opportunities are provided for career and technical education teachers in a variety of formats and ways throughout the year, including building-level CTE meetings, professional conferences, and trainings. Instructors are encouraged to use Marzano's High Yield Instructional Strategies, which are embedded into curriculum maps from the Shawnee Mission School District Instructional Playbook.

### Parent Engagement

Students and parents in grades sixth through tenth grade are invited to an open house, called Signature Summit, hosted each year after Board of Education approves the program of studies. There, they can learn about the various programs and meet with the instructors, tour the classrooms, and connect with counselors. In the past year, attendance increased from 200 to 1,000.

### Business and Industry Partner Engagement

Business and industry partners are identified by lead program instructors and included on advisory councils for each respective program. These advisory councils meet, at minimum, two times per year to guide curriculum and project development for student learning experiences. Additionally, a number of programs utilize business and industry partners as guest speakers and onsite mentors to students based on individually identified projects.

	Shawnee Mission School District Credential Output		
KC Rising Industry Sectors	College Credit	Industry-Recognized Certificate	Career Experience
Advanced Manufacturing	Yes		
Architecture & Engineering	Yes	Yes	Yes
Construction & Building Trades	Yes		
Finance & Insurance			
Information Technology	Yes	Yes	
Life Sciences	Yes	Yes	Yes
Supply Chain & Logistics			

## Kansas City Kansas Public Schools, Wyandotte County, Kansas


The Kansas City Kansas Public Schools (KCKPS) is a nationally recognized urban school district that serves approximately 22,000 students. With a Head Start program, three preschools, thirty elementary schools, eight middle schools, and five high schools, the district serves a very diverse mixture of students, with sixty-eight languages spoken in the homes. To serve those students, the district employs approximately 3,700 staff, including more than 1,600 teachers.

Research on the future job market in Kansas has determined that, to obtain the skills and credentials necessary to access jobs with middle-class wages, **all** students need formal education beyond high school. Therefore, postsecondary preparation is important for all students. In 2013, under the leadership of Superintendent Dr. Cynthia Lane, the district became a member of the Coalition of Innovative School Districts, consisting of seven Kansas school districts. Coalition membership allowed KCKPS to pursue policies and practices that ensure each student graduates with a high school diploma, plus one or more endorsements aligned to postsecondary success.

The district determined that the following endorsements, when paired with a high school diploma, place KCKPS students on the path to having access to high-skill, high-wage, high-demand careers in the metropolitan area and beyond.

- Completion of at least one full year of college (eighteen to thirty credit hours)
- Completion of an industry-recognized credential or certificate
- At least a twenty-one on the ACT or 1060 on the SAT
- Acceptance into the military (Armed Services Vocational Aptitude Battery)
- Completion of a qualified internship or industry-approved project
- Approved plan for postsecondary transition
- Completion of International Baccalaureate Diploma Programme or International Baccalaureate Career-Related Programme


To meet the needs of Diploma+ at the high school level, the district is transitioning to college and career academies, each of which has an industry and career focus, linked to either pathways into college, completion of industry-recognized credentials and certificates, or immediate entrance into the workforce. The district already is seeing success in



**DIPLOMA<sup>+</sup>**  
KANSAS CITY, KANSAS PUBLIC SCHOOLS


## College and Career Academies

# WYANDOTTE HIGH SCHOOL



**ENGINEERING**  
Computer Science (PTLW)

**CONSTRUCTION & DESIGN**




**Health Sciences, Human and Public Services**

**COMMUNITY HEALTH EDUCATION**

**NURSING**

**HOSPITALITY, TRAVEL, & TOURISM**

**LAW ENFORCEMENT & PUBLIC SAFETY**



**Information Technology**

**WEB & DIGITAL COMMUNICATIONS**

**BUSINESS, ENTREPRENEURSHIP, & MANAGEMENT**

graduating students Diploma+. Fifty-three percent of May 2017 graduates earned their high school diplomas and one or more Diploma+ endorsements. Full transition begins for the class of 2021, which is entering ninth grade in the 2017–18 school year. Students entering KCKPS high schools as freshmen this year (class of 2021) will be required to graduate Diploma+.

KCKPS staff, working alongside business and civic leaders, KC Rising, parents, and students, identified the following college and career academies.

- Health Sciences
- Advanced Manufacturing, Transportation and Logistics
- Engineering, Architecture, and Construction
- Information Technology
- Business and Finance
- Human and Public Services
- International Baccalaureate Diploma Programme or International Baccalaureate Career-Related Programme

District leaders stay connected with CEOs from high-growth sectors in all of the industry areas, with a particular focus on advanced manufacturing, which is especially strong in Wyandotte County. District leaders believe leadership from business and industry is essential to ensuring a district focus on rapidly growing industry sector needs and to support a pace of effective transformation.

Students entering ninth grade in 2017–18 will be organized into ninth grade academies, which will provide in-depth exploration of the college and career academy industry themes. As these same students transition into their sophomore year, they will select their industry area of concentration and the endorsement they will pursue for graduation.

### Opportunities for Certifications

- Early Childhood Education
- Auto Collision
- Welding (American Welding Society)
- Certified Nursing Assistant
- Certified Medical Assistant
- Health Educator
- Computer Support Specialist
- Auto Technology
- ServSafe Food Handler
- Construction Technician
- First Aid
- CPR
- Certified Office Assistant
- Culinary Arts
- Pharmacy Technician

## J.C. HARMON HIGH SCHOOL



Architecture,  
Engineering  
and  
Construction

**ENGINEERING**  
Civil Engineering  
& Architecture  
(PTLW)

**GEOSPATIAL  
ENGINEERING**



Health  
Sciences,  
Human  
and Public  
Services

**SPORTS MEDICINE /  
EXERCISE SCIENCE**

**TEACHING AS A  
PROFESSION**



Business,  
Finance,  
& Information  
Technology

**FINANCIAL PLANNING**

**GAME & SIMULATION DESIGN**



## Internships

- Cerner Tech Impact
- University of Kansas Medical Center (spring and summer research projects)
- CVS Health (pharmacy technician)

Financing for Diploma+ primarily relies on private donations, contributions from business partners, and agreements with the Unified Government of Wyandotte County (casino monies) to subsidize tuition for college and technical college courses, totaling approximately \$10,000 per student. The district is working on a memorandum of understanding with various colleges and universities to reduce or waive the cost of tuition.

The district moved forward with college and career academies (see pages 16, 17, 18, 19) within each of the high schools versus a separate facility due to their commitment to reach all students, thus scaling college and career academies for all. Middle school students, using the Career Cruising tool (a self-exploration and planning program that helps people of all ages achieve their potential in school, career, and life), set goals, and visit industries and college campuses throughout the metropolitan area. The students also have an "individual plan of study" called a "dashboard," so that, beginning at sixth grade, students track goals, grades, assessment performance, and special accomplishments. The individual plan of study assists students in identifying their talents and aspirations for the future.

As the academies expand, the district plans to provide transportation for students that choose an academy or career pathway not housed in their home high school. All students will enter an academy during their sophomore years. The selection process is completed with students and families working with their counselor, college and career coordinator, and ninth grade Academy advisor. The only requirement for acceptance into an academy is that the students' choices align to their career interests as reflected by their profiles in Career Cruising and their individual plans of study.

KCKPS is very intentional with targeted teacher professional development, including externships with business partners that are tied to high-demand, high-wage professions. For example, teachers were placed at externships with KU Medical Center, resulting in authentic lesson plans and collaborative projects with industry experts. Benesch Engineering, a Wyandotte County company, provided classroom space at the firm and authentic, professional projects for eighth grade students and their teachers. In partnership with Pittsburgh State University, the district has brought back the Teaching Fellows program, which allows KCKPS to certify industry experts as classroom teachers with no cost to the teaching candidate. For more information about the Teaching Fellows program, please contact Shelly Beech—shelly.beech@kckspkckps.org or 913-279-2259.

## WASHINGTON HIGH SCHOOL



Business  
and  
Finance

MARKETING  
MANAGEMENT  
  
BUSINESS FINANCE



Health  
Sciences,  
Human  
and Public  
Services

PRE-VETERINARY  
TECHNICIAN  
  
TEACHING AS A  
PROFESSION



Information Technology,  
Advanced Manufacturing,  
Transportation  
& Logistics

WELDING TECHNOLOGY  
  
PROGRAMMING &  
SOFTWARE DEVELOPMENT



## F.L. SCHLAGLE HIGH SCHOOL



Architecture,  
Engineering  
and  
Construction

ENGINEERING  
Digital Electronics  
(PLTW)

DIGITAL  
COMMUNICATIONS  
& MULTIMEDIA



Health  
Sciences,  
Human  
and Public  
Services

HEALTH  
INFORMATICS

SOCIAL SERVICES

## SUMNER ACADEMY



International  
Baccalaureate  
Programme

FULL  
INTERNATIONAL  
BACCALAUREATE  
DIPLOMA



Candidate  
for International  
Baccalaureate  
Career-Related  
Programme

ARCHITECTURE

BIOMEDICAL  
SCIENCE (PLTW)

## **Northland CAPS Program: Serving Clay and Platte Counties, Missouri**

Northland Center for Advanced Professional Studies (NCAPS) was launched in the fall of 2013 after two years of planning and less than three months of actual implementation. NCAPS launched as a consortium of six school districts within Clay and Platte counties: Smithville, Platte County, Park Hill, North Kansas City, Kearney, and Liberty. In 2015, Excelsior Springs School District was added to the consortium. NCAPS represents seven school districts and thousands of students, so business partners appreciate the opportunity to work with a single point of contact and have access to students at a large scale.

On January 6, 2015, Northland CAPS, along with Metropolitan Community College (MCC) and Northwest Missouri State University gathered, at Cerner World Headquarters to celebrate the designation as an Innovation Education Partnership and the receipt of a grant to help fund the partnership. The Innovative Education Partnership, known also as a Missouri Innovation Campus, is a designation awarded by the Missouri Department of Higher Education under section 178.1100, RSMo.

“Missouri’s Innovation Campus initiative has become a national model for providing our future workforce with more skills, in less time and at a lower cost,” Jay Nixon, then Missouri’s governor, said at the event. “The Northland CAPS Innovation Campus is already putting hundreds of students on a fast track to success in future careers, and this official designation will ensure that hundreds more will have this opportunity in the years ahead.”

Northwest Missouri State University is now building upon the Northland CAPS designation as a Missouri Innovation Campus to create a premier career preparation program for high school students focusing on workforce needs through profession-based experiences. In addition, Northwest Missouri State has launched a competency-based applied graduate program: Strategic Communication and Leadership in STEM Fields. The primary audience for this degree is proposed executive leaders, with an emphasis on members

of the military completing advanced strategic training at Fort Leavenworth’s Command and General Staff College.

### **Governance**

Northland CAPS is governed by a nine-member board of directors and is a 501(c)(3), with North Kansas City School District as the fiscal agent. To ensure NCAPS is a market-driven program, the bylaws mandate that five of the board members are business people and four are superintendents from the consortium, with the president being a business representative. NCAPS staff are employees of the North Kansas City School district and are governed by the district regulations and policies. Each of the seven school districts provides a liaison to meet monthly with the leadership team of NCAPS to ensure communication is clear, issues are resolved promptly, and innovative ideas are shared across the districts.

### **Funding**

NCAPS is funded by tuition paid by each student’s home school district. Districts pay \$3,500 per student for participation in a half-day program for two semesters. Annual grants from Cerner and Ford Motor Company supplement the program, but all operating costs are covered through student tuition. It is believed that 400 students would be the maximum enrollment due to the fact that the school districts would not be willing to reallocate any more of their operating budgets to pay for student tuition.

### **Program Enrollment**

In 2013–14, the program launched with twenty-eight students, two teachers, a project manager and five strategic business partners: Cerner, Ford Motor Company, Holland 1916, North Kansas City Hospital, and Bank Liberty. The program offered two strands—Engineering and Advanced Manufacturing co-located at Holland 1916 and Technology Solutions co-located at Cerner. By 2015–16, six strands were offered to 292 students: Digital Media and Design, Engineering and Advanced Manufacturing, Global Business and Entrepreneurship, Global Logistics, Medicine and Health Care, and Technology Solutions. In 2016–17, 323 students were served and 2017–18 enrollment is 380 students, with

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**“The Northland CAPS Innovation Campus is already putting hundreds of students on a fast track to success in future careers, and this official designation will ensure that hundreds more will have this opportunity in the years ahead.”**

Former Missouri Governor Jay Nixon

## **‘Internships for All’ is the mission of Northland CAPS; therefore, students spend their first semester at one of a handful of business partner satellite sites, working in groups on authentic business projects facilitated by instructors.**

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a wait list for the Medicine and Health Care strand. Student demographics are representative of the school districts, with a free and reduced lunch population ranging from 9 percent to 87 percent, including homeless students in the North Kansas City School District. Because Northland CAPS is an inclusive program, students’ grade point, attendance, or behavior will not deny them access to the program. However, students must be on track to graduate. NCAPS has strict, profession-based policies that mirror the business world expectations; therefore, students who do not comply are counseled and can be dismissed from the program.

NCAPS is a low-capital-cost model due to high business engagement, resulting in classrooms, equipment, and technology provided by business partners. Liberty Hospital and two co-located classrooms in North Kansas City Hospital house the Medicine and Health Care strand. Cerner continues to offer classroom space for Technology Solutions, and Bank Liberty continues to house the Global Business and Entrepreneurship strand. Global Logistics operates out of the Ambassador Building at the KCI Airport. As of 2017–2018, Digital Media and Design is located at the Innovation Campus in Gladstone, Missouri.

The Engineering and Advanced Manufacturing program was co-located with Holland 1916 until 2016, when Magna International Inc. announced the launch of a new, onsite training center for the development of skilled tradespeople at its LMV Automotive Systems manufacturing facility in Liberty, Missouri. LMV Automotive Systems, a manufacturing division of Magna’s Cosma International operating unit, employs approximately 340 people who produce welded body assemblies for automakers.

The state-of-the-art training center includes all of the assembly technologies currently in use at LMV, such as robotic spot and metal inert gas welding, and is used to provide training for weld technicians, tooling technicians, and maintenance personnel. In addition to offering hands-on experience, the center features a classroom area and an innovation corner where employees can learn the principles and practices of lean manufacturing. The training center is the focal point in LMV’s partnership with Northland CAPS, providing high school students with opportunities to gain exposure and skills related to high-demand/high-skill professions such as engineering, computer software development, and advanced manufacturing. This NCAPS

business partner has made a strong commitment to its workforce pipeline by offering qualified NCAPS students employment and funds for 100 percent of their MCC college hours when the student commits to a three-year employment agreement.

### **Curriculum Development**

Northland CAPS curriculum is reverse engineered from industry standards, then mapped back to high school and college standards, so that every course qualifies for high school and college credit. Currently, college credit providers are Metropolitan Community College, University of Missouri-Kansas City and Northwest Missouri State University. To develop curriculum, NCAPS uses its copyrighted rapid prototyping development process that ensures curriculum development is iterative, constantly changing, industry-driven, and authentic project-based.

### **Significant Business Partner Relationships**

To-date, more than 300 businesses participate at varied levels of engagement (see Appendix G). The Northland CAPS business partner development has five main steps:

1. **Gather data** to identify local economic trends and workforce needs, current and future.
2. **Identify ‘who,’** businesses and sectors, that have the most need for workforce.
3. **Find the intersection** of the economic trends and workforce needs data. The best, long-term, win/win business partner relationships are found at the intersection of economic development and workforce needs.
4. **Engage business partners** in areas interest them, letting them drive the partnership activity and the amount of time/effort.
5. **Grow and nurture** the business partner relationship to meet a perceived return on investment for the business partner.

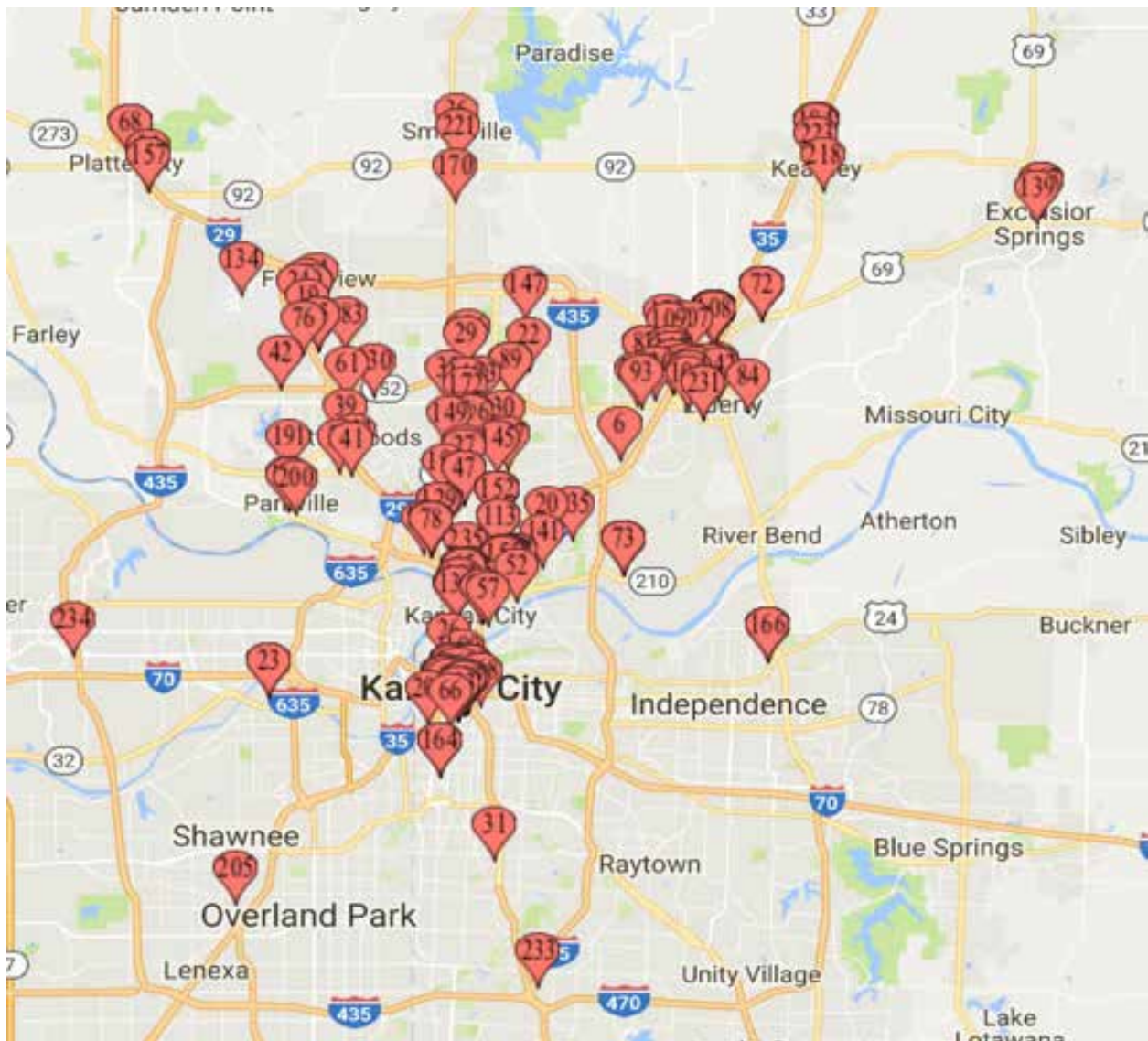
### **Professional Internships**

‘Internships for All’ is the mission of Northland CAPS; therefore, students spend their first semester at one of a handful of business partner satellite sites, working in groups on authentic business projects facilitated by instructors.

