

TALENT DEVELOPMENT PIPELINE FOR YOUTH: CREATING A CAREER-READY WORKFORCE IN NC

EXECUTIVE SUMMARY

Issues facing the talent development of youth today are not new. A 1975 national policy brief by Hoyt highlights that the education system was emphasizing academic preparation over preparing individuals for the workforce. Work-based learning offers students real-life work experiences that apply technical and academic skills to develop employability skills. This talent development pipeline policy brief provides approaches for improving student success that aim to increase educational attainment and labor market outcomes for youth by aligning North Carolina's talent development pipeline for youth with work-based learning and labor market needs. Recommendations to improve the youth talent development pipeline include evidence-based practices in work-based learning, models of pathways to work, and data systems to assess and improve talent development outcomes. Policy recommendations will increase postsecondary credentials creating a pool of qualified candidates for the North Carolina workforce.

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POLICY BRIEF

Nature of the Problem

Students are graduating from high school underprepared for their future academic and work pathways. Businesses report that those entering the workforce are not career ready and lack soft skills needed for employability (Fletcher, 2006; Fletcher & Zirkle, 2009; Symonds, Schwartz, & Ferguson, 2011; Fletcher & Tyson, 2017). High School students with work-based learning experiences are more likely to achieve degree attainment and be better prepared for the workforce than peers without work-based learning opportunities. The average high school graduation rate for students concentrating in CTE programs is 93 percent, 13 percent higher than the national average (Association for Career and Technical Education, 2017). When high school students take one career and technical education class for every two academic classes, it reduces their risk of dropping out (ACTE, 2017). Although evidence indicates that career and technical education is a strong best practice for high school youth, there have been consistent reductions in funding for career and technical courses.



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Current State of Youth Talent Development Pipeline: Educational, Work, and Financial Outcomes for North Carolina Youth

Current career readiness standards include a bachelor's degree, associate degree or industry-recognized postsecondary credential (Carnevale, Hanson & Fasules, 2018). According to Carnevale, Smith, & Strohl (2013), 65 percent of North Carolina jobs will need some form of postsecondary education by 2020, and those who earn one of these degrees or credentials earn higher salaries on average than those with only a high school degree.

If this is the case, what are NC students doing after high school? It's reported that 81.8 percent intend to enroll at a two- or four-year institution, with 42,762 enrolling at four-year institutions and 36,598 enrolling at two-year institutions. The six-year graduation rate for four-year schools in North Carolina is on average 61.2 percent, and 22 percent for community colleges (NCES, 2013; NC Community College System, 2017). By age 30, less than half the national workforce meet the current career-readiness standard of earning a two- or four-year degree or industry-recognized credential (Carnevale, Hanson & Fasules, 2018). Additionally, there is wide variance in the graduation rates among the postsecondary institutions and hundreds of students leave college before graduation uncredentialed, in debt and unprepared for work. As a result, the potential of the labor market is limited because half of the individuals in the workforce are without the standard credential needed for career readiness.

This current condition leaves opportunities for improvement to provide employers with the optimal workforce needed for economic growth in North Carolina. Career and technical education with work-based learning opportunities that partner with business and education are essential to best prepare youth to be career ready. With low unemployment rates, the number of people whom businesses can recruit to fill open positions becomes increasingly small. Therefore,



it becomes even more important that North Carolina explores ways to create a seamless pipeline from school to work so that youth have a clear pathway to obtain postsecondary credentials and enter into the labor market.

2014-2024 North Carolina Employment Projections

In order to improve North Carolina's youth talent development pipeline, it is important to analyze future employment projections and determine what postsecondary credentials will be needed to fill these projections. Construction, healthcare, and production occupations require some postsecondary education including certificates and associate degrees for entry and upward mobility.

