MOVING BEYOND PLATO VERSUS PLUMBING

Individualized Education and Career Passways for all North Carolinians

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EXECUTIVE SUMMARY

- Debate is currently raging about whether we should be preparing all students or only some of them for college. To cut to the chase, does the future belong to those who study Plato or to those who master plumbing?
- Although studying Plato may be right for some and plumbing for others, a variety of diverse routes or "passways" must be developed to enable young people with different talents and interests to secure viable positions in today's challenging labor market. [For more on the term *passways* itself, see page 13.]
- The "Great Recession" has altered the North Carolina economy in unexpected ways. Briefly put, our analysis of recent labor market data indicates that our state is grappling with the worst employment downturn on modern record. Although the worst of the job losses appears to have passed, the labor market still is not growing robustly enough to absorb all those who want and need work, so full recovery remains a distant goal.
- The occupational structure of the North Carolina economy will continue to evolve. State-level forecasts developed in accordance with U.S. Bureau of Labor Statistics (BLS) methodologies indicate that occupations requiring workers with postsecondary educations are likely to grow at faster rates than those that require workers with less formal education. However, because the high growth rates are coming off of small numerical bases, the occupations requiring more education will translate into relatively few jobs. In absolute numbers, then, the vast majority of 'available' jobs in coming years will require on-the-job training or work experience rather than formal postsecondary education or training.
- In light of such career forecasts, we propose a set of recommendations to prioritize multiple points along the education pipeline in order to foster future economic prosperity.

1. Foster Individual Educational and Career Plans and build multiple passways.
2. Support various types of certificate programs as viable alternatives to college degrees.
3. Invest in "middle-skill" jobs and "globally competitive and competent" workers.
4. Build a stronger and better marked bridge from community college to a four-year college degree.
5. Institutionalize assessment of future fits among education, training, and the labor market.
6. Explore the viability of new insurance products that guard against future economic uncertainty.

What is needed is a new bipartisan consensus, acknowledging the value of four-year college degrees for some people and aiming for the goal of some form of postsecondary education for all.

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Introduction

These are hard economic times, and North Carolinians want answers: What should our next governor and policymakers do to get our citizens and state back onto a path toward prosperity? And what will the labor market look like when it finally recovers from the Great Recession? Can a broad bipartisan, or "purple," consensus be reached to invest in enhancing the skills of our current and future workers, especially through more and higher-quality education and training? If so, where will such skill enhancement and training take place? How much formal education and what types of skills, training, and credentials are most appropriate given recent changes in and challenges confronting the North Carolina economy? Should college for all be our sole goal?

There is an intense debate, both nationally and within North Carolina, about whether we should be preparing all students or only some of them for college. To cut to the chase, does the future belong to those who study Plato or to those who master plumbing? As part of the Carolina Seminar on the Future of North Carolina, the authors and a range of other participants listened to diverse opinions on the future of higher education and the workforce expressed by a wide variety of academic and other leaders, including: Tom Ross, president of the University of North Carolina; Keith Crisco, secretary of the North Carolina Department of Commerce; Scott Ralls, North Carolina Community College President; Bonnie Gordon, senior program director at MDC; Jay Schalin, director of state policy at the Pope Center for Higher Education Policy; and Leslie Winner, president of the Z. Smith Reynolds Foundation (See Appendix 1 for a list of participants in the *Carolina Seminar on the Future of North Carolina*).

Can a broad bipartisan, or "purple," consensus be reached to invest in enhancing the skills of our current and future workers, especially through more and higher-quality education and training?

In this paper, we discuss and contextualize today's policy debate over postsecondary education, briefly detail the parlous condition of the North Carolina economy since 2000, analyze future labor market (occupational) projections, and lay out some simple but powerful recommendations regarding an overall educational and career plan for our state.

Let us begin by pointing out for the record that critiques challenging the "college for all" line generally create and destroy a straw person: No one is arguing that everyone should go to college. Instead, most policy thinkers believe that everyone should have access to some form of postsecondary education or training. What is needed is a new bipartisan consensus, acknowledging the value of four-year college degrees for some people and aiming for the goal of some form of postsecondary education for all.

The Presence of the Past

The link between education and economic prosperity has been an ongoing policy concern for decades, both in North Carolina and across the South. Building on earlier efforts in the region, a bipartisan group of governors—William Winter of Mississippi, Lamar Alexander of Tennessee, Richard Riley of South Carolina, Jim Hunt of North Carolina, Bob Graham of Florida, and Chuck Robb of Virginia—began in the early 1980s to discuss the importance of educational reform to economic progress in the South. Because of globalization and rapid technological change, southern governors increasingly came to believe that they could best raise per capita income by facilitating higher levels of educational attainment—more and higher-quality public schooling. This centrist group of southern governors, hoping to spur economic growth, became the champions of improving the quality of public education in their states.

The think tank MDC's 2004 *State of the South* report simultaneously captured and reiterated the regional "the more education, the better" consensus, arguing that the South (and by implication North Carolina) needed dramatically to increase the number of citizens earning bachelor's degrees, associate's degrees, certifications, or job-ready credentials. "Just as it is urgent that the South attack the too-high drop-out rate in high schools," the report stated, "so it is crucial that the region raise its completion rates in postsecondary education."[1]

While acknowledging the important work of our policy forebears, we believe that thirty years after the emergence of the economy and education consensus in the South, conditions have changed sufficiently to necessitate the forging of a new bipartisan consensus. For North Carolina, achieving this purple consensus will entail prioritizing various points in the education and career pipeline as well as creating multiple education passways toward prosperity.