Students learn new, industry-specific skill sets and hone their professional skills. During second semester, all NCAPS students apply and are interviewed by business partners, who select their interns. Northwest Missouri State University provides college credit for the student's completion of the NCAPS Professional Skills Program (one credit hour) and the successful completion of internships (up to three credit hours).

NCAPS Alumni and business partners state that the internship process is one of the highest-rated market value assets of the NCAPS program. Placements are not always successful, but in 2016–17, 260 associates were placed at 235 locations, with 120 companies participating (below). Only one associate was dismissed from the internship program.

**2017 Unpaid Internships—100 Percent of the Northland CAPS Students  
260 Associates, 235 Locations, 120 Companies**



### Lessons learned:

- Define a specific system and automated technology for taking attendance. Recording attendance is the responsibility of the student, not the teacher or internship supervisor.
- Define a specific system for the internship application, selection, placement, and monitoring process.
- Internships can be a powerful marketing tool for the program and can help strengthen business partner expectations and relationships.
- Involve teachers in the internship supervisor training, because teachers are directly responsible to the internship supervisors.
- Aim for synchronized rollouts and placement of interns.
- Educate students about the value of any and all authentic work experiences, no matter what the task.
- Educate students on how to personally advocate for their needs while at the internship placement.
- Establish a consistent, program-wide day to connect and reconvene with all interns and supervising teachers.

### Transportation

Students transport themselves to and from their home high schools and the NCAPS business partner classroom sites. Some districts provide transportation for students in need and other students negotiate carpooling and other creative ways to transport themselves.

### Success Metrics

NCAPS performs a satisfaction and perception survey for all students, parents, business partners, and alumni. The data is summarized and used for future planning and goal development.

### Northland Summer Externship Experience

In partnership, NCAPS and the seven Northland school district liaisons developed and launched the Northland Summer Externship Experience, NORTHLAND SEE, in summer 2015. To date, approximately 240 K–12 teachers have participated in the two-and-a-half-day summer externship. Each year twelve to thirteen businesses open their doors to expose the teachers to the way they do business, their cultures, how they measure success, and what they are looking for in regard to future workforce.

Teachers learn how to use design thinking skills to observe the business in action and ask questions, resulting in identifying problems or opportunities the specific business would like the teacher team to solve. Many teachers take the authentic problem-solving activity back to their classrooms, integrate it into their curriculum, and launch student problem-solving teams. Throughout the year, some teachers continue the business partner relationship, and then the authentic learning culminates in a “pitch” of the respective solutions to the business partner. (See Appendix A for the Externship Training Manual.)

**\*\*All Northland CAPS courses offer dual credit for professional skills training and internships**

KC Rising Industry Sectors	Northland CAPS Credential Output		
	College Credit	Industry-Recognized Certificate	Career Experience
Advanced Manufacturing	Yes	No	Yes
Architecture & Engineering	Yes	No	Yes
Construction & Building Trades	Yes	No	Yes
Finance & Insurance	Yes	No	Yes
Information Technology	Yes	No	Yes
Life Sciences	Yes	Yes—Basic Cardiac Life Support/ CPR	Yes
Supply Chain & Logistics	Yes	No	Yes



## Missouri CAPS Programs

In Missouri, CAPS programs are present in North Kansas City, Springfield, Affton, Parkway, and Washington School Districts. St. Charles and four other school districts are in the process of creating a new consortium, St. Charles CAPS. These programs range between twenty students to 300 students being served in either junior or senior high grades. Each Missouri program holds true to the Blue Valley CAPS model by offering academic strands that are aligned to regional industry needs and demand. Business and industry partners drive the content being offered based on workforce needs, but all programs are authentic, project-based experiences that result in high school and college credit.

The Northland CAPS program, located in North Kansas City and established in 2013, is the oldest program in Missouri, a consortium serving seven school districts. The Greater Ozark CAPS (GOCAPS) program, located in Springfield, is a consortium of eleven school districts. It was followed by the launch of St. Louis CAPS, a consortium of four school districts located in the Affton School District. The Parkway SPARK program began as a stand-alone program focused on entrepreneurship when it was launched in 2014, but it has since been included in the CAPS Network.

The Missouri Department of Higher Education and the Missouri Chamber of Commerce and Industry continue to gather data on the Missouri CAPS programs and Innovation Campuses. Brian Crouse, vice president of Education for the Missouri Chamber of Commerce and Industry, conducted research at the request of the Missouri Chamber of Commerce and Industry's Missouri 2030 Education and Workforce Alliance for the purpose of providing an overview of the Missouri CAPS programs. The Education and Workforce Alliance used the resulting report as the basis for future discussion on approaches of scalability at the state level and areas where the Missouri Chamber of Commerce and Industry can provide value. The report was developed based on one-on-one site visits with each of the three Missouri programs—Northland CAPS, Greater Ozark CAPS, and St. Louis CAPS.

Representatives from each of the Missouri CAPS program spoke about their challenges to develop and scale the CAPS model. Even though their challenges are slightly different, three common themes emerged:

### Quality Teachers

It is a challenge finding the right educator to teach in a nontraditional, project-based learning environment, where the curriculum is driven by industry partners. Northland CAPS referenced the fact that the current teacher certification and provisional certification processes in Missouri are too prohibitive regarding recruiting business professionals to teach in the CAPS model. Each program believes the easiest path to correct this would be to change the provisional certification process so that no additional college coursework

would be required when seeking a teaching license. The Springfield and Northland programs stated that Kansas has recently made changes to streamline and open teacher licensure pathways.

### Embracing Innovation

Another challenge to individual programs or expansion across the state is the lack of understanding of the model and how it fits in the scope of a traditional educational framework. Some veteran educators and school leaders have struggled with the working concept of the CAPS programs. One program put it simply as, "an expansion of what we think of as career and technical education to include nontraditional CTE academics and career disciplines."

### Transportation

The basic transportation need of individual students from school to the business partners was cited as a potential barrier for low-income students and/or scalability. Many programs currently expect students to be responsible for their own transportation to the business partners' sites, but some districts support students' transportation needs. Students who do not have accessible transportation have used creative ways of transporting themselves, like carpooling and using taxis and Uber vehicles.

For the detailed report, including funding strategies, business partners, industry sector programming, and more, see Appendix E.

## **Liberty Public School District, Clay County, Missouri**

Liberty Public School District 2016–17 enrollment was 12,597 K–12 students with a graduation rate of 93 percent and the free and reduced lunch population at 19.8 percent. The district includes one Early Childhood Center, eleven elementary schools, four middle schools, two high schools and one alternative secondary school. District and board leadership is driven by the district’s strategic plan 2013–2019 (revised in 2017), “INSPIRE INVEST INNOVATE.” The district’s work is measured by the achievement of two goals: 1) every student will graduate college- and career-ready and 2) every student will develop personal, social, and civic responsibility. One of the district’s mission-critical commitments is community partnerships, resulting in an expansion of relationships and partnerships with parents, patrons, and businesses to ensure greater opportunities for real-world application of learning. District-wide, at all levels, authentic learning utilizing real-world partners is occurring.

The Liberty Public School District provides access to a variety of experiential learning experiences through Northland CAPS (seventy-nine students), Excelsior Springs Career Center (forty-four students), Northland Career Center (twelve students), internships, and job shadowing. The respective programs provide:

- **Northland CAPS**—Digital Media and Design, Global Business and Entrepreneurship, Medicine and Health Care, Technology Solutions, Global Logistics, Engineering and Advanced Manufacturing
- **Excelsior Springs Area Career Center**—Animation and Media, Automotive Technology, Carpentry/Construction Technology, Computer Technology, Electrical, EMT, Firefighter, Health Services Assistant, HVAC
- **Northland Career Center**—Aviation Tech, Agricultural Education, Construction Tech, Culinary, Diesel Tech, Health Sciences, HVAC, Welding, IT Professions, Law Enforcement/Crime Scene Investigation, Marketing Management, Practical Nursing, Teaching Professions
- **Internships**—Educational Intern Program, Internal Internship Program
- **Job-Shadowing** - Automotive, Architecture, Atmospheric Sciences, Broadcasting, Civil Engineering, Cosmetology, Criminal Science, Finance, Forensic Science, Graphic Design, Health Sciences, Hotel Management, Law, Marketing, Museum, Occupational Therapy, Pharmacy, Physical Therapy, Respiratory Therapy, Speech, Pathology, Sports Marketing, Veterinary, Web Design

In an attempt to scale authentic, real-world learning experiences for larger numbers of high school students, a district-wide internship program was established. Scaling internships across two high schools became difficult due to the barriers of high school schedules, transportation,

and required Carnegie units for graduation. (The traditional method of awarding credit in Missouri high schools has been through use of the time-anchored Carnegie-based unit, which establishes 7,830 minutes of student “seat time” during a school year for one unit of credit.) The internship program to date offers an education intern program and internships within internal district job functions, e.g., Liberty School District’s IT department, HVAC systems department, and buildings and grounds.

As a district, they are beginning to study competency-based instruction to create more flexibility within their high school schedules, redefining how the Carnegie unit is achieved and seat-time implications. The district is studying both states that have created multiple ways to achieve high school graduation and states that have gone to competency-based instruction, like New Hampshire, Iowa, and innovative high school models like High Tech High and New Tech High.

Participation in the Northland Teacher Externships has been significant over the last three years. For example, Liberty North High School English and Language Arts teachers developed a scalable, authentic client project experience. The “mega business project,” consisting of 420 juniors, divided into teams and toured sixteen businesses to learn about their work. Each business provided problems for the student teams to solve. The experience met the English and Language Arts standards of persuasive presentations, technical writing, and others.



	Liberty Public School District Credential Output		
KC Rising Industry Sectors	College Credit	Industry-Recognized Certificate	Career Experience
Advanced Manufacturing	NCAPS LPS	NCC LPS	NCAPS NCC LPS
Architecture & Engineering	LPS-Rochester Institute of Technology NCAPS	LPS	NCAPS LPS
Construction & Building Trades	ACC-MO WEST, North Central MO College NCAPS	LPS	NCAPS LPS
Finance & Insurance	NCAPS	No	NCAPS
Information Technology	ACC—Metropolitan Community College (Maple Woods) NCC—Metropolitan Community College MO Western Linn State Tech NCAPS	NCC ACC	NCAPS NCC ACC LPS
Life Sciences	NCAPS LPS	NCC NCAPS	NCAPS NCC ACC
Supply Chain & Logistics	NCAPS	No	NCAPS

NCAP=Northland CAPS, NCC=Northland Career Center, ACC=Excelsior Springs Area Career Center, LPS=Liberty Public Schools

## Independence School District, Jackson County, Missouri

Independence School District, with an enrollment of 14,244 K–12 in 2016–17 and graduation rate of 96.7 percent, has students that identify twenty-nine languages as their primary home languages. The district’s free and reduced population is 73 percent.

In 2013, the Independence School District was invited to partner with Ford Next Generation Learning, the educational arm of the Ford Motor Company Foundation, to develop and implement the career academy concept. Three years later, the Independence School District fully implemented “wall-to-wall academies” in its three high schools. Using the Ford NGL model below, the Independence School District created a strategic plan. In year one, all high schools executed Freshman Academy; in the second year, two academies were implemented, and years three and four saw the full implementation of five academies (2016–17 school year). The district is transforming high schools versus just adding another layer to their high schools.

Five academies are offered in the district’s three high schools (see page 28):

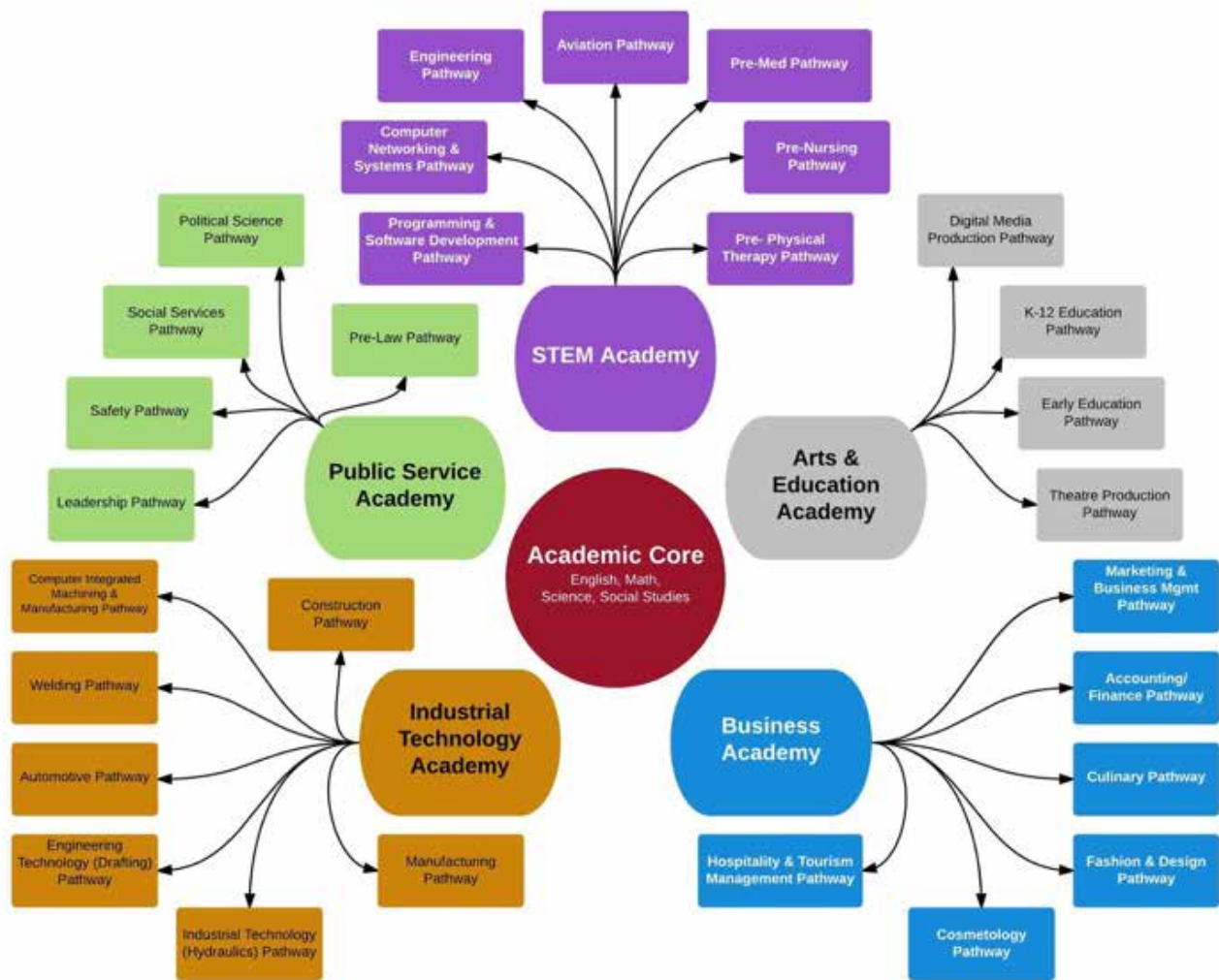
- Public Services Academy
- STEM Academy (Science, Technology, Engineering, Medicine)
- Arts & Education Academy
- Business Academy
- Industrial Technology Academy

### Freshman Academy

All ninth graders participate in the Freshman Academy, which encourages students to take three to five intro courses to help them complete their ‘exit ticket’—the academy selection they will move forward with as tenth graders. Freshman Academy is a year-long course through which all ninth-grade students complete four specific outcomes: 1) participate in a career skills fair, 2) visit a college campus, 3) complete their ten-year plan, and 4) select an academy prior to enrollment as a sophomore. The district allows some flexibility for students who realize they have chosen the wrong academy for their interests and skills.

# The FORD NGL FRAMEWORK





### Academy and Pathway Development

The academies were chosen based on Kansas City economic and workforce indicators. Community and business partners were involved in selecting the five academies. An overall steering committee and advisory committees have strong industry and community leader participation and influence over academy/pathway decisions.

Within each of the academies, multiple pathways meet the following criteria:

- Driven by current workforce development data that indicated high-demand, high-wage work within the Kansas City region.
- Student access to dual credit course work. Each pathway contains multiple dual credit courses. Students have the opportunity to exit high school with at least forty-five hours of dual credit, if they choose.
- Student access to an industry-recognized credential.

Each pathway ends with a credential identified by the industries relevant to the coursework. The industry-recognized credential is nationally portable and aligns to entry-level skills. All thirty-two pathways have access to an industry-recognized credential that allows students to exit high school highly qualified for the workforce.

Note: Existing high school courses that did not meet these criteria were eliminated from the high school course offerings.

Construction trades programming did not exist at all Independence School District high schools. With the leadership of the Carpenters Apprenticeship of Kansas City and the International Brotherhood of Electric Workers, all high schools can participate in a robust, flipping-houses program within the Independence community in partnership with Habitat for Humanity.