- North Carolina is projected to add more than 550,000 jobs by 2024. The rate of employment growth is projected to outpace growth in the state's overall population (12.6 percent vs. 10.4 percent).
- Service-providing sectors in North Carolina are projected to contribute nearly 90 percent of all net new jobs created. Healthcare and social assistance, the state's largest industry by employment, is projected to add 135,000 jobs.
- Construction is projected to be one of the fastest-growing industries in the state, adding nearly 37,000 jobs. Projections for the manufacturing industry show a very modest increase of 0.7 percent, adding 2,900 jobs.
- Healthcare practitioners/support occupations and technical occupations are projected to be the two fastest-growing occupational groups.
- Production occupations such as machinists, welders, and process technicians are projected to slightly increase, generating 10,000 jobs, with many requiring a postsecondary credential.
- A majority of projected job openings are expected to come from replacement needs rather than new growth.
- Currently, only 33 percent of all jobs in North Carolina require a bachelor's degree.

Importance of Career and Technical Education in Youth Talent Development Pipeline

The outcomes for students exposed to career and technical education have been positive. Stevens, Kurlaender, and Grosz (2015) demonstrated that the average economic return for those who complete career and technical education AA/AS degrees or short-term certifications experience 12 to 23 percent higher earnings than those not completing a degree or certificate. All students need opportunities to participate in career and technical education and work-based learning opportunities, but this has been a challenge in high schools because career and technical education offerings are limited; an average of 22 of the 26 credits required for a high school degree are reserved for academic courses necessary to meet state graduation standards.

For postsecondary opportunities, Kandalec (2016) found that there is a negative perception of community colleges, career and technical education, and apprenticeships as compared to four-year colleges. This study found that postsecondary career and technical education is perceived by students, counselors and parents as a "fall back" option for students who are not at grade level in their academic courses (Kandalec, 2016). More promotion is needed about the positive impacts of community colleges and career and technical education. The current state of CTE



curriculum has received national attention and research suggests it is a myth that students could be prepared for careers without taking CTE classes (Carnevale, Hanson & Fasules, 2018).

More career and technical education opportunities that provide work-based learning experiences for the majority of students need to be integrated into the high school curriculum. The high school curriculum provides few opportunities for career and technical education. The lack of required credits needed for CTE eliminates student opportunities to take career and technical education courses. Additionally, high schools must align the career and technical education tracks with opportunities for students to enter the workforce. Curricula that include work-based learning experiences create opportunities for teens and young adults and have positive impacts on their future employment and earning prospects. For example, in a 2015 study, NC youth who participated in an apprenticeship program had a transformative experience and reported a better understanding of work, community college, and the connection of learning to work (Howze, 2015). Students who participate in work-based learning have experiences that make them more competitive for employment opportunities. If high school students do not immediately enter postsecondary education, they need to have experiences that create employment opportunities. However, Carnevale, Hanson, and Fasules (2018) argue that the nation needs to let go of the myth that students can be career-ready out of high school and instead emphasize that all students need some type of postsecondary credential in order to access the labor market.

Benefits of Work-Based Learning Programs

Work-based learning programs provide both social and academic benefits for students.

In a seven-year study of one California work-based learning program, researchers found that minority students participating in the program entered college at twice the rate of non-participating minority students, and that college enrollment rates were higher for all students in the program when compared to local and state student populations (CART, 2011). In addition to higher enrollment in college programs, work-based learning programs provide these benefits: connections between classroom and real-world learning, work-based learning links to what students learn in school, and the skills and knowledge needed for real-world careers. Students are able to apply their classroom knowledge to real-world problems.

Work-based learning programs are linked to career-themed pathways through community colleges and four-year degree programs.

Many students drop out of high school and college programs in part because they are unable to see any connection between what they are learning and what they may one day be doing professionally. Research has found that students in work-based learning programs complete related coursework at high rates and have higher attendance and graduation rates than those not enrolled in such programs (Colley & Jamison, 1998).



Work-based learning programs help students identify career interests and skills by connecting students to industry professionals and by providing hands-on training.

Work-based learning enables students to select courses of study that are tied to their individual career goals. These programs also facilitate the development of critical skills: Whether students choose a career right out of high school or after college, all future members of the workforce need to develop the so-called “soft skills” of creative problem solving, conflict resolution, communication, and teamwork. In addition to these skills, employers want to hire individuals who display positive social skills such as self-respect and reliability (Bremer & Madzar, 1995). Work-based learning programs provide the opportunity for students to develop the skills that will be highly valued in future careers.