In participating students' junior and senior years, academy courses are four blocks out of an eight-block day. Core

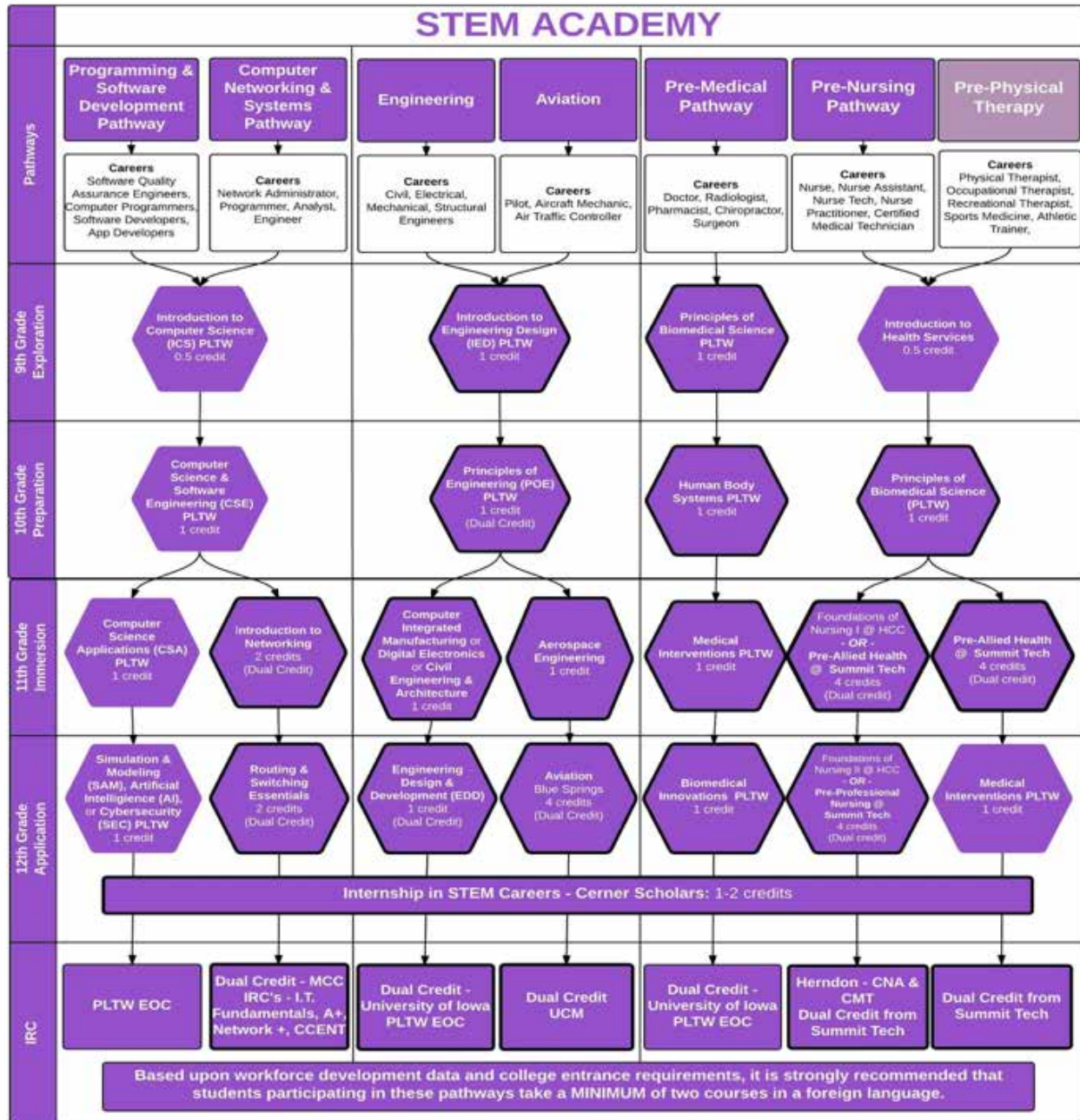
graduation courses are being embedded into one of the blocks to help students achieve all of their core credits (below).

### Teacher Development

Professional development in the career academy model consists of a full week of induction training, including highly effective teaming, project-based learning, and an externship opportunity. During the first three years of implementation,

the academies of the Independence School District were able to train every high school teacher in a week-long professional development experience. Since August 2016, 100 percent of new high school staff members receive academy training in July before their new contracts begin.

The future of professional development is now focused on academy "teams" of teachers that collaborate weekly during contract time to deepen their project-based learning skillset,





as well as improve curriculum alignment with industry. A two-day “Project-Based Learning 2.0” training session is offered to teachers who want to deepen their knowledge and advance the strategy further into their classroom instruction. Each pathway within the five career academies has an advisory panel that meets every other month. Advisory panels are a critical part of academy curriculum work, and will continue to focus each course sequence on workforce development needs.

### Scaling to Industry Partners

Three primary groups of industry volunteers collaborate to monitor and evaluate the academies of the Independence School District. The steering committee, a group of seven industry partners that work with the superintendent, serves two functions. First, its members approve any change, addition, or deletion to pathways prior to submitting changes to the superintendent for Board of Education approval. Second, they evaluate the academies annually using a Baldrige-style rubric with more than seventy metrics, including work placement data that already has shown an increase early in the adoption.

The Industry Council is a group of more than thirty industry partners who plan and implement events. Each of these events brings students and businesses together, enabling the district to scale that exposure. Events include the freshman career exploration event, sophomore field trips, junior job shadows, senior internships, teacher externships, and guest lectures, among others.

Finally, industry partners who participate in advisory panels inform Independence School District teachers about changes in industry needs. Collaboration with industry partners around curriculum assures the pathways within each academy will stay up to date with the changing needs of industry. Teachers know the district is willing to change resources at any time, based upon this process. Each time this occurs, the steering

committee receives the information and considers it carefully before making a recommendation to the district curriculum supervisors.

### Funding

The Independence School District Foundation has provided \$140,000 for the past two years to cover 90 percent of students’ cost for dual college credit. The current superintendent was successful in securing a twenty-four-cent levy increase, which pledges \$100,000 to the academies annually. These funds ensure students do not have to pay for their industry-recognized credential. A student who wants to earn more than one credential only has to pay for half of the cost. District leaders stated that most other costs associated with converting to “wall-to-wall” academies are covered with normal operating funds, because the adoption of the model was a “transformation” rather than an additional “layer” of work added to their comprehensive high schools. The transition to course sequences, or pathways, rather than a traditional elective model has enabled the district to reduce the number of teachers needed for this transformation; therefore, financial sustainability of the academies seems to be under control.

### Next Steps

Student outcomes are at the center of future planning. The numbers of students completing industry-recognized credentials, dual credit, and internships have grown dramatically over the past three years. However, scaling these outcomes to reach long-term goals will take a level of collaboration between education and industry that has rarely existed. The Independence School District is working through the steering committee, industry council and advisory panels to build its capacity to scale. A critical element of success will be its ability to efficiently engage industry partners across the Kansas City metro in preparing tomorrow’s workforce.

	Independence School District Credential Output		
KC Rising Industry Sectors	College Credit	Industry-Recognized Certificate	Career Experience
Advanced Manufacturing	Up to AA degree	NIMS	All
Architecture & Engineering	Up to AA degree	Autodesk and ADAA credential	All
Construction & Building Trades	Six hours	NCCER	All
Finance & Insurance	Nine hours in finance, none in insurance	ASK business credential	All
Information Technology	Up to AA degree	Cisco CCNA, A++, Network+	All
Life Sciences	Biology and Chemistry	None	All
Supply Chain & Logistics	None	None	None

NIMS=National Institute for Metalworking Skills, NCCER=National Center for Construction Education & Research, ASK=Assessment of Skills and Knowledge of Business

## **Summit Technology Academy Campus and Missouri Innovation Campus, Lee's Summit, Missouri**

Summit Technology Academy (STA) is an innovative and advanced experience that prepares high school juniors and seniors for college and high-wage, high-demand, professional careers. STA serves fourteen Missouri school districts, including Lee's Summit School District. Beginning with the 2017–18 school year, Summit Technology Academy Campus and Missouri Innovation Campus are co-located at the new, 136,000-square-ft. facility owned by the Lee's Summit School District.

STA offers coursework in four career pathways: Engineering, Computer Science, Creative Science, and Health Science, blending classroom instruction with real-world, hands-on experiences with more than 200 business and industry partners. Programs follow a national curriculum model used in industry, with all courses offering college-level curriculum and credit. Students can earn three to sixteen college credit hours during their time at STA. Many STA programs also offer an industry-recognized credential. The 2017–18 student enrollment is 516, which includes 289 Lee's Summit high school students. Top five program enrollments are: pre-professional nursing (eighty-seven), pre-allied health academy (seventy-five), network engineering (fifty-five), medical interventions/biomedical innovation (fifty), and software development (forty-five). STA students can participate in two-hour-per-day internships, e.g., Cerner Scholars, internship in STEM careers, or gaining high school credit only.

The Missouri Innovation Campus is a progressive initiative by the University of Central Missouri (UCM) and Metropolitan Community Colleges, as well as numerous business partners, such as Cerner Corporation, DST, Burns & McDonnell, Black & Veatch, UMB Bank, SAIC GEHA, and Kiewit. As a result of successful participation in one of the four MIC programs—Systems Engineering Technology, Design and Drafting/Engineering Technology, Computer Science/Software Development, and Cybersecurity—the student will receive an associate degree from MCC soon after earning a high-school diploma. Bioinformatics will be the newest MIC program, with hopes of securing more female students.

MIC students participate in applied learning experiences through paid internships. Business partners pay \$2,000 per intern to MIC and also pay the student for their hours as an intern. UMC uses the money from the business partners to pay MCC for the associate degree credit hours. The student is on track to earn a bachelor's degree from UCM two years after graduating from high school making a \$60,000 to \$62,000 starting salary right out of college. The selection of students to be a part of the MIC encompasses numerous steps and is quite rigorous, but it starts by applying to Summit Technology

Academy. Interested students must meet the following requirements:

- 3.0 unweighted GPA, 95 percent attendance, and appropriate ACT or Accuplacer score
- Meet minimum requirements for the appropriate programs at Summit Technology Academy
- Commit to providing their own transportation to internship sites and college classes
- Commit to completing high school graduation requirements before their senior year, except for the fourth-year English credit and elective credit

In June 2012, MIC welcomed in seventeen students, with eleven of the seventeen receiving their bachelor's degree in Systems Engineering in 2016 from the University of Central Missouri. The second MIC cohort graduated six students in Systems and Design and Drafting in 2017. All MIC graduates have been hired full time by one of the MIC business partners, usually by the partner where the student interned for three years. Currently, there are eighty-eight students in the MIC program.

Generally, students need to be willing to leave their home high school after their junior year, because they spend their senior year taking college courses and STA program courses, and they also must be willing to dedicate their summers to full-time internships. During the school year, students are at their internships all day Tuesday and Thursday. MIC program leaders state that there is about a 30 percent student attrition rate, with about thirty

	Summit Technology Academy and MIC Credential Output		
KC Rising Industry Sectors	College Credit	Industry-Recognized Certificate	Career Experience
Advanced Manufacturing	Yes	Yes	Yes
Architecture & Engineering	Yes		Yes
Construction & Building Trades			
Finance & Insurance			
Information Technology	Yes (STA and MIC-Associates Degree)	Yes (STA only)	Yes (STA and MIC)
Life Sciences	Yes		Yes
Supply Chain & Logistics			



## **Kansas City Public Schools and Manual Career and Technical Center, Jackson County, Missouri**

Kansas City Public Schools is the twelfth-largest school system in Missouri, and is diverse ethnically, culturally, and linguistically. The district serves approximately 15,500 students in pre-kindergarten to grade twelve, with more than fifty languages spoken by the students. Ethnicity of students is 57 percent African American/Black, 28 percent Hispanic, 9 percent White, and 6 percent Asian/Other. The free and reduced population is 92 percent.

Kansas City Public Schools, under the leadership of Superintendent Dr. Mark Bedell, launched the 2018–2023 strategic plan, a community-wide commitment to student learning and success. As outlined in the plan, one of the school district’s Big Five Goals emphasizes readiness for college, career, and life, committing that every student will graduate from high school with a postsecondary plan and the experiences and preparation to execute that plan successfully. Success metrics of this goal are 1) an increased percentage of students with attendance of at least 90 percent, 2) an increased percentage of students who complete courses, activities, and experiences based on their college and career plans, and 3) Increased four-year high school graduation rates and decreased four-year high school dropout rates. Throughout the district’s secondary schools, there is a commitment to successful post-high school transitions, including Early College Academy (students receive both their high school diplomas and associate degrees in a partnership with Metropolitan Community College), and certificates and trade or industry licensing in employment-ready fields.

A 2016 Master Plan documented the establishment of college and career pathways within each high school, setting aside a budget of \$350,000 for pathways and expanded electives. The Master Plan calls for the pathways to be aligned with the fastest-growing careers in the Kansas City metro area as defined by MARC 2016 data:

- Information Technology: Computer Science, Cybersecurity, Networking
- Health Science: Project Lead the Way, Biomedical Science
- Finance & Insurance: Entrepreneurship, Management Finance, Business Administration
- Advanced Manufacturing: Automated Manufacturing (MT1 Credential), Construction Technology

During the 2017–18 school year, school communities will develop the pathway plans, implementing the plans in the 2018–19 school year. Additionally, all high schools are expected to expand electives and higher-level courses within the same timeline.

Manual Career and Technical Center (MCTC) is a shared-time attendance center for Kansas City Public Schools high school students and charter school students. The students generally attend MCTC during their eleventh- or twelfth-grade years. The Center offers seven career and technical programs: Culinary Arts, Computer Science, Construction Technology, Health Science, Automotive Technology, Automotive Collision and Repair, and Pre-Engineering. Successful completion of a designated program allows MCTC students to be eligible for articulated or dual college credit and access to employment placement services. Programs located within the high schools are: Fashion Design, TV Broadcasting, Business, Biomedical Science, and the Innovation Technology Center.

Students who are interested in attending MCTC must complete applications at their local schools and meet eligibility requirements. Once accepted, students will be transported to MCTC from their local schools to attend half-day class sessions. Students are accepted if they meet the requirements and space is available. Students need to be on track for graduation and meet age, math and science score, attendance and GPA requirements (based on the program). Approximately 360 students applied for MCTC, but during the 2017–18 school year 216 students will attend.

Rashawn Caruthers has served as the director of MCTC, but her role has expanded to encompass all CTE for K–12. She

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**Kansas City Public Schools is the twelfth-largest school system in Missouri, and is diverse ethnically, culturally, and linguistically. The district serves approximately 15,500 students in pre-kindergarten to grade twelve, with more than fifty languages spoken by the students.**

is leading an effort to design a clear scope and sequence of CTE programming for students K–12. Next steps will include establishment of a Construction Career Academy and programs that include educator preparation, civil engineering and architecture, agriculture, K–12 STEM, robotics at every school, and other CTE programming.

students who do not take CTE classes, the career-oriented approach to learning has not yet managed to shake the old stigma that it is a pathway to blue-collar work for students who are not college material.

Business partners actively support the programming at MCTC; for example, David Disney and Steven Dunn, executive leaders from JE Dunn Construction, partnered with the district and community leaders to build the Construction program. They are working to bring an apprenticeship program online in the 2018–19 school year. Business partners that provide support are Truman Medical Center (Health Science program), Kansas City Fire Department (EMT and Firefighter program), UMKC (Education program), and Henderson (Pre-Engineering program). Small automotive companies provide opportunities for the Auto Technology and Collision Program. MCTC is seeking a dedicated business partner for the Computer Science program.

When asked what the barriers are to scaling the CTE programs, district leaders say the main barrier continues to be an awareness and advocacy for the benefits of career and technical education from the Kansas City Public Schools high school administrators, teachers, students, and parents. Even though national data reports that students in career and technical education are happier with their high school experiences, and more likely to finish high school than

	Manual Career and Technical Center Credential Output		
KC Rising Industry Sectors	College Credit	Industry-Recognized Certificate	Career Experience
Advanced Manufacturing			
Architecture & Engineering	Yes		Yes
Construction & Building Trades		Yes	Yes
Finance & Insurance			
Information Technology		Yes	Yes
Life Sciences		Yes, CNA	
Supply Chain & Logistics			

## Excelsior Springs School District, Clay County, Missouri

The Excelsior Springs School District had an enrollment of 2,872 K–12 students in the 2016–17 school year, with a graduation rate of 95 percent, free and reduced at 51.3 percent, and attendance at 85 percent. Students' ethnicity is: 84.5 percent White, 5.4 percent Multiracial, 4.7 percent Hispanic, 4.5 percent African American/Black. The district includes three elementary schools, one middle school, one high school, and the Excelsior Springs Area Career Center, which serves eight school districts.

Teachers and administrators at Excelsior Springs High School have committed to disrupt the current education system and challenge the status quo to reimagine the high school experience. They are transforming the traditional high school model by creatively utilizing time (flex-mod schedule) and fluid use of space (teachers take the learning to the students, not just a classroom), and embarking on building integrated, interdisciplinary courses that support authentic, project-based, personalized learning to harness the power of collaboration and student responsibility. Sharing the video "Most Likely to Succeed" with staff, students, and parents during the 2016–17 school year jump-started the process.

The redesign, called "Reimagine HS," utilizes the support of the New Tech Network, a leading design partner for comprehensive school change. New Tech Network schools take the student learning experience to the next level to impact academic achievement, foster positive life outcomes, and fully prepare students for the next level of learning in an unknown world. New Tech Network provides Excelsior Springs High School with access to an international network of more than 200 innovative schools. (Source: *New Tech Network: Annual Outcomes Report, 2016*).

Administrators and teachers are working with New Tech Network consultants to create systemic school change and design new interdisciplinary, team-taught coursework. Additionally, the staff has received training in project-based learning methodologies through the Buck Institute. PACE School Network was utilized to develop a flex-mod schedule and then automate to a master high school schedule.

Outcomes of this comprehensive high school transformation include:

- Increased student achievement in state scores
- Increased parent engagement as measured by attendance at conferences, Back to School events, etc.
- Increased parent satisfaction survey data representing perception of education quality
- Increased graduation and attendance rates
- Increased ACT scores

- Increased percentage of students enrolling in trade schools, two- and four-year colleges

Using the current Graduation Handbook: Requirements for Students in Missouri Public Schools, the Excelsior Springs "Reimagine HS" model has received permission from the Missouri Department of Elementary and Secondary Education to do the following:

- Embed core academic or state-required content into courses and/or CTE courses/programs.
- Utilize proficiency-based methods to demonstrate mastery of competencies in each course to award graduation credit.

These waivers will allow high school students to have autonomy over their time, place, and pace of learning.

## KC STEM Alliance

KC STEM Alliance was founded in 2011 to connect the many STEM education and workforce initiatives in the Kansas City region. The alliance supports leading in-school and out-of-school STEM programs, increasing access to STEM activities in underserved communities, and invites community collaboration by leading regional STEM initiatives.

In-school support is provided through Project Lead The Way®, a nationally recognized K–12 STEM curriculum available in thirty-four Kansas City-area public school districts and nine private or charter schools. With hands-on, project-based learning in engineering, biomedical science and computer science, Project Lead The Way (PLTW) turns classrooms into spaces where content is learned in the context of STEM careers. KC STEM Alliance supports PLTW by providing professional development, connecting industry mentors with students and teachers and organizing student competitions and scholarships. In the 2016–17 school year, 59,088 students participated in PLTW coursework. Through a new elementary program called LAUNCH, 32,141 of those students represented K-5.

High school students who participate in PLTW coursework do not earn industry-recognized credentials or certifications, but many of these students earn college scholarships and/or college credit through affiliated universities. It is interesting to note the large scale of student and teacher impact across the region, but there is a lack of market value assets for students after graduation, which could be an area of further study. The Shawnee Mission School District does provide an additional designation—Project Lead the Way Scholar—on students' diplomas.

Out-of-school support is provided through *FIRST*® Robotics, which offers mentor-based after-school programs, starting with *FIRST* LEGO League Jr. and building to the high school-level *FIRST* Robotics Competition. KC STEM Alliance manages, staffs and covers all costs associated with Greater Kansas City regional *FIRST* events and competitions. More than 3,000 students participated in *FIRST* Robotics across the Kansas City area. Nationwide, more than 75 percent of *FIRST* Robotics alumni are in STEM fields as students or professionals. (Source: *FIRST*, 2015 Alumni Survey)

## PREP-KC

For ten years, PREP-KC has been a leader in addressing one of Kansas City's most long-standing and difficult challenges: improving the education of Kansas City's urban students in order for young people to complete high school and be fully prepared for college and/or employment. The PREP-KC team works with six bi-state urban school districts (Center, Grandview, Hickman Mills, Independence, Kansas City Public Schools, and Kansas City Kansas Public Schools), twelve high schools and many middle and elementary schools (public and charter), which serve approximately 60,000 mostly low-income students.

### Market Value Assets

Since its launch ten years ago, PREP-KC has focused on “changing the way high school looks.” It helps schools and districts reorganize their teaching/learning practices to provide authentic, real-world learning experiences for students to prepare **all** of them to enter postsecondary education and/or high-quality employment. An important element of this change is a focus on market value assets—the credentials, early-college courses, and real-world learning experiences that ensure students graduate from high school with the assets future employers are seeking and that our regional workforce needs. Clearly, taking this view of K–12 education has implications throughout the entire P-16 pipeline, and requires K–12 and postsecondary leaders, along with employers, to think differently about their roles in creating a system that delivers these new and more-powerful learning experiences.

### Wall-to-Wall Career Academies

A critical component of attaining this goal is a redesign of “high school” to deliver a combination of rigorous academics while consistently demonstrating real-world applications of those concepts. This redesign moves teachers and students into schedules to support career academy pathways—the opportunity for students and teachers to create long-standing cohorts focused on general career themes, such as health sciences and health care, business and finance, and engineering and architecture, that are matched to the region's current and projected workforce needs. This restructuring is a multi-year process requiring strong support from top district and school leaders, engagement with parents and community stakeholders, new relationships with employers, and expanded outreach from higher education. (See Appendix F for PREP-KC's 7 Traits of Highly Effective Career Pathways.)

The data from a five-year pilot of PREP-KC's career academies (cohorts of 456 students in ten urban high schools) reviewed by a third-party evaluator showed that the

impact on urban students' trajectory was vivid: 100 percent of these students graduated from high school (versus the national average of 75 percent from low-income students), and 74 percent had a confirmed postsecondary enrollment (versus the national average of 36 percent for first-generation college-goers). Additionally, these students were more likely to enroll in programs that matched their high school career themes and to stay in the region for postsecondary education.

This data, along with other studies in the field, confirms that PREP-KC's support for urban high schools is creating a powerful platform for up-stream innovation in workforce preparation and will significantly expand the "opportunity pipeline" for urban students. The next challenge: How to move from cohorts of students and volunteer-teachers receiving significant support from PREP-KC to wall-to-wall career academies for all students led by teachers and principals.

### Industry-Informed Instruction™

Industry-Informed Instruction™ (III) was designed by PREP-KC to address this challenge. With many of their partner high schools now organized into career pathways (career academies, pathways, small learning communities, or houses), the next gap is the opportunity for all teachers (not a handful of volunteers from a faculty) to get up-close and real-world knowledge of the needs and expectations of employers. To move in this direction, III was designed with a "soft launch" during the spring semester 2017 and will continue to be piloted during the 2017–18 school year. The design brings together three key components:

- A core content teacher with responsibilities for teaching a key concept
- An industry professional who regularly uses that concept
- The application of a Common Sector Competency (a "soft skill" employers are seeking)

PREP-KC designed a toolbox© (documents and processes) to assist teachers and principals in implementing III, and is responsible for recruiting "matching" professionals from the database of workforce volunteers. So far, the feedback has been very positive, with teachers and industry volunteers excited about the opportunity to connect and create real-world context for students. Closing this knowledge and application gap, especially for low-income students, is critical to their opportunity to access postsecondary education and workforce opportunities.

### "Up-stream" to High School Career Academies

For most of the past 10 years, PREP-KC and its partner districts and schools have recognized that instructional expectations and practices will need to change if **all** students (versus a "selected" group of high-performing students) in urban schools are to receive rigorous college and workforce-preparation. K–12 math benchmarking initially was launched in middle and high schools to support math teachers and

instructional coaches, ensuring that all students were prepared to pass a rigorous algebra course (often considered a "gatekeeper" to advanced math) by eighth grade. Currently, PREP-KC is working with high school leaders to expand the percentage of graduating seniors whose transcripts show at least one advanced math course beyond Algebra II—a correlate to completing a postsecondary program.

### Prepare for Scale

Regionally, PREP-KC sees K–12 education as the first segment of a seamless human capital pipeline that drives our region's economy and creates an ecosystem wired for innovation. When education reform is viewed in these terms, boundaries between sectors blur, students access new opportunities that prepare them for college *and* career success, and the Kansas City region builds a workforce that can compete globally.

The opportunity for urban young people, especially the 60,000 in PREP-KC's bi-state partnerships, to successfully compete for high-quality employment, as well as postsecondary opportunities, must become part of the DNA of our region's educational innovation if the Kansas City region is to thrive economically and become a community where the chances of becoming well-educated and well-employed are not predicated by zip code or family income.

Several important regional initiatives are underway to help meet this challenge, including the framework launched by KC Rising, MARC's Common Sector Competencies study, the Kauffman Foundation's launch of KC Scholars, the Talent to Industry Exchange studies, and additional initiatives such as GradForce KC.

### Data-Informed Investments

PREP-KC has continuously maintained a data dashboard to track the impact of its partnerships and investments. The dashboard not only tracks publicly available outcome data (high school graduation rates, state assessment scores, and attendance), but also works with districts and schools to measure up-stream indicators. As PREP-KC is now moving to support at-scale implementation (such as wall-to-wall career academies), the dashboard is being redesigned to reflect new metrics of success.

## Hire KC Youth

Hire KC Youth, formerly known as Bright Futures, is the signature youth employment program from Kansas City, Missouri, Mayor Sly James. In 2014, Mayor James and a sixteen-person Summer Youth Employment Commission, comprised of leading industry professionals, gave the program a new name and scope with the hope that it would inspire industry to hire Kansas City youth in much larger numbers. Historically, the city employed eighty to 100 youth each summer across a number of city agencies, including Parks & Recreation. Industry and community leaders asked how the city could scale the city internship program and double its impact in 2017?

In summer 2017, a pilot was launched expanding upon Mayor James' vision, taking Hire KC Youth from a city hall program to a citywide initiative. Hire KC Youth is now managed by KC Social Innovation Center, in partnership with the Full Employment Council. Hire KC Youth aligns, develops, and organizes the region's experiential learning, employment and work-based experiences to support opportunity equity and illuminate career pathways so that all youth can learn and grow into promising futures.

### 2017 Short-term Results:

#### Youth Outcomes

- 1,300 applicants
- 85 interns placed
- More than 400 youth connected to jobs

#### System Outcomes

- Website mentor credentials, digital badges
- More than 600 digital learning experiences logged for the *Job Ready* digital badge series
- *At Work* digital badge series

#### Business/Industry/Regional Outcomes

- More than 480 youth connected to paid work in summer 2017
- Business engagement and support
- School engagement and resources

### Long-term Results:

#### Youth Outcomes

- 10,000 applicants
- 1,500 internships
- More than 5,000 youth connected to jobs

#### System Outcomes

- Regional youth job board
- Robust resources for employers, students, and schools
- Comprehensive pathways and credentials
- Communications and resource hub

#### Business/Industry/Regional Outcomes

- Empowered small to mid-sized employers
- Talent-to-industry labs for curriculum and skill development
- Regional approach to coordinated collaboration between education, industry, and community

Hire KC Youth's ultimate impact will be the creation of a regional playlist for career development, so that all area youth have the opportunity to engage in meaningful, productive work-based experiences by age eighteen, and to have agency to chart their future pathways by age twenty-four.

## Section Two:

# Kansas City Business Partners— Best Practices and Examples

With a heightened interest in hands-on, experiential work-based learning, the compelling question is, how do business-education partnerships really work? A new study by the U.S. Chamber of Commerce focuses on connections between employers and higher education, but the lessons learned offer insight to businesses and educators who are interested in K–12 school partnerships, too. (Source: *Business Education Network, spring 2006, U.S. Chamber of Commerce*)

- **Focus on the return on investment.** Business partners are more likely to engage long term and expand the partnership if they bring clear objectives to the partnership and their objectives are met. Company leaders will connect the experience to a positive ROI and look for more avenues to provide learning experiences for students.
- **Be transparent:** Educators and business partners are held accountable to their roles in the business-education partnership. Both parties should articulate clear goals and responsibilities, communicating frequently to modify if needed.
- **Be intentional about competencies and link experiences to career pathways:** Students can easily translate their experiences into skills that help them in the workforce.
- **Involve small companies.** They may not be able to offer a multitude of opportunities, but their engagement is valuable.

Since 2008, business and industry partners in the Kansas City region have become more and more involved in creating authentic learning experiences for K–12 students and teachers, especially in the support of high school students. Educational leaders across the Kansas City region demonstrate a commitment to involving business and community leaders in the development and implementation of authentic industry-inspired learning experiences.

Successful workforce development partnerships require the collaboration of education, business, and community, providing students with industry-driven, immersive authentic learning experiences focused on high-demand, high-skill jobs. Scaling these partnerships is difficult, but not impossible, and the result is high school students graduating with the market value assets and skills to succeed in the competitive college environment and global workforce. Business partners across the region are looking for a regional systemic, streamlined process that would result in an “easy button” for business-education partnerships.

With so many businesses to partner with, educators often wonder about the best place to start in the development of business-education partnerships. The graphic below depicts a simple three-step process to identify the best place to start.

**Step One:** Identify the economic development trends in your community and/or region. Meet with local and state chambers of commerce to understand the trends for current and future economic development.

**Step Two:** Determine the businesses in your community and/or region that have significant workforce development needs currently and into the near future. Examine local employers to see who is having a hard time filling positions due to lack of workforce talent and/or the bandwidth of a talent pipeline.

**Step Three:** Identify the businesses that fall within the intersection of high-demand, high-skill jobs due to economic demands (Circle 1 below) but have workforce development needs that are not being met (Circle 2). These businesses are excellent prospects for the initial development of business-education partnerships. (Source: *The Story of CAPS: How a Midwestern Program Broke Through Barriers and Brought the Real World, Relevance and Fun Back Into Education,* Blue Valley School District, 2013)

### Where to start in your community?



### Scaling Engagement

In K–12, business partner engagement comes in many kinds of partnerships between employer and educator partners. One common thread is integrating work-based learning experiences into in-classroom and out-of-classroom experiences, but these types of partnerships are limited to too few students. To positively impact more students, a greater number of options and touch points are needed over the course of a student’s education. The U.S. Chamber of Commerce Foundation’s publication, *Career Readiness: A Business-Led Approach for Supporting K–12 Schools*,



September 2016) states, “In many cases, these experiences are place-based and include internships, cooperatives, and—more recently—youth apprenticeships. However, they can also be project-based or simulated experiences that take place on the school premises.”

Business partners want to provide intensive workplace-based experiences, such as high-quality apprenticeships and internships, but have found this type of involvement difficult to scale up. A potential strategy that could support scaling could be through greater use of “serious games,” also known as immersive learning simulations, game-based learning, or gaming simulations. Serious games enable users to apply their knowledge and skills in complex, real-world scenarios. The serious-games industry is still in a startup mode, but it has been growing rapidly through advances in virtual reality hardware and artificial intelligence. (Source: Mourshed, M., D. Farrell, and D. Barton. (2012), “Education to employment: Designing a system that works”, McKinsey & Company.

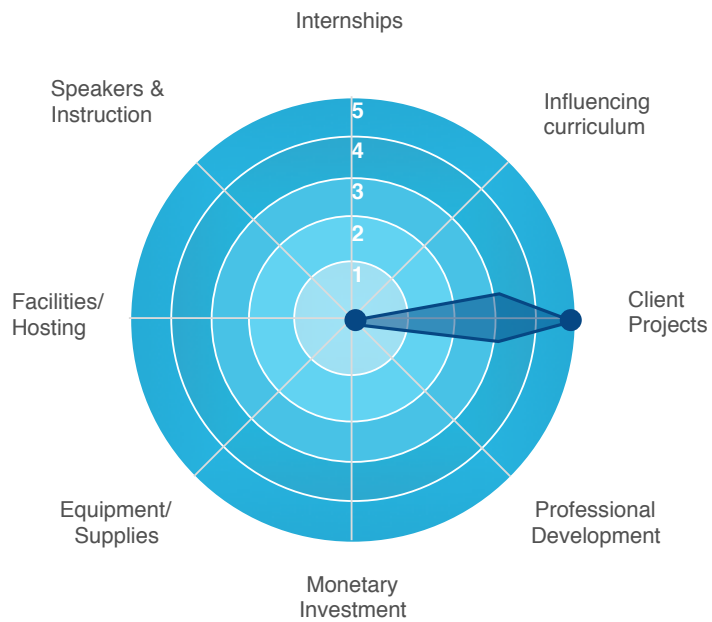
There are many levels of involvement, from minimal time and employee effort to more significant time and employee commitment. Some Kansas City regional programs track their business partner involvement by using the business

partner dashboard (spider chart) below. The business partner dashboard is a graphical method of displaying the types of business partner engagement and the magnitude of involvement. Over time, nurturing and growing hundreds of unique business partner relationships becomes challenging and overwhelming. Therefore, the business partner dashboard provides a database of information that can be used like a customer relationship management system (below).

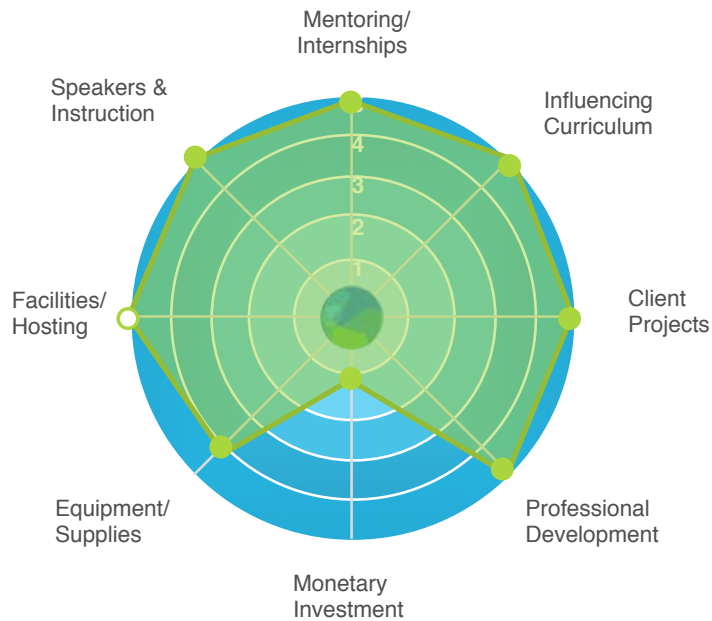
Business-education partnerships can start very small and grow or just maintain one specific area of engagement that the business partner values. For example, 48 Barriers—a company that provides barriers for traffic control and is a Northland CAPS business partner—provides authentic client projects for students to research and propose valid solutions to a business problem. For example, a business partner problem proposed to the student teams to solve could be, “How do we market our product more effectively utilizing social media? How might we measure the effectiveness, and what would be the first few steps we need to take?” Holland 1916, on the other hand, has many areas of involvement. The Northland CAPS program embraces each business partner equally regardless of the level of involvement (see page 41).

## Business Partnership Dashboard





**CASE STUDIES**



## Example of Business Partnerships: Holland 1916 Inc.

Holland 1916 Inc. strives to build a diverse, sustainable portfolio of companies that delights customers, improves the lives of their employees, generates returns for shareholders, and makes a significant difference in the community. One of the portfolio companies, Holland Nameplate, has served global customers for more than 100 years as an ISO 9001 certified manufacturer of aluminum and stainless steel and etched and screen-printed nameplates and panels. One claim that differentiates Holland Nameplate is that it is actively engaged in building its community.

Over the years, Holland 1916 has demonstrated significant investment in the educational change process of K–12. From hosting daily classroom space for Northland CAPS engineering and advanced manufacturing students and teachers, to providing authentic business-based projects, participating in teacher externships, hiring high school and college summer interns, and impacting 900 elementary students and teachers with contextual math instruction, Holland 1916 is a role model for all business leaders. Mike Stradinger, CEO of Holland 1916, suggests that the speed of the educational planning process needs to better align with business, e.g., iterations in education happen only once a year, whereas business completes twelve iterations of change in the same time period. Educators need a directional strategic plan, with an option to have a reset button every sixty days. This process is similar to the Northland CAPS rapid prototyping curriculum development process, where curriculum and student experiences change as fast as the business environment through iterative cycles of input from teachers, business partners, and students.

To scale business involvement in the educational change process of K–12, Stradinger recommends that the education system needs to create an ‘easy button’ for business partners to get involved by standardizing three to four ways businesses can plug in. One size does not fit all, so business partners need a menu of options and exposure to model business partner programs. Most businesses are followers and need to know what is in it for them. He suggests that businesses take a look at their own internal training departments and determine what might be transferable to the K–12 system. Stradinger mentioned the Missouri Training Incentives, capped at \$10,000 a year to train employees, and questioned if this could be used to train educators, too. There may be a potential for a lean and quality credential in the manufacturing industry and credentials on three basic manufacturing jobs; printing, chemistry, and fabrication. Stradinger also suggested the best thing that the Kauffman Foundation could do is to help train companies on other levels of involvement, including how to do internships.

Stradinger launched Holland 1916’s 100-year celebration with a challenge to all employees. Every Tuesday throughout the 2016–17 school year, the employees welcomed between fifty

and eighty fourth graders to the plant operations for ninety minutes of contextual math instruction taught by Holland 1916 employees. Small groups of students and teachers were escorted throughout the plant, learning how math is used at each of the stations. Over the course of a year, more than 900 students and teachers from four Missouri and Kansas school districts, (Liberty, North Kansas City, Kansas City Public Schools, and Kansas City Kansas Public Schools) benefited through this hands-on, industry-driven math instruction. Early anecdotal feedback from students, parents, and teachers suggests that the Holland 1916 partnership with schools is a success. Comments included:

- “You guys inspired me to do my best in math so then I can get a good job so I can make a lot of money so then I can pay my bills and also to put food on the table so I can’t be starving.” – student
- “We always talk about how they will need to use math in the future, but on this visit, they actually got to see it in action!” – teacher
- “I’m that mom that has been to every one of her daughter’s field trips. This is by far the most relevant and engaging one I’ve attended.” – parent

The unexpected, but delightful, outcome was the impact the students and teachers made on the Holland 1916 employees. The partnership created a sense of pride among employees for the community service they were providing and helped the company retain millennial talent, which has a strong passion for giving back to the community.

During the 2017–18 school year, Holland 1916 is leading a scaleup of the fourth grader prototype experience by partnering with the North Kansas City School District, North Kansas City Business Council, and other manufacturing businesses to execute ninety-minute tours of contextual math instruction for all middle school students. In partnership with curriculum owners in the North Kansas City School District, business partners will develop hands-on experiences at the business sites that align with the middle school curriculum, focusing on algebra, chemistry, and physics.