Work-Based Learning Evidenced-Based Practices

Connecting Educators to Work-Based Learning Opportunities

Real-world experience coupled with quality professional development enhances and improves the teaching of mathematics and science. Teachers who participate in industry internships or other work-based learning programs deepen their subject-matter knowledge, become familiar with current practices, get an added boost in morale, and establish connections between workplace and school. An additional benefit is the importance of not only becoming familiar with the materials and equipment, but also learning how new technologies are being used in the industry. Furthermore, teacher internships provide a foundation for strong inquiry-based lessons and enhancing student problem-solving skills to address current issues. If teachers do not have industry experience, they may find it difficult to build authentic lessons that center on relevant and up-to-date issues and to create interdisciplinary project-based learning opportunities. Finally, teacher participation in work-based learning programs for multiple years can positively affect student achievement: one study found that student achievement increased during the second year of a teacher’s participation in such a program (Silverstein et al., 2009).

Connecting curricula to real-world experiences requires teachers to work with industry professionals and with each other. Joint planning time for teachers facilitates the development of an integrated curriculum and authentic assessment tools. The school day is organized to provide time for teachers to develop a curriculum that integrates subject-matter learning and extends to work-based learning experiences. For example, a social justice course could include a part-time internship for students working with an organization that serves the community.

STEMersion, a two-week summer immersion for STEM teachers in Charlotte, NC, has been a very successful program. What started in the first year with 20 teachers, seven companies and Central Piedmont Community College has now been replicated in several counties in North Carolina and as far as away as West Virginia. Teachers who were interviewed six months after their experience said that the experience changed the way that they teach their students because they were able to use “real-world” contextual examples with theoretical classroom lessons.



Guided Pathways for Careers

Guided pathways for careers provide students with clear, educationally coherent program maps that include specific course sequences, progress milestones, and program learning outcomes (CA Guided Pathways Project, 2018). As part of the talent development pipeline, youth need to receive career counseling beginning in the eighth grade that provides opportunities to explore career clusters and early views to career pathways. Whiston and Brecheisen (2002) noted that children as young as age 8 can see relationships between career aspirations, interests and exposure to career options. This provides evidence that career exploration should start as early as elementary school but must occur by middle school for students to make selections by high school. Rowjeski (2005) states that occupational aspirations are predictors of attainment. The community college needs to continue exploration and be organized by meta-majors so students can explore “broad fields of interest (such as business, allied health, education and social services, STEM, social and behavioral science, and English, arts and humanities), with a default curriculum that gives them a taste of the given field” while continuing on their chosen pathway (Jenkins, 2014). This would allow students to explore while staying on a pathway to completion.

Bailey, Jaggars, and Jenkins (2015) describe community colleges like cafeteria programs requiring students to navigate their own options. This leads to students taking the wrong courses or too many courses, and also can result in lower completion rates. Guided pathways, which can help alleviate such problems, are divided into four areas of practice: 1.) mapping pathways to student goals, 2.) helping students choose and enter a program pathway, 3.) keeping students on the pathway, and 4.) ensuring that students are learning. Exploration of pathways should start early during the application process and continue in the first semester.

The pathways for youth and young adults need alignment between the academic curriculum and the needs of the workforce. The curriculum needs to give students opportunities for entering and exiting education that align with workforce demands. Multiple entry and exit points would allow students to see clear opportunities for career progression that include the needed postsecondary credentials to advance in their chosen pathway. For example, in a healthcare career pathway, a student could enter as a Certified Nursing Assistant and exit years later as a Physicians Assistant with several educational and work-based learning opportunities along the pathway.