## Example of Business Partnerships: Cerner Corporation

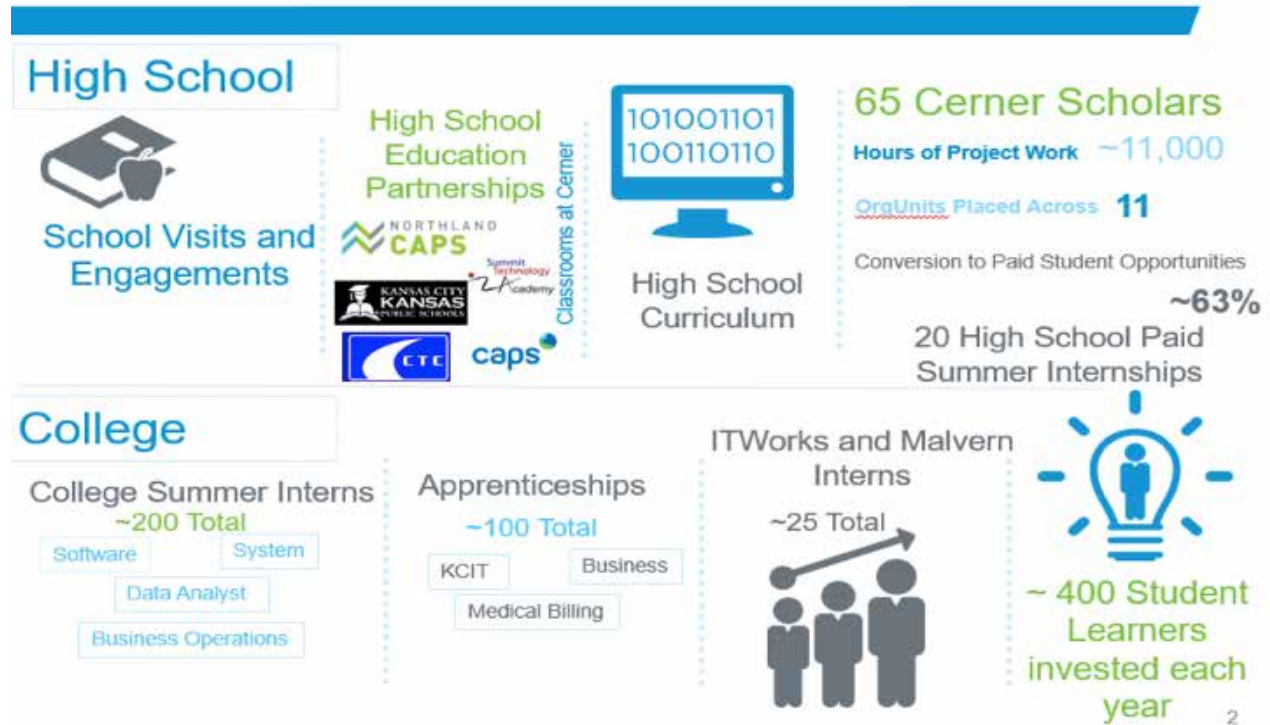
Cerner Corporation is the world's largest publicly traded health information technology company providing leading-edge solutions and services for health care organizations worldwide. Cerner's mission is to contribute to the systemic improvement of health care delivery and the health of communities. Cerner is also Kansas City's most comprehensive business partner positively supporting education across the region.

Cerner invests in student learning and immersion programs to impact student preparation for the 21st Century workforce.

The company has developed programs that help students become able to learn; to sort, analyze, share, discuss, critique and create information that can be applied to solve problems—all while working collaboratively with others. Working to address these challenges now and in the future, Cerner has connected with local education partners to develop programs that will grow Cerner's pipeline and provide students real, relevant education connected to the 21st Century workforce. Yearly, Cerner hosts around 400 students with the goal of providing them a better understanding of Cerner and the type of workforce needed (below).

Cerner defines business-education partnerships in three distinct areas: advocacy, exploration, and providers of professional-based learning.

# Developing Cerner's Future Workforce



## Advocacy

Cerner is committed to transforming Kansas City's regional vision for education, workforce, and economic development by partnering with education and industry partners. The graphic below captures Cerner's education and industry partnerships across the Kansas City area.

# STEM Education

We believe in building 21st century skills through real-world student learning for tomorrow's workforce.



# Regional Workforce Development



Through Mid-America Regional Council we engage in the human capital work stream

**COMMON SECTOR COMPETENCIES**

FOR THE *Kansas City* REGION

A blueprint for workplace competencies addressing multiple industry sectors, customized to the needs of the Greater Kansas City region



Education Asset Inventory- Building strong connections between education and industry requires a clear understanding of currently available educational credentials.



Brings business leaders from specific sectors together with educational institutions to ensure that curriculum and degree programs meet employer needs



A \$79M investment from the Kauffman Foundation awards college scholarships — 2,000 scholarships per year by 2020



## Exploration

Cerner exposes students to career opportunities within the STEM fields and Cerner. Below are just a few examples of how Cerner allows students to explore:

- **Cerner Open Houses:** Quarterly, Cerner opens its doors for students, parents, and educators to learn more about Cerner, the industry, and the skills needed.
- **STEM Educators Series:** The series introduces a common language for educators and industry partners to develop the human capital needed to increase the pace of innovation and sustain inclusive growth within STEM fields.
- **Hour of Code/Server Scavenger Hunt for Girls in Tech:** Students from elementary to high school perform an hour of code/server scavenger hunt at Cerner. Last year, girls from the Kansas City Kansas School District, Kansas City Public Schools, and Hickman Mills School District participated.
- **Influencing High School Curriculum:** Cerner partners with local education systems to ensure industry- and project-based learning is at the forefront of their curriculum. Cerner associates are members of advisory boards and partnered with Project Lead the Way computer science and engineering K-12 curriculum to build the programming. Cerner provides key education partners an opportunity to participate in entry-level associate training.
- **Career Mentoring: At local schools, Cerner associates** mentor students who have an interest in STEM or health care-related fields, which includes career jumping events, speaking engagements at local schools, etc.

## Professional Based Learning

Cerner provides opportunities for students across the Kansas City region to experience professional-based learning through the following programs.

- **Summer Intern Program—250+ College Students, More Than Twenty High School Students**
  - Interns include high school and college students (college software interns, college system interns, college business interns, high school technical interns). Interns come from around the United States and are placed on teams performing project work alongside full-time Cerner associates. In summer 2018, Cerner will support approximately 250 college interns and twenty high school interns from the Cerner Scholars program. The goal is to transition interns to full-time Cerner associates. Often, when this goal is achieved, the new associates join the same teams on which they served as interns.

- **Apprentice Program—100+ Students**
  - Students attend local four-year universities or community colleges and work part-time at Cerner year-round. Students are embedded into Cerner teams as contributing members in technical, business, and medical billing. As of August 2017, 252 apprentices have transitioned to full-time positions at Cerner.
- **Site Internships—More Than 10 Students**
  - Cerner partners with colleges to place interns at local ITWorks client sites.
- **Cerner Scholar Experience—More Than Sixty-five Students**
  - High school students work at Cerner two-and-a-half hours a day, four times a week. The Cerner Scholars experience provides students a deeper learning experience related to their interest in computing and technology. The goal is for Cerner Scholars to transition to a paid summer internship/apprenticeship. The current placement rate is 66 percent.
  - Cerner also partners with the following forward-thinking, innovative career preparatory programs, which serve multiple school districts.
    - Northland CAPS (program co-located at Cerner work location)
    - KCK Tech Impact Program (program co-located at Cerner work location)
    - Summit Technology Academy
    - Blue Valley CAPS
    - Fort Osage Career and Technology Center
- **Missouri Innovation Campus Intern Program—Seven Students**
  - Cerner partners with the Missouri Innovation Campus to host students for their internship experiences.



## Section Three:

# National and Regional Promising Practices

## Arkansas Conversion Charter Schools

Executive Director Scott Smith leads the Arkansas Public School Resource Center, whose mission is to support the improvement of public education by providing technical support and advocacy services on behalf of public schools, with a special emphasis on charter schools and rural districts. Arkansas Public School Resource Center is a service-oriented, nonprofit membership organization that provides support, technical assistance, advocacy, and training to benefit charter schools and rural school districts across the state. It provides access to information and technical assistance to schools in four main areas: legal services, financial analysis and management, technology, and teaching and learning.

Charter schools are public schools that are responsive to students' needs and are held accountable for improved student achievement. Charters are granted for an initial term of five years. A conversion charter may be renewed for periods ranging from one to five years. Open-enrollment charters may be renewed for periods ranging from one to twenty years. At the end of the term, the Arkansas State Board of Education may renew the school's contract. Public charter schools are accountable to the state's charter authorizer. Arkansas' charter law establishes the Charter Authorizing Panel as the primary charter authorizer. The State Board of Education may exercise a right of review over a Panel decision, and may decide to hold a hearing at which it may leave the Panel's decision in place or overturn it.

In Arkansas, there are two basic types of public charter schools. A **conversion school** is a public school converted to a public charter school. Conversion schools can only draw students from within the school district's boundaries and the superintendent and school board must be supportive of the conversion charter application prior to it being submitted to the Arkansas State Board of Education. An **open-enrollment school** is a public charter school run by a governmental entity, an institution of higher learning, or a tax-exempt, non-sectarian organization. Open-enrollment schools can draw students from across district boundaries and from anywhere within the state.

For the purpose of this report, five conversion charter applications and waivers were examined: Academies of West Memphis, Hot Springs World Class High School, Pea Ridge Manufacturing and Business Academy, Siloam Springs High School, and South Side Charter High School. A common mission runs through all of the conversion charters that were examined; that is, students have a choice of multiple pathways—traditional format, blended personalized learning,

increased industry certifications, and concurrent credit opportunities—in a personalized learning environment that equips each student with college and career readiness. Through a teacher-facilitated, student-driven, blended learning environment rich in digital as well as project-based learning opportunities, students have the option of navigating a flexible-schedule design that promotes college and career readiness.

Students receive career exposure through industry professionals delivering industry certification elective courses in areas of high demand, high-skill jobs, such as manufacturing, health, computer technology, and logistics. In addition, an expansion of concurrent credit opportunities leading to an associate degree are facilitated through such entities as North Arkansas College, Virtual Arkansas, Arkansas Tech, etc. Students pursue and achieve a dual high school and college associate degree and/or technical certification through partnership with colleges, universities, trade schools, and local industry experts.

Students choose from the three options below:

- A) **High school diploma**—students graduate with the traditional high school diplomas having all the core requirements for high school completion.
- B) **High school diploma with—**
  - **Certificate of Proficiency**—demonstrating mastery of course-required skills in specified performance standards in the areas or disciplines that issue certifications. The program of study may be a stand-alone program or part of a technical certificate or associate degree curriculum. Examples include A+ Comptia computer technician certification, certified production technician, and logistics technician.
  - **Technical Certificate**—a program of collegiate-level study that recognizes the completion of a specified level of competency in an occupational field. This program of study may be a stand-alone program or a part of an associate degree curriculum.
- C) **High school diploma with associate degree** (concurrent credit option)

## Waivers for Conversion Charters

To accomplish student choice of multiple pathways, conversion charter schools have received approval for a variety of waivers that address common barriers in the traditional high school system. Waivers include:

- 1) Use of time—the Department of Education’s mandatory attendance for Grades 9–12 Rules is waived. When students have the opportunity to move at their own pace through competency-based learning, based on their pace of learning and their level of expertise, they may master standards more quickly, thus completing coursework quicker than the mandated 30 hours per week.
- 2) Teacher certification and salary (waived so industry experts can become teachers).
- 3) Requirement to have a licensed library media specialist.
- 4) Principal’s role (supervision and hiring of teachers without certification).
- 5) Class size and teaching load. Conversion charter schools may have classes of more than thirty students and teaching loads of 180 students versus 150.
- 6) Unit of credit and clock hours for a unit of credit (seat time waived)
- 7) Gifted and talented “pullout” programs. Gifted and talented students receive enhanced educational offerings of sufficient rigor to meet their needs within the context of the charter school’s curriculum plan.
- 8) Coursework duplication (coursework standards are embedded in other courses)

### Personalized Learning

Personalized blended learning opportunities give students control over the time, pace, place, and path of their learning, which frees up time for industry, college and career coursework, and experiences. For example, if a student wants to master all standards and objectives in the algebra course in three months versus the traditional year-long course, the student has the opportunity to do so, due to the blended learning, online coursework and waiver in seat time. Conversion charters are utilizing a variety of online high school curricula to support their personalized learning strategies. Examples include iSchool High, New Tech, KIPP, etc.

Arkansas officials commented they are looking at the personalized learning platform developed by Summit Public Schools. Summit Learning is a nonprofit organization that runs charter schools in California and Washington and offers students a “personalized learning plan”—essentially software that allows students to learn at their own pace. In 2015, Facebook announced a partnership with the network of charter schools to build educational software that will be offered free to public schools.

### Funding

Upon review of a few of the conversion charter applications, generally, funding is coming from a reallocation of existing operating funds from the individual schools. There is evidence of additional funds from private and economic development funds, including the Walton Foundation, economic

development entities (Boone County Economic Development Corporation), and individual school district foundation grants.

### Workforce Development Centers

In its 2017 Regular Session, the Arkansas General Assembly adopted Act 509 (the Workforce Development Authority Act), which authorized the creation of workplace development centers to enhance the availability, accessibility, and quality of vocational and technical education in the state. The Act requires at least four sponsors to create a workforce development center authority. The sponsors must include one or more school districts and one or more vocational-technical schools, and may include one or more cities or counties. The idea for workforce development centers came from several Northwest Arkansas school districts seeking to involve and leverage several sectors of education and local government for regional support and resources that would create high-quality technical education opportunities for their region. Under Act 509, the local partners are permitted to pledge local revenue, including a portion of local property taxes to support bond issues or other forms of financing for the creation and operation of a workforce development center.

In summary, at the core of their mission, the Arkansas conversion charter schools believe in personalized learning within a flexible environment that is tied to workforce development. The goal is to meet each student’s individual learning needs by creating a unique, self-paced, blended learning environment that is project-based and career-focused. To accomplish this, specific waivers will allow industry-level professionals to be teachers, providing high-level content instruction. The seat-time waiver, alongside competency-based learning, allows students to move at their own pace, accelerating their learning in areas of competence while spending more time on concepts that are harder for them to master. This allows students more opportunities to participate in industry-level internships and complete college coursework during high school.

### Youth CareerConnect: U.S. Department of Labor Grant

#### Youth CareerConnect Grant

In 2014, President Obama committed to a comprehensive effort to rethink the high school experience for America’s youth, challenging schools to scale up innovative models that personalize teaching and learning so that students stay on track to graduate with the knowledge and skills they’ll need to succeed in college and in careers. As part of achieving the President’s vision to prepare all students for success in postsecondary education and in a competitive

workforce, the U.S. Department of Labor, in collaboration with the Department of Education, established the Youth CareerConnect grant. Other funding has been provided by the Rockefeller Foundation, IBM Foundation, Irvine Foundation, the National Academy Foundation and other entities.

The Youth CareerConnect grant program (see page 49) was designed to encourage school districts, institutions of higher education, the workforce investment system, and their partners to scale up evidence-based high school models that transform the high school experience through:

- Integrated academic and career-focused learning
- Work-based learning and exposure to the world of work
- Robust employer engagement
- Individualized career and academic counseling
- Integration of postsecondary education and training

The Department of Labor is using revenues from the H-1B visa program to fund approximately twenty-four Youth CareerConnect awards of \$107 million to local partnerships of local education agencies, workforce investment boards, institutions of higher education and employer partners as they redesign the high school experience. All grantees demonstrate a strong public/private partnership and must include, at minimum, a local education agency, a local workforce investment system entity, an employer, and an institution of higher education. At minimum, applicants also will be required to provide a match of 25 percent of the grant award. Awards began in 2014 for program implementation to align with the 2014–15 school year and will expire in 2018. Following are two examples of the twenty-four Youth CareerConnect grant recipients, Westside CAPS and the Denver Public Schools.

### **Westside High School and Westside Center for Advanced Professional Studies (CAPS)**

The Westside Community Schools are located on the west side of Omaha, Nebraska. Westside High School is a 9–12 school with approximately 2,000 students, and strives to meet the unique needs of all learners, offering more than forty advanced placement and honors courses, a 1:1 laptop program, more than sixty extracurricular clubs, and modular scheduling. Instruction is delivered through large groups, small groups, laboratories, and independent study where students can meet with teachers during the school day.

Westside Community Schools received its Youth CareerConnect grant from the U.S. Departments of Labor and Education in April 2014. The grants are intended to focus on careers being filled by workers from other countries. With the help of its \$2.6 million grant, Westside began increasing its programming, working to expand its curriculum, enhance academic and career advising, and establish partnerships with businesses. The Westside CAPS program represents the collaboration of education, business, and community, providing students with a unique, immersive experience,

resulting in highly skilled, adaptable, global innovators and leaders. Westside CAPS is a member of the CAPS Network started by the Blue Valley School District.

Westside CAPS began in the 2015–16 school year. For the 2017–18 school year, it will serve 600 students through health sciences, STEM and emerging technologies. Ultimately, the district wants to model the program after the Nebraska Career Education model, which has six career strands and sixteen clusters. The program starts with taking foundational classes during freshman and sophomore year. During junior year, a student has the choice to transition into the work experience, participate in dual enrollment, becoming a CNA, or staying on campus and performing more foundational work; for example, in the advanced health sciences or sports medicine. During senior year, students are off campus for a real-life experience. Each day, students spend two-and-a-half hours either in the morning or the afternoon off campus performing dual enrollment coursework, working at a hospital, participating in internships, or pursuing other courses. The senior courses are project-based rather than a direct delivery of content to students.

Higher education partners are supportive of the Westside CAPS program:

University of Nebraska at Omaha provides:

- Dual enrollment program
- Early entry program

Metropolitan Community College provides:

- College Now!
- Dual enrollment program

Nebraska Methodist College provides:

- CNA certification
- Medical terminology certification
- Phlebotomy certification

Westside CAPS leadership states that 80 percent of the students who have received industry-recognized credentials are using them in a work environment. The Westside School District federal grant pays for the cost of industry-recognized credentials for students. Westside CAPS has hired a career advisor from industry, rather than a high school counselor, to coach students in their postsecondary plans and career interests.

### **Denver Public Schools**

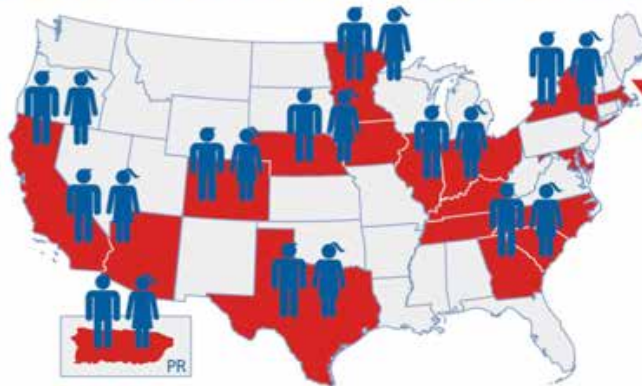
Denver Public Schools (DPS) serves more than 92,000 students, with 183 schools, including more than thirty-eight high schools (public, public charter, technical), with the following demographics: 57 percent Latino, 21 percent White, 14 percent African American, 3 percent Asian, 3 percent two or more races, 1 percent American Indian. The district's



# YOUTH CAREERCONNECT HIGHLIGHTS

As of 09/30/2016

**YOUTH CAREERCONNECT (YCC)** provides high school students with education and training that combines a rigorous academic and technical curriculum, focused on in-demand industries or careers, and work-based learning opportunities. This combination increases participants' employability in those same industries and prepares them for post-secondary education.