Aligning Career Pathways With Education and Work

Giving credit for prior learning is one way to create an entry onto a career pathway that will give students credit where credit is due rather than have them repeat courses that would increase the time and cost of education. One of the fastest-growing community college degrees in North Carolina is the Associate of Applied Science (AAS). AAS degrees are career-focused degrees that prepare individuals for employment. It is critical that all credits from these degrees count for students and transfer into their continued education. Rather than trying to transfer individual courses, articulation agreements are needed that allow completed associate degrees to count toward the completion of a bachelor’s degree. Effective career pathways must mirror the occupations in local areas so that students are able to graduate from high school either college- or career-ready. A promising practice is to encourage AA/AAS degrees and postsecondary credentials to mirror the needs of local job markets. In 2017, the Texas legislature authorized community colleges to offer bachelor’s degrees in high-need areas like applied sciences, applied technology and nursing.



Registered Apprenticeship Programs

Registered Apprenticeship is a work-based learning program of the United States Department of Labor that connects job seekers looking to learn new skills with employers looking for qualified workers. The goal of such instruction is to provide workers with advanced skill sets that meet the specific needs of their employers (dol.gov/apprenticeship).

In 2016 the NC General Assembly passed a bill making community college tuition free to any high school student participating in a registered apprenticeship program while still in high school. The program must meet all of the following criteria: is a registered apprenticeship program recognized by the United States Department of Labor; has a documented plan of study with courses relating to a job specific occupational or technical skill; and requires the participants in the program to be high school students when entering the program (although the waiver stays in effect for students within 120 days of their high school graduation).

There is a growing trend in North Carolina for companies to actually recruit high school youth into apprenticeship programs in advanced manufacturing. There are currently seven public-private partnerships to recruit high school youth into registered apprenticeship programs; partners include the K-12 education system, community colleges, chambers of commerce, community foundations and private employers.

There have been targeted efforts to recruit minorities and underrepresented youth into high school apprenticeship programs. Because of these efforts the Guilford Apprenticeship Partners (GAPNC) placed 120 students into a pre-apprenticeship program beginning in June 2018; 47 percent of those students are minorities. GAPNC is a collaborative partnership between employers, K-12 education, the Community Foundation of Greater Greensboro, the local Chamber of Commerce and Guilford Technical Community College.

Other States Best Practices in Work-Based Learning

The Kentucky Federation for Advanced Manufacturing Education (KY FAME) is a partnership of regional manufacturers whose purpose is to implement dual-track, apprenticeship-style training that will create a pipeline of highly skilled workers (kyfame.com/about).

Another strong model is the #SupplyChainOKI (Ohio, Kentucky and Indiana), a collaborative regional effort of businesses, government agencies, chambers of commerce, community organizations, port authorities and educational institutions. Their goal is to establish a process that allows potential employees to gain the skills they need to get good-paying jobs with career advancement opportunity in supply chain careers (supplychainoki.com).

Apprenticeship Carolina is a forward-focused program in South Carolina that gives the state's youth an opportunity to earn while they learn. High school apprentices can earn a paycheck, enhance their employability skills, and strengthen their academic skills through high school apprenticeships with a variety of employers to include manufacturing, information technology and healthcare.

Components of a Strong Work-Based Learning Initiative

Nimble Framework Needed

Employers involved in CTE programs—including businesses, government agencies and nonprofits—have said that bureaucracy and slow response time are the biggest challenges in CTE work (Disare, 2015). It has become increasingly important that K-12, community colleges and universities are able to collaborate with business and respond quickly with curriculum changes in order to meet the



demands of a rapidly changing labor market. This idea of a “nimble framework” would allow local administrators to respond to ever-changing labor market conditions by making the necessary changes at the local level to meet the needs of employers in the specific community or region for students earning postsecondary credentials in North Carolina. This framework would allow businesses to work collaboratively to be consumers and producers of the skilled workforce.

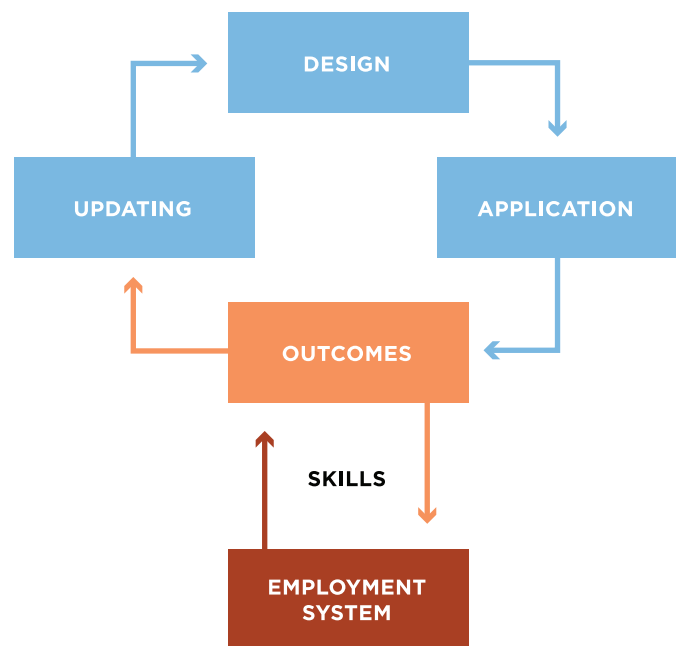
According to the NC Department of Public Instruction, each local board of education shall encourage high schools and local businesses to partner, to specifically target students who may not seek higher education, and to facilitate high school to work partnerships. Local businesses are encouraged to work with local high schools to create opportunities for students to complete a job shadow, internship, or apprenticeship. Students may also be encouraged to tour the local business or clinic, meet with employees, and participate in career and technical student organizations. Because of the regional diversity in North Carolina and the nature of sustainable jobs, it is important that administrators are able to identify postsecondary credentials that mirror the needs of the local job market and make necessary changes quickly for student success. It is important that employers are engaged with education throughout the complete process to become co-designers of the system that develops the future workforce to ensure that the skills needed for their workers are being developed (Figure 1). This could also include businesses offering opportunities for work-based learning. It is not enough for educators to ask business to check if the curriculum developed by educators aligns to their needs.

Measuring Student Success Outcomes (from K-12 to beyond postsecondary)

Institutions and businesses involved in the youth talent development pipeline need to be accountable for student success outcomes and need to collaborate to ensure their success. Providing all educational organizations (high schools and postsecondary schools) involved in the pipeline access to data and holding them accountable for learning, completion, and labor market outcomes will provide a common goal of aligning education and work.

Data must provide evidence of performance from high school to community college or four-year institution, as well as labor market outcomes after completion. Measuring completion needs to include industry credentials, certificates, and degrees. Transfer from community college to four-year institutions needs to not only report how many students transfer or move on to four-year schools, but also the success rates of those students. It is critical to measure the outcomes of students past the traditional measures of completing degrees or if they transferred to a four-year school. Labor market data is needed to align public investments with social mobility and economic goals. Better labor

FIG. 1: EMPLOYERS PARTICIPATE THROUGHOUT EDUCATIONAL CYCLE AS CO-PRODUCERS AND CONSUMERS OF SKILLS (Caves & Renold, 2016)



market outcomes data can help institutional leaders improve planning and program design and can also help them demonstrate the value of their colleges' and universities' educational offerings to students, legislators and other stakeholders (The Aspen Institute, 2015).

Postsecondary Credentials

Postsecondary certificates are uniquely an American invention. They are awarded by public or private institutions or for-profit trade schools for completing studies in a specific field — such as computer and information services, office management, healthcare or food services. The number of graduates with certificates has skyrocketed more than 800 percent over the past 30 years. Some examples of postsecondary credentials are the Manufacturing Skills Standards (MSSC) Certified Production Technician (CPT) or the American Health Information Management Associations (AHIMA) certifications in IT Coding or Health Information Management.

Certificates hold tremendous promise for expanding our skilled workforce and are increasingly popular for a variety of reasons.