**20,100**  
PARTICIPANTS ENROLLED IN THE PROGRAM

## PARTICIPANT SUMMARY INFORMATION

Grade at Time of Enrollment



56%

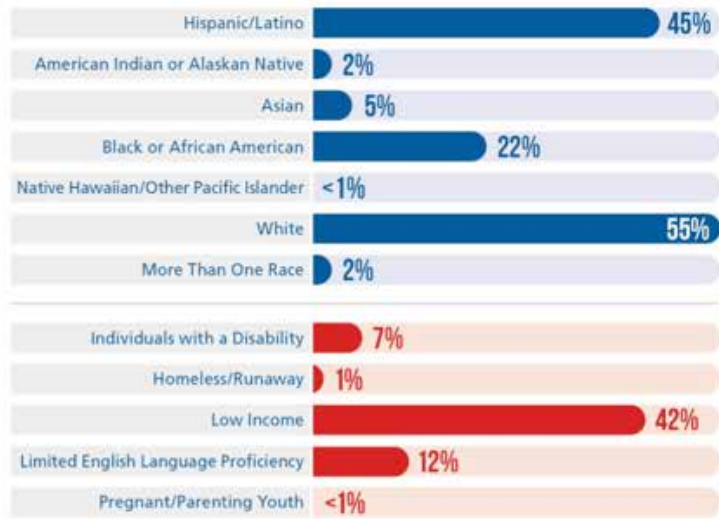


Male

44%



Female



## SHORT-TERM PERFORMANCE INDICATORS

document success and progress towards long-term performance goals.

94.6%

ATTENDANCE RATE

66.5%

YEARLY PROGRAM RETENTION RATE

95.9%

WORK READINESS ATTAINMENT RATE

STUDENTS WHO EARNED AN INDUSTRY-RECOGNIZED CREDENTIAL



## PROGRAM SERVICES

provide students with challenging and relevant classroom and work-based learning opportunities.



Prepared by High Impact Partners (HIP), Youth CareerConnect Technical Assistance Contractor



graduation rate is 68 percent, with a 72 percent free and reduced population.

One of the five goals in the district's strategic plan—the Denver Plan 2020—is to ensure students graduate college- and career-ready and are prepared for their futures. DPS provides a variety of supports and services for students and their families, not just on their path to graduation, but to ensure their success in a globally connected, knowledge-based economy. This plan is called DPS CareerConnect, an initiative aimed at building a highly skilled workforce equipped to meet the changing demands of Colorado's high-growth industries. More than 18,000 students participate in DPS CareerConnect, part of the DPS Office of Postsecondary Readiness, and more than 500 students will complete CareerLaunch internships, 100-120 hour internships that include a project that contributes to the business partner's bottom line (Appendix C), throughout the 2017–18 school year.

Colorado ranks in the top five states for degree holders, yet one in five students does not graduate from high school. Only one in four Colorado natives will earn a college degree. At the same time, many companies are struggling to find qualified workers in advanced industries, especially those in STEM fields. Historically, DPS CareerConnect students are 30 percent more likely to graduate than their peers. Program growth is aligned with high-opportunity industries. Students receive industry exposure and tangible connections to college and career opportunities within these fields. By scaling the program elements that have led to these outcomes, DPS hopes to close the opportunity gap for students and reach the graduation goals included in the Denver Plan 2020.

The Denver Public School District also received nearly \$7 million from the Youth CareerConnect grant to create and expand STEM pathways in eight schools. Students participate in paid internships or job shadowing and complete a capstone project that demonstrates how they applied the skills and knowledge learned in the classroom to their workplace-based learning experience. DPS also works with workforce investment partners to provide career fairs and summer industry academies.

Even though much of the work has just begun, the district has built DPS CareerConnect to scale K–12 throughout their 183 schools. The most impressive work to date is the way they have built multiple entry points for community and business partners to be involved in the expansive “work-based learning” opportunities. The following link (<http://www.dpscareerconnect.org/welcome/resources-for-schools/company-partner-resources/>) provides an overview of resources for the community and business partners. Upon review, we just might agree that this is the type of “easy button” we need for our Kansas City business partners.

Starting with the Class of 2021, students will need to complete three key requirements to earn diplomas:

- Planning for the future through the Individual Career and Academic Plan
- Twenty-four units of course credit in required areas
- Competency demonstrations in English and math through college and career assessments (ACT/SAT), a professional portfolio of authentic work to show mastery of the standards, or by attaining an approved industry-recognized certification

This is the beginning of the district's transformation to a new type of high school credential for all. The new approach is less about the time spent in a classroom and more about students demonstrating they are truly prepared for the world after high school. Not all of this is a reality today, but the district believes Denver and the entire state of Colorado can achieve this vision of all students graduating high school, college- and career-ready, building an unmatched talent pipeline for Colorado's booming economy.

Additional Youth CareerConnect grant recipients producing positive results are:

- The **Los Angeles Unified School District**, which received a \$7 million grant to build out new career academies focusing on health care, biotechnology, and other technology-related industries in six high schools. The program is backed by funding from the Irvine Foundation, The United Way of Greater Los Angeles, the workforce investment system, and the Los Angeles Chamber of Commerce will help provide work-based learning opportunities to students, including 10,000 student summer internships.
- The **New York City Department of Education**, which received nearly \$7 million to fund two new early college high schools, similar to IBM PTECH models, that offer associate degrees while students are still in high school. A diesel mechanic registered apprenticeship has expanded, and a dental hygienist apprenticeship was created in partnership with the Consortium for Worker Education.
- **Clinton, South Carolina**, which received a \$6.8 million grant to transform three high schools to prepare students for skilled jobs in computer science and engineering. Each high school transformed its instructional calendar to expand individual learning time, worked with corporate partners to design project-based learning experiences modeled on real-world challenges, and aligned curricula with Piedmont Technical College and Midlands Technical College so students earn postsecondary credits and credentials before graduating.
- The **Metropolitan School District of Pike Township** in Indianapolis, which received a \$7 million grant to expand its career academies in advanced manufacturing and logistics, working in partnership with Conexus, an advanced manufacturing collaborative, and EmployIndy to provide work-based learning opportunities.

- **Jobs for the Future**, which received a \$4.9 million grant to take ninth graders through industry credentials and an associate degree in high-demand fields. The grant funds pathways in three regions across Massachusetts, focusing on information technology, advanced manufacturing, and health care.

Commonwealth Corporation. Pennsylvania used legislation to establish the state's industry partnership program, which provides competitive grant programs.

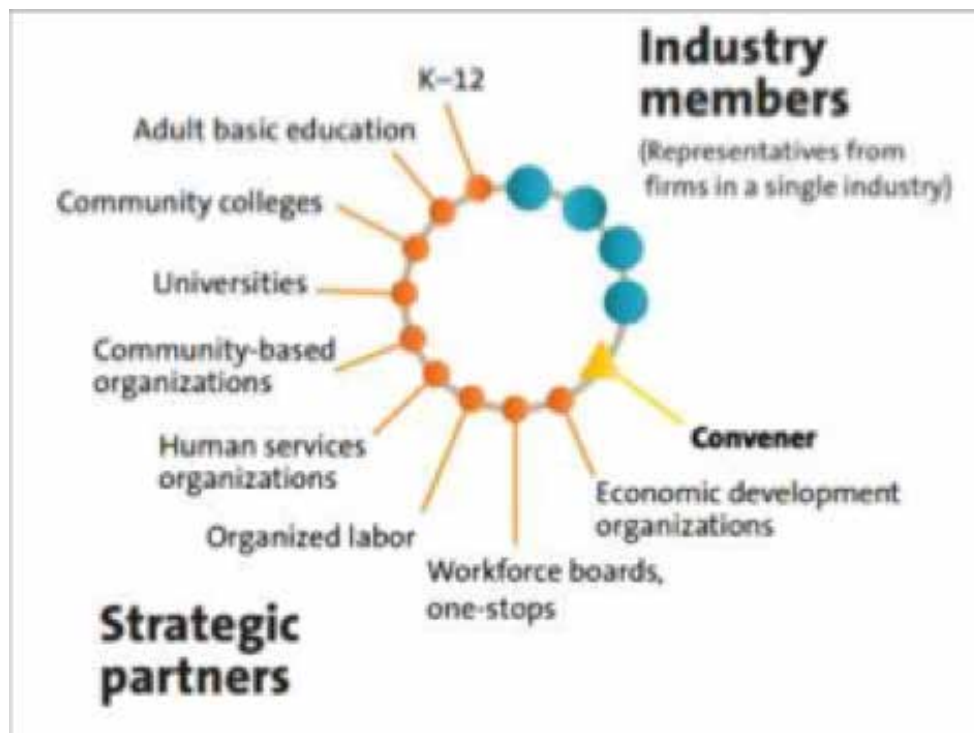
Indiana created the Indiana Career Council during the 2013 General Assembly, chaired by then-Governor Mike Pence. The Career Council includes state agency heads and representatives from business, industry, and community organizations. State-sector strategies and regional partnerships have proven effective at accomplishing workforce development strategies that demonstrate a measurable return on investment. Sector partnerships are more responsive to industry demand (as compared to traditional job-matching and training services) because they:

- 1) Are market-driven, solving a workforce issue versus being initiative-oriented
- 2) Address workforce needs interdependently, not independently, across systems, e.g., across K-12, higher education, and industry
- 3) Work with industries collectively, not as individual businesses

The strategic partners of a sector partnership consist of a convener, industry partners, and system partners (below).

## State and Regional Sector Partnerships –Workforce Development Strategy

Maryland, Massachusetts, and Pennsylvania are just some examples of states that use statutes and state funds to support regional sector partnerships. Maryland statute established the Employment Advancement Right Now (EARN) to provide competitive grants to support the creation and maintenance of industry-led, sector-driven partnerships. Massachusetts created the Workforce Competitiveness Trust Fund to support regional sector partnerships through competitive grants administered by the quasi-public



Source: Groves, Garrett, and Lindsey Woolsey, "State Sector Strategies Coming of Age: Implications for State Workforce Policymakers," Copyright National Governors Association. Reproduced by permission of the National Governors Association. Further reproduction prohibited.



## Example of Life Science (Orthopedic Industry) Sector Partnership

**Convener:** OrthoWorx, Inc.

**Region/Location:** Warsaw, Indiana

Formed in 2009 with initial funding from Lilly Endowment Inc., OrthoWorx is a community-based initiative that works strategically and collaboratively with the orthopedic industry, other life sciences partners and regional stakeholders to ensure the Warsaw region continues to reap the social and economic benefits from its position as **The Orthopedic Capital of the World®**.

OrthoWorx is focused on supporting the orthopedic cluster in Warsaw, Indiana, and the surrounding area. The cluster represents nearly 45 percent of Kosciusko County's employment—nearly 13,000 total jobs (including direct and indirect employment) and unequalled concentration of medical device industry jobs. The organization works to be on the leading edge of education and talent development; to cultivate regional pride; and to enhance the future of orthopedics through innovation.

OrthoWorx Industry Partners:

- BioCrossroads, City of Warsaw, DePuy Synthes Joint Reconstruction, Kosciusko County Community Foundation, Kosciusko County, Lake City Bank, Medtronic, Northeast Indiana Regional Partnership, OrthoPediatrics, Paragon Medical, Zimmer Biomet Holdings

OrthoWorx Education Partners:

- Warsaw Community Schools (K–12), Grace College, Ball State University, Indiana University, IPFW, Ivy Tech Community College, Manchester University, Purdue University, University of Notre Dame

OrthoWorx claims that the percentage of passing science I-STEP scores (state tests) at Warsaw Community Schools is at 92 percent versus 62 percent when the district started the STEM Elementary Academy, supported by OrthoWorx. The district is performing the following projects to keep the sector partnerships strong:

- STEM and experiential education in grades K–12
- Workforce development for secondary and technical school
- Think Ortho campaign to engage college students with programs and internships
- Professional development and curriculum for co-ops, interns, and young professionals
- Engagement with academic partners through faculty projects and workshops

## Example of Robotics and Advanced Manufacturing—Sector Partnership

Robotics and Advanced Manufacturing Technology Education Collaborative (RAMTEC) (see images page 53) is located in Marion, Ohio, and is the nation's only provider of robotics and advanced manufacturing industry certifications under one roof. Through an innovative collaboration between Tri-Rivers Career Center, Marion Technical College and the Ohio State University at Marion, RAMTEC became a reality. RAMTEC has partnered with real-world manufacturing facilities to identify the needs of industry, becoming one of the leading accreditors of both high school and adult robotics manufacturing licensure.

Increasing sophistication in technology and product manufacturing means the skill level of entry-level employees becomes more rigorous every day. This means that being prepared requires more than a basic understanding; it requires an immersion in industry experience that can only be gained by learning from those who do. Many times, high school and technical community colleges cannot afford to keep up to date with the new technical skills and the equipment needed to provide hands-on training. RAMTEC's highly qualified instructors are strongly connected to industry leaders, fostering an education filled with the most up-to-date and relevant practices. Coupled with the opportunity to gain several recognized certifications, RAMTEC graduates enter the workforce with strong knowledge and advanced skills.

High school programs offered at RAMTEC are advanced machining, engineering technologies, and welding. High school students must be on track to graduate to be admitted to the two-year program. There are some recommended courses, but there are no other requirements to be admitted. **(Note: Their entrance criteria are very similar to Northland CAPS).** Junior and senior year are flexible, with 150 minutes at RAMTEC on the Tri-Rivers Campus. Students may choose to take their academics at their home high schools or at Tri-Rivers Campus. Students design and program robots to compete in the SkillsUSA Robotics and Automation, National Robotics Challenge, and Vex Robotics competitions, with a capstone project that provides them the opportunity to program industrial robots. Students graduate with industry-recognized certifications for completing Lincoln Robotic Welding, Yaskawa Motoman Robotics, FANUC Robotics, Allen Bradley Automation, Mitsubishi Automation, Parker Hydraulics, and Project Lead the Way.

Career opportunities upon high school graduation include robotics technician, mechanical engineering technician, manufacturing technician, architectural technician, or maintenance technician. If the student chooses to go on to postsecondary two-year or four-year degrees, his or her career opportunities include mechanical engineer, electrical engineer, civil engineer, robot engineer, or architectural engineer.

In 2014, the RAMTEC Statewide Advanced Manufacturing STEM/Career Technical Education Consortium, led by Tri-Rivers Career Center, received \$14.99 million through Ohio's Straight A Fund. The Straight A Fund allowed Tri-Rivers to partner with eight additional career centers to expand and continue RAMTEC's vision to address the skills gap by preparing high school and adult students with advanced manufacturing and engineering skills.

RAMTEC is an example of transformative solutions that involved multiple education providers: K-12, Marion Technical College, Ohio University, certification partners, 21st Century

training partners, and industry partners within robotics and advanced manufacturing technologies. Such collaborations solve the skill gap at a sector level; by splitting costs among multiple stakeholders (educators, employers, and trainees), investment is reduced for everyone—an incentive for increased participation. Agreements such as non-poaching deals also can boost employers' willingness to collaborate, even in a competitive environment. (Note: The Magna International Inc./ LMV Automotive Systems manufacturing facility in Liberty, Missouri, is an example of this type of sector collaboration with Northland CAPS, even though they are in the very early stages.)



## South Carolina—Apprenticeships

Several years ago, South Carolina had a problem: a shortage of skilled workers and no way to train young people for the workforce. At a time when apprenticeship programs were in decline in the United States, the state started a program called Apprenticeship Carolina™.

Today, South Carolina offers a comprehensive workforce solution custom-designed to meet employers' needs through internationally renowned programs—readySC™ and Apprenticeship Carolina—along with a robust technical college system. Apprenticeship Carolina is a division of the South Carolina Technical College System and works to ensure all employers in South Carolina have access to the information and technical assistance they need to create demand-driven registered apprenticeship programs. At no cost to the employer, apprenticeship consultants are available to guide companies through the registered apprenticeship development process, from initial information to full recognition in the national Registered Apprenticeship System.

Apprenticeships are an 'earn while you learn' training model that combines structured on-the-job training, job-related education, and a scalable wage progression. In 2007, only ninety South Carolina companies had apprenticeship programs, and there were only 777 apprentices. Today, Apprenticeship Carolina has serviced nearly 18,177 apprentices in the following targeted industry clusters: advanced manufacturing, construction technologies, information technology, energy, tourism, health care, and transportation/distribution/logistics.

South Carolina's high school students have the opportunity to participate in a youth apprenticeship program. The program combines high school curriculum and career and technology training with critical on-the-job training at a local business. Students earn paychecks through part-time work while earning national credentials within high-demand occupations.

Employers create recruitment pipelines, decrease costly turnover, and have the opportunity to influence the training of future employees. In addition, a registered program makes the business eligible to receive a \$1,000 per-apprentice South Carolina state income tax credit.

Page 55 shows the process of the Youth Apprenticeship Program, resulting in high school students leaving with a diploma, technical college dual credit, a Department of Labor credential, and other applicable credentials.

## Township High School District 214 and Redefine Ready! National Campaign

Township High School District 214 is the second-largest high school district in Illinois, serving more than 12,000 students from eight communities, grades nine through twelve, with six comprehensive high schools and four specialized learning programs, offering more than 600 academic courses and 140 co-curricular opportunities. Students have diverse backgrounds, with more than seventy-seven languages spoken at ho. Schools range from 11.9 percent to 70.8 percent free and reduced status.

High School District 214, led by a visionary superintendent, Dr. David R. Schuler, is committed to the vision of college ready, career ready, and life ready. Its Career Pathways program provides all students with rigorous academic courses, access to early college credits and industry certification, and personalized and career-specific learning experiences. The district believes high school graduation is not an endpoint, that K–12 is just a part of the cradle-to-careers pipeline, and that their nationally unique career pathways program leads a student to the next step, whether it be enrolling in college, entering the military, or going straight into the workforce.

The career pathways program guarantees that all students choose one of the sixteen nationally recognized career clusters by the end of their sophomore years. Students receive hands-on workplace learning experiences, such as internships, that enable them to explore their career interests while still in high school. Students in District 214 graduate with a diploma-plus: external experiences, early college credits, and career credentials. It begins by asking students what they want to do with the rest of their lives, instead of counselors, parents, or students asking, "What do you need to graduate?"

Beginning this effort in 2007, the District 214 now works closely with more than 900 business partners, who drive and enhance teaching and learning, offer internships to students, and work in classrooms with students as speakers and mentors. Career pathways stay on the cutting edge due to the daily contact with industry partners, who keep teachers and students up to date on trends and demands to ensure student success. These partnerships have led to the creation of in-school, industry-standard health care labs and CNA training, college certifications before high school graduation; state- of-the-art manufacturing laboratories; and a first-of-its-kind nanotechnology laboratory filled with equipment typically found in research institutions. Educators truly seem eager to receive guidance from advisory boards comprised of professionals in various industries, not just to go through the motions to check off the requirement of meeting with advisory boards.