- They are relatively inexpensive — with net costs ranging from roughly \$6,780 to \$19,635, which is far less than even one year at some colleges.
- Certificates usually take less than two years to complete, and more than half take less than one year. This means certificate holders can move quickly from the classroom to the workforce — which helps explain why more than 1 million certificates were awarded in 2010, up from 300,000 in 1994.
- Certificate courses potentially pay more than many two-year degrees and sometimes more than four-year degrees. Certificate holders earn 20 percent more on average than high school-educated workers — which can mean about \$240,000 more than a high school diploma in lifetime earnings. Among students who earn two-year degrees, technical degrees typically lead to higher earnings than other associate degrees and many vocationally and technically oriented credentials tied to specific high-demand jobs provide stronger earnings than many other two- and four-year degrees assuming no further higher education (The Aspen Institute, 2015). But many certificate holders can earn more than workers with degrees from a two-year college, and some earn more than those with bachelor's degrees (Carnevale, A., Merisotis, J., 2012). According to Glassdoor, a certified Computer Numerical Control machinist's annual salary is \$47,188 and a certified surgical technician's salary is \$46,054 annually.

One of the main challenges with postsecondary credentials is that certificates are rarely counted in government education reports. This needs to change because certificates have become the fastest-growing form of postsecondary credential awarded in our country over the past few decades.

Community Collaboration

A high-quality work-based learning program does not place college- and career-readiness into separate silos, but instead connects rigorous academic classroom learning with work-based coursework that merges in-classroom experiences with industry-related opportunities. Advisory boards of industry professionals can facilitate visits to construction sites, connect teachers with potential mentors and internship opportunities, fundraise for supplemental funds, and give valuable insight into grade-level projects. These connections help teachers learn about industry programs and collaborate with industry professionals in order to align the curriculum to authentic real-world problems that occur within the industries their students are exploring.



Policy Recommendations

From this brief, three major policy recommendations have emerged to increase the educational attainment of youth and obtain stronger labor market outcomes in North Carolina.

Policy Recommendation 1: Reform the current curriculum in partnership with business and industry to incorporate more work-based learning opportunities.

Both students and educators need work-based learning experiences in order to experience real-world work outside of the school classrooms. The evidence presented and supported throughout this policy brief clearly supports the fact that work-based learning increases attainment of educational and employment goals. Based on this evidence the following recommendations are offered:

- A required curriculum course in high school for 16-32 hours of work-based learning (to include soft skills) that is applicable to all careers.
- State funding for summer teacher work immersion experiences (2-4 weeks) to include a stipend for participating teachers.
- A required work-based learning experience for all Career Development Counselors and CTE Directors that is part of their professional development plan.

Policy Recommendation 2: Create clear pathways for youth to employment.

Students need to have a clear view of a pathway that aligns education and employment. The pathways must provide opportunities for students to have the ability to obtain employment upon departing education and opportunities to re-enter education to further career advancement.

- Community colleges and universities must provide credit for past learning experiences including credentials, certificates, and degrees. Additionally, credits and degrees earned at the community colleges must be applied toward the bachelor's degree. Completed credentials, certificates, and degrees need to be aligned and stackable. Stackable credentials provide short-term certificates or credentials that progress toward the completion of a degree.
- Students should not need to take extra credits, more credits, or repeat credits for skills they already have or have already completed. North Carolina should explore competency-based education models.
- North Carolina needs to explore the creation of applied bachelor's degrees at the community college level in high-need areas like applied sciences, applied technology and nursing that relate to workforce needs. Colleges and universities also must apply all of the credits within completed AAS degrees toward bachelor's degrees. This provides pathways for those with AAS degrees to increase educational attainment and graduate with a four-year degree.

These types of clear pathways will increase degree attainment by providing credit where credit is due and reducing barriers.

Policy Recommendation 3: Develop tools to accurately collect and report actionable data that can be used to improve educational attainment and labor market outcomes in North Carolina.

Educational opportunities and outcomes cannot be improved if they are not properly measured and evaluated. A comprehensive data system to assess student outcomes should go beyond degree completion and take into account learning, completion, transfer, equity, and labor market outcomes.



The outcomes need to be assessed at all levels of the pipeline and available to all partners in the system. It is suggested that assessment needs to go beyond the completion of degrees and intentions of further education — for example, go beyond assessing the completion of high school students and their intent to attend college. It is important to begin measuring the number of high school students who successfully complete college or career credentials/programs and the labor market outcomes for those students. Additionally, K-12 schools and postsecondary institutions need to be able to disaggregate this data to explore issues of equity. For example, postsecondary credentials/certificates should be counted as completions for the purpose of government reporting, and the earnings of those completing the credentials/certificates need to be reported. If student outcomes beyond access and completion are not measured, they cannot be improved.

- Create a comprehensive data system (including K-12, postsecondary, colleges, and labor market outcomes) to assess the outcomes of the youth development pipeline that can be used for continuous improvement.

TABLE 1: **DEMOGRAPHICS OF NORTH CAROLINA STUDENTS IN CAREER AND COLLEGE PROMISE CTE PATHWAYS AND TRANSFER, EARLY AND MIDDLE COLLEGE**

	Career & College Promise CTE Pathway	Career and College Promise Transfer Pathway	Early College	Middle College
American Indian/Alaska	148	194	211	12
Asian	117	331	448	80
Black	1,877	1,240	2,214	355
Hawaiian/Pacific Islander	17	23	21	3
Hispanic	1,346	946	2,731	235
White	6,774	10,818	7,290	772
Multiple	251	323	315	61
Unknown	881	1,125	973	65