District 214 has developed deep higher education partnerships to provide crucial early college credits. Harper College, National Louis University, and Northeastern Illinois University

# How Does It Work?

## Identify Partners

Education partners and/or Apprenticeship Carolina™ identifies business partners and occupations of interest



## Meetings

Meetings with business are held to determine OJT, JRE, wage schedule, and apprentice selection process



## Qualified Candidates

Education partner advises students/parents of opportunity and identifies qualified candidates



## Applications

Employer ready to hire youth apprentices and contacts education partner to collect applications



## Interview

Employer interviews and hires student for youth apprenticeship



## Training

Student begins OJT and JRE (JRE can be technical college dual credit courses)



## Graduate

Student graduates with high school diploma, DOL credential, and other applicable credentials



## Career Skills

Youth apprenticeship completers can continue with adult apprenticeship, be hired full time with business, or have skills for a successful career



**Partnership = Success**



Visit [www.apprenticeshipcarolina.com](http://www.apprenticeshipcarolina.com) for more information!

803.896.5287 • 111 Executive Center Drive, Columbia SC 29210



partner to provide no-debt, low-cost college opportunities for students pursuing a variety of specific credentials.

### College-Ready Indicators

Students are college ready if they meet either the academic or standardized testing benchmarks listed below.

GPA 2.8 out of 4.0 and one or more of the following benchmarks:

- Advanced placement exam (three or more)
- Advanced placement course (A, B, or C)
- Dual credit college English and/or math (A, B, or C)
- College developmental/remedial English and/or math (A, B, or C)
- Algebra II (A, B, or C)
- International Baccalaureate exam (four or more)
- College Readiness Placement Assessment (standardized test benchmarks minimum score)
- SAT Exam: Math (530) | Reading and Writing (480)
- ACT Exam: English (18) | Reading (22) Science (23) | Math (22)

### Additional Factors that Contribute to College Success:

Earning As, Bs, and Cs; Free Application for Federal Student

Aid completion; enrollment in the Career Pathway course sequence; college academic advising; participation in college-bound bridge programs; senior year math class; completion of a math class after Algebra II.

### Career-Ready Indicators

Students are career ready if they have identified a career interest and meet two of the behavioral and experiential benchmarks listed below.

- 90 percent attendance
- Twenty-five hours of community service
- Workplace learning experience
- Industry-recognized credential
- Dual-credit career pathway course
- Two or more organized co-curricular activities

In addition, students entering the military upon graduation must meet the passing scores on the Armed Services Vocational Aptitude Battery for each branch of the military.

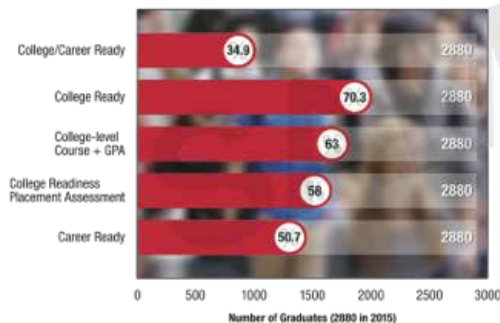
Below is a Redefining Ready! report card with sample data that demonstrates the percentage of students that are college and career ready, college ready or career ready:



## Redefining Ready! Report Card District XXX College and Career Readiness 2015

**Redefining Ready!** is a new multi-metric, research-based approach to determining what it means to be college ready, career ready, and life ready.

College/Career Indicators: Percentage of Graduates in 2015 Academic Year



### College Ready Indicators

<b>College/Career Ready</b>	<b>34.9%</b>
<b>College Ready</b>	<b>70.3%</b>
<b>College Level Courses + GPA</b>	<b>63.0%</b>
■ Advanced Placement Exam (3+)	44.2%
■ Advanced Placement Course (A, B or C)	57.6%
■ Dual Credit College English and/or Math (A, B or C)	0.3%
■ College Developmental/Remedial English and/or Math (A, B or C)	1.8%
■ Algebra II (A, B or C)	60.9%
■ GPA 2.8+	64.1%
<b>College Readiness Placement Assessment</b>	<b>58.0%</b>
■ ACT Exam: English (18)   Reading (22)   Science (23)   Math (22)	47.3%
■ SAT Exam: Math (530)   Reading and Writing (480)	0.0%
■ Harper College-level Requirements	57.8%

### Career Ready Indicators

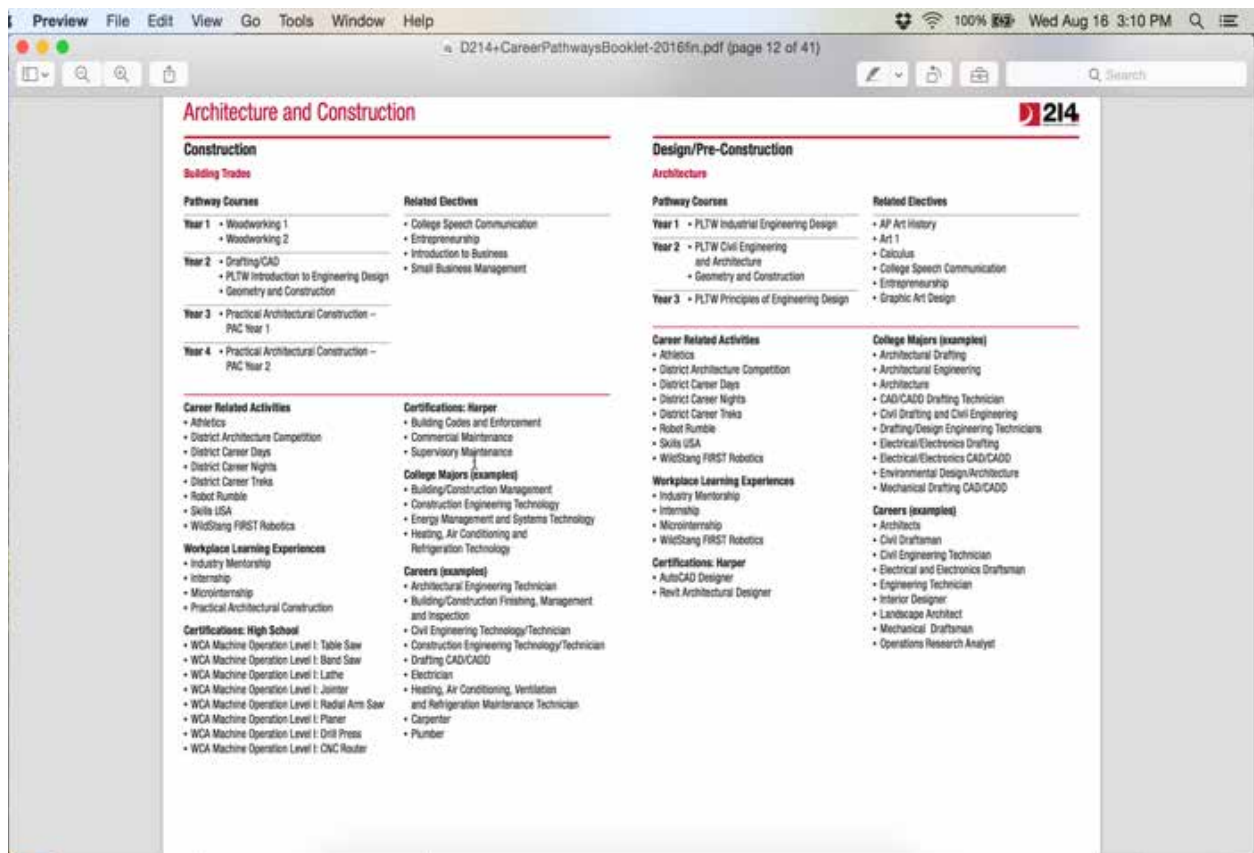
<b>Career Ready</b>	<b>50.7%</b>
■ 90% Attendance	91.1%
■ 25 hours of Community Service	4.9%
■ Workplace Learning Experience	6.6%
■ Industry Credential	13.3%
■ Dual Credit Career Pathway Course	9.1%
■ Two or more organized Co-Curricular Activities	29.4%

Sample Data

District 214 has aligned with the national Redefining Ready! campaign, a multi-metric approach initiated by the American Association of School Administrators (AASA)–The School Superintendents Association, which measures whether students are college ready, career ready, and life ready. In 2015–16, Dan Domenech, AASA's executive director, and Dr. David R. Schuler, the 2015–16 AASA president and superintendent of High School District 214, initiated the Redefining Ready! campaign and have been leading the charge nationally. The Consortium for School Networking, the National Association of Secondary School Principals, Phi Delta Kappa International, and the National Superintendents Roundtable have endorsed the initiative. The campaign has gained traction and now has hundreds of supporters, including Tom Vander Ark, author of *Getting Smart: How Digital Learning is Changing the World*. In April 2017, a cohort made up of more than thirty school districts from around the

nation came together to network and learn how to implement Redefining Ready! Within their own school districts. The research supporting Redefining Ready! Can be found at [www.aasa.org](http://www.aasa.org) or [www.RedefiningReady.org](http://www.RedefiningReady.org).

Finally, Township High School District 214 has developed a career pathways booklet, which aligns curriculum, extra-curricular opportunities, and external career learning experiences to the sixteen nationally recognized career clusters. All D214 students use the guide as a roadmap to begin self-identifying and preparing for their postsecondary goals. Below is a screen shot of architecture and construction pathways, articulating years one, two, three, and four career-related activities, workplace learning experiences, and certifications: high school or Harper College, college majors, and careers examples.





## Section Four:

# Barriers and Headwinds

It is clear that scaling high quality, market-driven CTE programming throughout the nine-county Kansas City region remains a challenge for education, business, and community leaders. We know that, by 2020, more than 60 percent of all jobs in this country will require college or postsecondary training of some sort, and only 50 percent of those jobs will require a four-year degree. The needs of the job market require that students continue to pursue formal education after high school to obtain the skills and credentials necessary to access jobs with middle- to upper-class wages. All students will need to be prepared for postsecondary education, whether it is degree-bearing or credential-bearing in a different way. A high school diploma is not enough.

Students who leave high school with just a diploma have a significant disadvantage compared to their peers who leave with a diploma plus market value assets, like industry-recognized credentials or dual college credit toward a two- or four-year degree. We know that students who leave high school with a high school diploma plus market value assets are more likely to successfully navigate their journey from school to employment without getting lost along the way. Students who acquire market value assets, typically through participation in CTE programming, are more likely to enroll and complete either degree- or non-degree-bearing postsecondary education or training. Market value assets make further education and training, and ultimately a job, more affordable and more attainable.

So, the question remains, what are the barriers that inhibit scaling high quality, market-driven CTE programming, giving more students an opportunity to earn market value assets during high school? On the other hand, what are some of the incentives (headwinds) that seem to be moving the needle on the scalability and sustainability of high-quality, market-driven CTE programming? What critical policies and/or legislation are either barriers or headwinds?

Based on the data collected, barriers to scalability are generally the same across the Kansas City region and,

quite frankly, across the United States, due to the fact that most high school systems are designed using the same long-standing framework. For the purpose of this report, six barriers are highlighted:

- 1) Perceived stigma of career and technical education
- 2) Culture of high schools and accountability systems
- 3) Need for multiple ways of acquiring high school graduation credit
- 4) Limited number of CTE educators in the workforce
- 5) Lack of career awareness and counseling
- 6) Lack of systemic collaboration between business and education

## ***1) Perceived Stigma of Career and Technical Education Among Parents, Educators, and Students***

The career-oriented approach to learning has not yet managed to shake the old stigma that it is a pathway to blue-collar work for students who are not college material. Parents, students, and many educators still regard CTE as a low-level vocational education track that often leads to low-skill jobs with no intermediate postsecondary education.

Historically, many low-performing and low-income students were tracked into low-level vocational education courses that did not prepare them for access to or success in postsecondary education. Currently, most CTE programs hold students to rigorous industry-driven standards in preparation for postsecondary education and beyond, but this persistent negative image continues to impact students' and parents' decisions about high school coursework and career pathways. Despite the strong demand among employers and growing interest from policymakers, career and technical education remains a tough sell for many prospective students. It is not unusual to hear parents say, "Oh, yes, I understand the value

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**We know that, by 2020, more than 60 percent of all jobs in this country will require college or postsecondary training of some sort, and only 50 percent of those jobs will require a four-year degree.**

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of today's highly skilled technical careers, and that may be okay for your child, but not for mine."

California's Strong Workforce Program has allocated annually \$200 million to ensure that CTE and workforce development programs in community colleges are responsive to employer and worker needs, encourage cross-sector collaboration, and engage employer and labor leaders in developing and aligning programs to workforce needs. State-wide, the community colleges are rebranding career and technical education with a \$6 million marketing campaign to better define and raise awareness about career education for students and build support among business and union leaders for the community college programs.

The California Community College system conducted qualitative research to get a sense of what current and prospective students think about career education and employment options. Not surprisingly, the results stated that a lack of knowledge is the biggest barrier to enrollment. Overall awareness of the term "CTE" was fairly high, but specific understanding of what it refers to was very low. For example, 30 percent of students who were currently enrolled in career and technical programs had heard about CTE, but said they did not know anything about it. Another 16 percent said they had never heard the term. Awareness was even lower among prospective students. "The marketing of career and technical education is a huge issue," said Bryan Wilson, California state policy director for the National Skills Coalition. "It doesn't have enough currency with student and parents." (Source: "State Policies Impacting CTE, 2015 and 2016 Year in Review, by the Association for Career and Technical Education (ACTE) and the National Association of State Directors of Career Technical Education Consortium")

Nevada Governor Brian Sandoval signed a proclamation declaring the 2016–17 school year to be the "Year of STEM." The marketing campaign was designed to raise awareness about careers in STEM fields and promote student resources, such as Nevada's career exploration website, [www.stemhub.nv.gov](http://www.stemhub.nv.gov), the Nevada K-12 STEM Challenge, and the STEM School Seal to be awarded to exemplary schools. The Office of Science, Innovation, and Technology hosted monthly events across Nevada featuring local companies, local schools, institutions of higher education, and career pathways.

In 2014, Michigan Governor Rick Snyder began a new campaign promoting education and careers in the skilled trades, beginning with promotional videos produced by "Dirty Jobs" television star Mike Rowe and other partners. The campaign emphasized parent engagement by asking them to become CTE instructors, mentors, and internship sponsors.

Locally, the Northland CAPS program provides parents and students many opportunities to visit state-of-the-art advanced manufacturing businesses, tour the plants, talk to staff members, and even participate in hands-on experiences with very expensive robotic equipment. Authentic, onsite

exposure to employees that are happy and well paid and facilities that are pristine and highly technical help to break down the stereotype of these new STEM 'middle-skills' jobs. These 'middle-skills' jobs require more than a high school diploma, but less than a four-year degree and are essential to economic growth. Siemens Foundation has created a massive effort to build and sustain today's STEM workforce and close the opportunity gap in STEM middle-skill, or technical, careers. The Foundation focuses on three main objectives through partnerships with national leaders in the field: raise national awareness of the opportunity in STEM technical careers, rehab the image of STEM skilled career opportunities, and scale effective training models. (Source: *Siemens Foundation 2016*). See page 60.

## 2) Culture of High Schools and Accountability Systems

Traditionally, core content high school teachers and CTE teachers do not create cooperative partnerships in which resources are pooled to present an integrated curriculum in both CTE and core classes. CTE courses are perceived as having lesser value than core academic coursework does. Policymakers need to align and integrate core content and CTE standards. School and district accountability systems should be retooled to ensure that metrics assess a range of student knowledge and abilities that predict readiness for success in both college and careers. The Elementary and Secondary Education Act flexibility requirements and the increased focus on rigorous college- and career- ready standards and assessments ensure that the political climate is ripe for these collaborations.

High school teachers need opportunities to work in teams to develop curricula that integrate content into the context of careers and participate in rigorous career-based externships. Research suggests that embedding core content learning into the context of a career helps students apply their knowledge. The National Research Center for Career and Technical Education examined the math-in-CTE model, a curriculum integration model that enables math and CTE teacher teams to determine where mathematics intersects with CTE concepts and applications. The study found that teaching math in context has a significant positive impact on student learning. (Stone, Alfeld, and Pearson, 2008). In the Kansas City region, there is some evidence of core graduation credit being embedded in the context of a CTE course, e.g., in the Northland Career Center, Northland CAPS, Olathe 21st Century Academies, and Blue Valley CAPS.

Many states are taking advantage of this opportunity to break down silos between CTE and general education leaders by changing their K–12 accountability systems, resulting in a more balanced scorecard in rating academics and CTE coursework equally. In 2016, the Kansas State Board of Education adopted a new definition of college and





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<b>\$41,540</b>	<b>\$62,540</b>	<b>\$50,380</b>	<b>\$48,800</b>

STEM jobs are projected to grow at almost double the rate of non-STEM occupations.



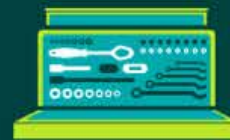
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Sources: Section 1—Brookings Institution and Bureau of Labor Statistics; Section 2—U.S. Department of Commerce; Section 3—The Aspen Institute College Excellence Program and Mathematica Policy Research





readiness activities. Students just cannot seem to fit it all into their schedules without giving up something they enjoy, like marching band or choir. Creating multiple ways to acquire high school graduation credits could free up time, making a student's high school schedule more flexible.

- Examples of multiple ways to acquire high school credit:
  - Personalizing learning for students through mastery learning, competency-based learning, performance-based learning, etc., that allows students to take ownership of the time, pace, and space of their learning
  - Embedding core graduation credit into the context of CTE courses, e.g., a student receives a geometry core math credit by completing CTE Architectural and Engineering coursework
  - Counting CTE courses and/or industry-recognized certifications as core graduation credit

For close to a century, the standard method for awarding students academic credit is through Carnegie units, a measure based on student time spent in school. The goal of that measurement is to standardize the amount of instruction students receive and are credited for subjects, for college admission and other purposes. A growing number of states are moving from seat-time (minutes of instruction) to competency-based credits; awarding academic credit based on what students know—not how much time they spend learning the content.

Thirty-six states have adopted policies that allow districts or schools to provide credits based on students' proving proficiency in a subject, rather than the time spent in a traditional classroom setting, according to the National Governors Association. The Missouri and Kansas State Departments of Education provide ways for districts to award credit through means other than time-fixed terms, semesters, or school years. Multiple avenues are available for documenting the validity of awarded credit, student progression, and/or graduation from high school.

States have a variety of approaches for moving away from "seat time." New Hampshire eliminated the Carnegie unit in 2005, giving schools until the 2008–09 school year to award academic credits based on mastery, not seat time. Michigan in 2007 created a policy to grant waivers from seat-time requirements to districts on a case-by-case basis, most of them through a blended-learning approach, combining in-person and online instruction. Oregon, since 2003, has allowed districts and schools to use proficiency-based approaches for awarding credit to students.