Endnotes

- Alliance for Excellent Education. (2013). The role of work-based learning in preparing students for college and a career. Webinar. Retrieved from <http://media.all4ed.org/webinar-apr-23-2013>.
- Aspen Institute. (2015). From college to jobs: making sense of labor market returns to higher education. Washington, D.C.
- Bailey, Thomas R., Shanna Smith Jaggars, and Davis Jenkins. 2015. Redesigning America's Community Colleges: A Clearer Path to Student Success. Cambridge, MA: Harvard University Press.
- Bremer, Christine D. & Madzar, Svjetlana. 1995. Encouraging Employer Involvement in Youth Apprenticeship and Other Work-Based Learning Experiences for High School Students. Journal of Vocational and Technical Education, v12 n1 p15-26 Fall 1995.
- Bureau of Labor Statistics, 2018, <http://www.bls.gov/data>
- California Guided Pathway Project, 2018, <https://www.caguidedpathways.org>
- Carnevale, A., Hanson A., Fasules, M. (2018, January 1). 'Career Ready' out of High School? Why the Nation Needs to Let Go of That Myth. Georgetown University Center on Education and the Workforce.
- Carnevale, A., Merisotis, J., An Important Measure of Education, 2012, Politico.
- Caves, K., & Renold, U. (2016). The employer's dilemma: Employer engagement and progress in vocational education and training reforms (No. 423). KOF Working Papers.
- Carnevale, A. P., Smith, N., & Strohl, J. (2013). Recovery: Job growth and education requirements through 2020. Georgetown University Center on Education and the Workforce.
- Center for Advanced Research and Technology (CART). (2011). Model for success: CART's Linked Learning program increases college enrollment. Clovis, CA: Author.
- CollegeBoard. (2018). Trends in Higher Education. Retrieved from <https://trends.collegeboard.org/college-pricing/figures-tables/average-published-undergraduate-charges-sector-2017-18>
- Colley, D. A., & Jamison, D. (1998). Post school results for youth with disabilities: Key Indicators and policy implications. Career Development for Exceptional Individuals, 21, 145-160.
- Community College Research Center (CCRC) and the AACC Pathways Project; Implementing Guided Pathways: Early Insights From the AACC Pathways Colleges, EXECUTIVE SUMMARY, Davis Jenkins, Hana Lahr, and John Fink April 2017
- Disare, M. Why New Vocational Education Isn't Reaching Classrooms, September 8, 2016
- Grovenstein, E. (2015). Transforming developmental education in North Carolina's community colleges. Concepts. Hunt Institute. Durham, NC.
- Howze, P., 2015, American Apprenticeship as a Transformative Learning Experience, A Phenomenology. (Doctoral dissertation) Retrieved from: <https://repository.lib.ncsu.edu/handle/1840.16/10601>
- Hoyt, K., An Introduction to Career Education, 1975, A Policy Paper of the United States Office of Education, Washington, DC.
- Jenkins, Davis, Hana Lahr, and John Fink. 2017. "Implementing Guided Pathways: Early Insights from the AACC Pathways Colleges." New York: Community College Research Center, Teachers College, Columbia University.
- Kandalec, K. R. (2016). Perceptions of post-secondary career and technical education: A Q method examination. (Doctoral dissertation). Retrieved from <https://repository.lib.ncsu.edu/handle/1840.20/33349>
- North Carolina Community Colleges (2017). 2017 Performance Measures for Student Success. Available at: https://www.nccommunitycolleges.edu/sites/default/files/data-warehouse/2017_performance_measures_report_-_20170629_-_final.pdf#overlay-context=analytics/state-and-federal-performance-measures
- <http://www.apprenticeshipcarolina.com/youth-apprenticeship.html>
- <http://www.cemets.ethz.ch/research/research0/2017.html>
- <http://www.courier-tribune.com/article/20151028/NEWS/310289949>
- <https://www.dol.gov/apprenticeship>
- https://www.glassdoor.com/Salaries/cnc-machinist-salary-SRCH_KO0.13.htm
- <http://kyfame.com/about>
- <http://www.supplychainoki.com>
- <https://www.theatlantic.com/education/archive/2016/09/new-age-programs-stymied-by-old-school-bureaucracy/499031>
- <http://theconversation.com/career-ready-out-of-high-school-why-the-nation-needs-to-let-go-of-that-myth-88288>
- <http://www.usatoday.com/story/money/markets/2015/06/24/cnbc-student-debt-crisis/29168475>
- https://www.doleta.gov/wioa/Docs/WIOA_YouthProgram_FactSheet.pdf
- <https://www.youtube.com/watch?v=ht8sIUfrTyM>
- National Academy Foundation Guide to Work Based Learning: A Continuum of Activities and Experience, 2011.
- North Carolina Department of Commerce, Labor and Economic Analysis Division: <http://www.nccommerce.com/lead>
- North Carolina Department of Public Instruction: <http://www.ncpublicschools.org>
- Rogers-Chapman, M., Center for Advanced Research and Technology (CART). (2011). Model for success: Linked Learning program increases college enrollment. Clovis, CA.
- Rojewski, J. W. (2005). Occupational aspirations: Constructs, meanings, and application. Career development and counseling: Putting theory and research to work, 131-154.
- Shulock, N., Chisholm, E., Moore, C., Harris, L. Institute for Higher Education Leadership and Policy, Career Opportunities, Career Technical Education and the College Completion Agenda, Part III: Promising Career Technical Education Policies. September 2012, California State University, Sacramento.
- Silverstein, C. et al., 2009. Teachers' Participation in Research Programs Improves Their Students' Achievement in Science. Science. Science 326, 440 (2009); DOI: 10.1126/science.1177344
- Stanford Center for Opportunity Policy in Education (SCOPE) Preparing 21st Century Citizens: The Role of Work Based Learning in the Linked Learning. September 2013. Stanford University School of Education.
- Rogers-Chapman, M., Center for Advanced Research and Technology (CART). (2011). Model for success: Linked Learning program increases college enrollment. Clovis, CA.
- Teachers' Participation in Research Programs Improves Their Students' Achievement in Science, Samuel C. Silverstein, et al. Science 326, 440 (2009); DOI: 10.1126/science.1177344
- Whiston, Susan C.; Brecheisen, Briana K. 2002. Practice and Research in Career Counseling and Development. Career Development Quarterly, v51 n2 p98-154 Dec 2002



P-12



POSTSECONDARY



WORKFORCE

**TALENT DEVELOPMENT PIPELINE
FOR YOUTH: CREATING A CAREER-
READY WORKFORCE IN NC**

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