Another avenue that helps students free up time is allowing a CTE course to fulfill a high school graduation credit. For example, in 2016, California extended the option to use a CTE course to fulfill the high school graduation requirement for a course in visual or performing arts or a foreign

language. Maine allows multiple pathways to proficiency and graduation, including completing a state-approved CTE program of study, demonstrating proficiency in meeting state standards, and either 1) meeting third-party-verified national or state industry standards or 2) earning six or more CTE dual-enrollment credits. School districts have flexibility in developing standards, and can recognize the presence of core academic standards embedded in CTE courses for graduation credit. New Jersey allows students to count an AP computer science course toward graduation requirements for math. The Washington State Board of Education has allowed language arts-credit equivalency for a CTE course or program. New Mexico awards graduation credit for CTE and pre-apprenticeship programs, plus districts may choose to put an additional weight on the calculation of the student's GPA for those who complete an industry-recognized credential. In Georgia, any type of postsecondary credit completed during high school can be counted as credit toward high school graduation.

*(Source: International Association for K–12 Online Learning; National Governors Association; Education Week)*

## 4) CTE Educator Workforce

To scale high-quality, market-driven CTE programming, it is crucial to dramatically increase the number of well-qualified educators. Some business and industry partners have the expertise and passion for working with students and can effectively teach the curriculum that aligns with workforce needs.

Due to the fact that high school CTE instructors must be certified (with the appropriate education foundation and content courses), it is often challenging to attract industry experts to these positions. CTE teachers must meet more stringent certification requirements than core academic teachers. In most states, CTE teachers must have a CTE credential that signifies they are well qualified and possess appropriate occupational and educational experience. In addition, they must have a state license to teach at the secondary level. Providing alternative certification options for well-qualified industry experts to become CTE instructors could reduce the barrier.

In 2016, Arizona created an additional specialized teaching certificate in CTE for applicants who demonstrate expertise in the subject matter, have a minimum of five years' related work experience, and comply with fingerprinting and background check requirements. The Office of Public Instruction updated Montana's CTE teaching license requirements to enable individuals with industry experience to receive a CTE teacher endorsement without having to meet additional educational requirements. In New York, the Board of Regents established three new pathways to earn a transitional CTE teaching certificate, making it easier for individuals with industry

experience or credentials to become certified CTE teachers. Also in 2016, the Oklahoma legislature passed several pieces of legislation to advance work-based learning and teacher licensure, expanding pathways for individuals with terminal degrees, qualified work experience in a corresponding area of certification, or vocational-technical certificates to receive alternative teaching certificates.

In 2016, Wisconsin expanded its experience-based alternative certification program to vocational teachers. Public schools can hire individuals who have relevant professional experience, but not a traditional teaching license, to teach CTE courses. Prospective teachers can qualify for a license based on a point system that takes into account a bachelor's degree in STEM or relevant subject fields, industry certification, or work experience, and if the candidate has participated in an internship, mentorship, or apprenticeship.

Missouri businesses have many individuals with the expertise to develop and deliver industry-aligned curriculum, but existing law requires the industry partner to receive a teaching license. In 2016, The Alliance for Childhood Education advocated for the visiting scholars legislation (HB 97 and SB 401) that would allow the Missouri State Board of Education to issue an initial visiting scholars teaching license as long as the instructor 1) is employed as part of a business-education partnership, 2) has the appropriate education degree or occupational qualifications, 3) completes an application prescribed by the board, and 4) complies with background check and fingerprinting requirements. The visiting scholar teaching license would allow the instructor to teach one year and then renew up to two more times. This legislation made it through the Missouri House of Representatives in 2016 and is likely to pass through the Senate in the 2017 Legislative Session. This Missouri legislation was inspired by the current design of the Kansas visiting scholar teaching license.

## 5) Career Awareness and Counseling

Students, parents, educators, and educational leaders need current and frequently updated information about the workforce of the future, careers, salaries, etc. Students need advising and counseling to make well-informed decisions about their career plans. The American School Counselor Association recommends a 250:1 student-to-counselor ratio, but Missouri was 452:1 and Kansas was 476:1 for the 2013–2014 school year. (Source: U.S. Department of Education, National Center for Education Statistics, *Common Core of Data, "State Nonfiscal Public Elementary/Secondary Education Survey," 2013–14 v. 1a.*)

As a result, career guidance and counseling is limited, and most counselors have time to focus only on course and test scheduling or the college application process. Utah created the Strengthening College and Career Readiness Program and appropriated \$400,000 for grants to enhance the skills of

college and career counselors. The State Board of Education developed a certificate that indicates a counselor is highly skilled at providing college and career counseling.

In 2015, fifteen states passed policies to increase career and academic guidance and awareness, whereas only six states did so in 2014 and three in 2013. In 2016, Missouri requires all students entering their ninth-grade year to develop a personal plan of study that includes graduation requirements, career or postsecondary goals, programs of study aligned with those goals, grade-appropriate and career-relevant opportunities and coursework, and associated assessments and student inventories. Likewise, in 2015 Kansas State Board of Education announced its new vision and the Kansans CAN initiative, which requires all students to develop an individual plan of study focused on career interest. In 2016, one notable piece of legislation in North Carolina created a website called Know Before You Go, that draws on economic and labor outcomes data to provide students with information regarding salary, completion rates, average loan data, and employment rates associated with various majors and institutions of higher education. In 2016, the legislature of Idaho appropriated \$5 million to emphasize the importance of college and career advising by amending existing law to require all school districts and charter schools to offer college and career advising to students in grades eight through twelve. (Source: "State Policies Impacting CTE, 2015 and 2016 Year in Review, by the Association for Career and Technical Education and the National Association of State Directors of Career Technical Education Consortium.

## 6) Collaboration between Business and Education

High quality, market-driven CTE programming requires multiple work-based learning strategies like internships, apprenticeships, and collaborating with adults on authentic work projects. These approaches provide students with the opportunity to work with local employers, learning directly from those who have already established their careers. Students learn employability skills while embedded in the real world of work and, in rare cases, can earn high school and college credit by participating in internships, e.g., through Northland CAPS.

Employers can partner with CTE teachers to ensure curriculum and instruction are industry-informed. They can provide career awareness and validate the skill sets needed to be successful. Mentoring students, serving as authentic judges of student project work, donating equipment, volunteering as co-instructors, and offering teachers externships are all ways business partners and employers can be involved.

Developing these work-based learning partnerships can be a challenge to scale, and employers need to know, "What



is my return on investment?" Many school districts in the Kansas City region have developed these types of business partnerships and are independently attempting to scale these relationships, tapping the same business partners from multiple directions. Business partners grow weary of the volume and random nature of these requests and strongly state the need for a systemic approach, which would allow these relationships to scale; essentially an "easy button" for business-education partnerships.

Two strategies seem to be gaining positive traction: 1) incentivizing collaboration between industry and education to provide work-based learning experiences and 2) systemic pipeline support of industry sectors that standardizes partnerships across school districts, postsecondary institutions, and employers.

### Incentivizing Collaboration

In 2015, twenty states enacted policies that foster and encourage collaboration between industry and education. Approximately one-third of these policies focused on expanding and/or improving work-based learning through funding increases, new accountability metrics, tax incentives, etc. For example, Maine is providing tuition assistance and grants for programs that obtain matching funds or in-kind contributions from local businesses to support the state's Put ME to Work program. The Apprenticeship Maryland Pilot Program is a two-year apprenticeship pilot allowing high school juniors and seniors to obtain licenses or certifications in high-skilled, high-growth manufacturing and STEM sectors. Colorado appropriated approximately \$583,000 for a new program to partially reimburse companies for offering high-quality internships at the secondary and postsecondary levels. The Colorado Department of Labor and Employment reimburses companies up to half of their expenses—for a maximum of \$5,000 and ten internships—and half of the reimbursement amount must be paid to the intern. To qualify, internships must be at least six months and 130 hours, be in a high-demand industry, like aerospace, advanced manufacturing, or information technology, allow students to gain experience in at least two occupational areas, and pay a wage of \$10 an hour.

In 2016, twenty-six states enacted policies that foster and encourage collaboration between industry and education to provide work-based learning opportunities. Oklahoma

authorized districts to enter into work-based learning relationships with businesses. Quite a few states provide tax incentives to offset employers' costs of providing work-based learning. For example; the Alabama Apprenticeship Tax Credit Act of 2016 provides a tax credit of \$1,000 each for up to five apprentices, with a limit of \$3 million annually. The tax credit will be available starting in 2017 and goes through the 2021 tax year.

Some states are incentivizing school districts and CTE teachers to collaborate with industry partners; for example, Colorado is piloting a program with \$1,000 bonuses awarded to school districts for each high school student who either earns an industry certification related to an in-demand occupation, finishes a rigorous workplace training program linked to industry need or successfully completes a computer science AP course. North Carolina created the Industry Certification and Credentials Teacher Bonus Pilot Program, rewarding CTE teachers with either \$25 or \$50 for each student who obtains an industry-recognized credential, depending on the rigor and economic development value of each earned credential, with a cap of \$2,000 per teacher.

### Collaboration of Sector Pipelines

Using employment and economic data, MARC identified advanced manufacturing as one of the five industry sectors that is a specialty of the Kansas City region, representing 76,340 jobs. Since 2014, manufacturing jobs in the Kansas City region have grown at more than twice the national average. (Source: *MARC Education Asset Inventory 2016*) KC Rising, a business-led initiative launched in 2014, has identified human capital as one of three key drivers of a globally competitive regional economy, with targeted industry sectors of advanced manufacturing, engineering and architecture, finance and insurance, information technology, and life sciences. Based on the examination of CTE data and existing programming in the Kansas City region, there is a lack of CTE program alignment to the targeted growth sectors within the Kansas City region.

Currently, regional sector-specific partnerships of school districts, postsecondary institutions, and advanced manufacturing businesses do not exist. Only a few school districts in the Kansas City region have advanced manufacturing programs, but there are many districts on the path of developing advanced manufacturing

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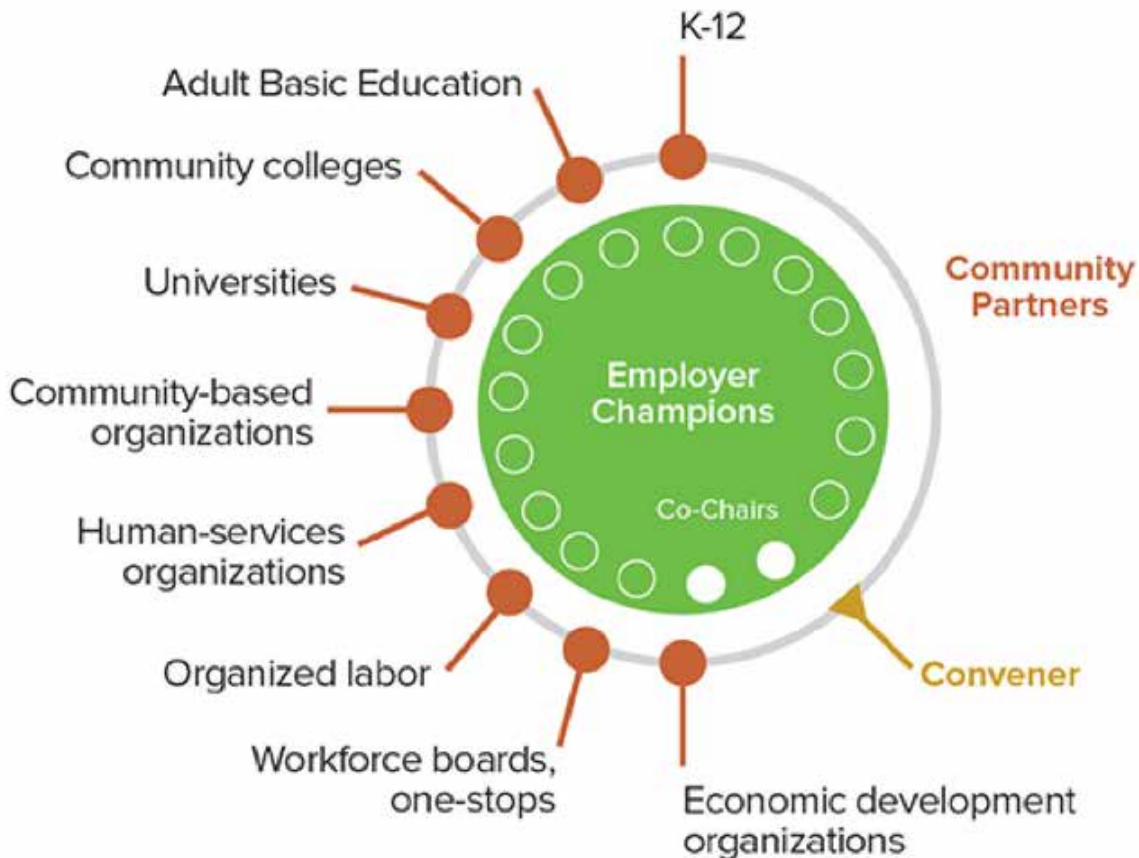
**Using employment and economic data, MARC identified advanced manufacturing as one of the five industry sectors that is a specialty of the Kansas City region, representing 76,340 jobs.**

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programs in isolation as individual school districts and developing partnerships with postsecondary education and manufacturing businesses. The industry-recognized credential for high school students is the Manufacturing Technician-Level 1 (MT1) certification. The MT1 program addresses the core industry-wide skills standards required for skilled production occupations in all sectors of manufacturing, e.g., life science, automotive, and technology. The core competency certified areas are 1) math and measurement, 2) spatial reasoning and manufacturing technology, and 3) business acumen and quality, measuring a student's skill attainment in twelve critical technical skills.

To avoid duplication of efforts and over-saturation of business partners, sector partnerships could be established to address workforce needs interdependently—rather than independently—across systems, e.g., across K–12, higher education, and industry, working with industries collectively, not as individual businesses. The Colorado Workforce Development Council uses the model below to convene key stakeholders for the purpose of developing sector partnerships.

Maryland, Massachusetts, and Pennsylvania are just some examples of states that use statutes and state funds to support regional sector partnerships. Maryland statute established the Employment Advancement Right Now program to provide competitive grants to support the creation and maintenance of industry-led, sector-driven partnerships. Massachusetts created the Workforce Competitiveness Trust Fund to support regional sector partnerships through competitive grants administered by the quasi-public Commonwealth Corporation. Pennsylvania used legislation to establish the state's industry partnership program that provides competitive grant programs. Tennessee STEM Innovation Network (TSIN) established STEM innovation hubs, which are regional partnerships of school districts, postsecondary institutions, STEM businesses and community organizations in northwest Tennessee and other rural areas of the state. TSIN also provides all Tennessee middle schools with a curriculum to educate students on the variety and benefits of STEM careers. (Source: "State Policies Impacting CTE, 2015 and 2016 Year in Review," Association for Career and Technical Education and the National Association of State Directors of Career Technical Education Consortium.)



(Source: Colorado Workforce Development Council, 2015)

## Section Five:

# Looking Ahead

An increasingly complex economic and social environment makes the journey from education to employment a complicated one, and students have many different routes available to them. Listening to Kansas City educators, parents, and business and community leaders, they believe too many young people are getting lost along the way. Evidence supports that the education-to-employment systems lack the frequency and scale required to support our youth effectively; yet, many quality programs exist that meet the needs of a small number of Kansas City youth.

## What We Learned

- Throughout the Kansas City region, there is a significant amount of innovative, high-quality CTE programming. In fact, most every school district is doing something related to career readiness and recognizes the importance of providing opportunities for students be college and career ready.
- Across the region, there is strong evidence of business partner support for work-based learning experiences and curriculum input, but an education-to-employment 'system integrator' that coordinates, catalyzes, and monitors activity does not exist. Due to the non-existence of an 'easy button' for business-education partnerships; business partners state they are becoming weary.
- Kansas City CTE programming is not at scale, leaving many students with just a high school diploma and no market value assets. Two districts—Independence and Kansas City, Kansas—are implementing wall-to-wall academies, but are in the early stages of scaling the production of market value assets for all students, e.g., dual credit that aligns with a degree, industry-recognized credentials, internships, and work-based learning.
- Entrepreneurial education and entrepreneurial work-based experiences rarely exist within Kansas City's high school curricula.
- The targeted growth sectors in the Kansas City region—advanced manufacturing, logistics and transportation, engineering and architecture, finance and insurance, life sciences, and information technology, are not supported by CTE programming at scale. In fact, there is little to no programming to support advanced manufacturing or logistics and transportation. Some districts are beginning to develop programming and reaching out to business partners, but the design work is occurring in isolation, resulting in duplication of effort.
- To date, the Kansas City region is not taking advantage of sector partnerships, one of the most transformative solutions, which involves multiple education providers and employers working within a particular industry or function. These collaborations solve the workforce development gaps at a sector level; splitting costs among multiple stakeholders, which is an incentive for increased participation. (Source: Mourshed, M., D. Farrell, and D. Barton (2012), "Education to employment: Designing a system that works," McKinsey & Company)
- Both business and education agree upon the need for students to master the Common Sector Competencies (employability skills), but implementation within school districts is fragmented and difficult to measure. (See Appendix B for Kansas City Common Sector Competencies.)
- Today versus a few years ago, parents, students, and educators have more awareness and support for multiple postsecondary education pathways, e.g., industry-recognized credentials and associate degrees, than in past years. Even with more awareness, a stigma associated with CTE programming and jobs that do not require a four-year degree still exist.
- Educators report the current high school structure, schedule, and ways of acquiring graduation credit inhibit student participation in CTE programming and work-based learning experiences.
- Even though current regulations and policies in Kansas and Missouri give school districts permission to transform the traditional high school structure, schedule, and ways of acquiring graduation credit, there is little to no action being taken.
- Many districts reported a heightened emphasis on authentic project-based learning and are providing professional development and externships for teachers.
- Administrators worry about the sustainability of quality CTE programming due to the lack of qualified CTE instructors in the workforce pipeline.
- Educators state it is challenging to keep up with the latest and greatest technical equipment and software, yet there are some employers eager to have students co-locate and utilize their equipment for training purposes. Some employers are interested in exploring the potential of public-private agreements for usage of facilities and equipment.
- Both Kansas and Missouri have mandates around individual plans of study for all students that have a focus on careers and postsecondary planning. There is a recognition for the increase in timely, well-informed career awareness and counseling, but districts are still challenged with scaling to all students.

## Ideas for Action

- Convener organization(s) invite key stakeholders of career and technical education to meet at a shared table.
- Use the Four Phases of Design Thinking to ignite the ideation process.
  - 1) **Gather Inspiration:** Getting outside of your own perspective and become informed and inspired by the people for whom you are creating.
  - 2) **Generate Ideas:** Through ideation, generate many ideas and push past the obvious to get to breakthrough solutions.

- 3) **Make Ideas Tangible:** Build rough prototypes to learn through making, and quickly get feedback from the people for whom you are designing solutions.
- 4) **Share the Story:** Craft a human story to inspire others toward action.

Many questions are still unanswered, but the hope is that this report will stimulate others to continue the investigation of this essential issue. This researcher believes it is possible to build a sturdy bridge between secondary school and employment. Don't all students deserve to test-drive their futures before they leave high school?



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