Recession and Slouching toward Recovery

Our ideas regarding the need to reform education and training were both stimulated by and are reflections of the difficult economic times in which we have lived over the past decade. The Great Recession has altered the North Carolina economy in unexpected ways. Briefly put, our detailed review of recent economic and labor market data indicates that our state is grappling with the worst employment downturn since 1976 (See Recession and Recovery in North Carolina: A Data Snapshot, 2007–12). Jobs have disappeared in almost every major industry, and unemployment has surged across all demographic groups and communities. Although the worst period of job losses appears to have passed, the state's labor market still is not growing robustly enough to absorb all those who want and need work, so full economic recovery remains a distant goal. Moreover, everything can change very quickly in labor markets: demand may even shift in positive ways. Any policy reform regarding high school and postsecondary education will face a difficult trial going forward, however, for the state's economy has been mired in labor market problems for more than a decade.

Framing the "College for All" versus "College for Some" Debate

For decades, policymakers were virtually unanimous regarding education: The more educated worker is the more "globally competitive" worker. This conclusion informed the thinking of policymakers at the national, regional, and state levels, including those in North Carolina.

In recent years, however, this policy consensus has frayed—or, according to some, become more nuanced—and an intense debate has emerged, both nationally and within North Carolina, about whether we should be preparing all students or only some of them for college.

The "college for all" crowd accepts the premise that every student should engage in some form of postsecondary education. Proponents of this position—ranging from the Lumina Foundation to the Bill and Melinda Gates Foundation to President Barack Obama—agree that current and future economic conditions mandate more postsecondary education. Today, some type of learning beyond high school is viewed

as a basic requirement for individual success in the labor market as well as a driver for future economic growth.

Others feel differently. For example, economic writer Robert Samuelson proclaimed in a widely cited *Washington Post* opinion piece that "the college-for-all crusade has outlived its usefulness."[2] For Samuelson, a monolithic focus on the college-prep track in high school ignores the real-life needs of students who either won't start or won't finish college and would benefit more from vocational programs.

Similarly, journalist Joe Klein, in a *Time* piece on "Learning That Works," reports that "the higher education establishment's response to vocational education has made things worse. Over time, it morphed into the theology that every child should go to college (a four-year liberal-arts College at that) and therefore every child should be required to pursue a college-prep course in high school."[3]

Educational blogger Mark Phillips agrees. In *Why Should We Care about Vocational Education?* Phillips frames the problem as one of blue-collar stigma in our white-collar society. "This bias against vocational education is dysfunctional and destructive to our children. They should have the opportunity to be trained in whatever skills their natural gifts and preferences lead them to, rather than more or less condemning them to jobs they'll find meaningless."[4] While Samuelson, Klein, and Phillips all invoke the term vocational education, most policy wonks today refer to it as career and technical education (CTE).

Over the past four years, a number of candidates for political office also began asking whether a four-year college degree makes sense, particularly during a recession. For example, former Republican presidential candidate Rick Santorum slammed President Obama at a February 2012 Americans for Prosperity forum: "President Obama once said he wants everybody in America to go to college," Santorum said. "What a snob. There are good, decent men and women who go out and work hard every day and put their skills to tests that aren't taught by some liberal college professor that is trying to indoctrinate them."[5] In sum, to critics of the college-for-all line, blue-collar work is worthy of respect, particularly because plumbers, electricians, and HVAC contractors trained in trades are likely to have earning potentials just as high as if not higher than some recipients of four-year degrees.

The President attempted to clarify his stance shortly after Santorum's attack, telling the National Governors Association that "the jobs of the future are increasingly going to those with more than a high school degree. When I speak about higher education, we're not just talking about a four-year degree. We're talking about somebody going to a community college and getting trained for that manufacturing job."[6]

Critics of the college-for-all argument are often guilty of misspecification: Again, no one is arguing that everyone should go to college; rather, proponents of this view, like President Obama, believe that everyone should have some postsecondary education or training. As James Merisotis, CEO of the Lumina Foundation, responds to the critiques, "College for all is a false premise. It's not an argument anyone is making…Taking time to defend against a false premise is not a good use of time."[7]

We, too, reject the "theology"—Klein's term—that every child must go to a four-year liberal-arts college and therefore that every child must be required to pursue a college-prep course in high school. It is time to reaffirm the position that every capable and interested student and future young adult be afforded the opportunity to attend college or to complete some kind of high school or postsecondary credential with relevance to the labor market (e.g., certificates, diplomas, apprenticeships, associate's degrees).

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Moving beyond a False Choice for the Future of North Carolina

In September 2008, the Republican candidate for the North Carolina governorship, Pat McCrory, and his Democratic opponent, Beverly Perdue, met for a debate. WRAL moderator David Crabtree framed the education issue in an interesting and, for our purposes, instructive way: "Education—always has been a big issue. With the last governors I can remember, particularly Mike Easley, Jim Hunt, both held education banners saying, 'We want to be the education governor.' We've talked to both of you about this before. But, if you can quickly, give me your education priorities. Top two."[8]

McCrory explained, "I want to reintroduce vocational training. I think there is elitism right now toward directing all the kids to four-year college degrees. Our labor force needs mechanists and technicians that can do jobs that are needed in North Carolina, and frankly pay more than my liberal arts degree paid in 1978 out of Catawba College."[9] In 2012, McCrory, running again for the governorship, is still promoting vocational education as a policy priority, pushing for two types of high school diplomas—one that "certifies a student is college ready and another that certifies a student is ready for an outside career."[10] As McCrory frames it: What's wrong with becoming a plumber?

After hearing McCrory in 2008, Perdue responded that McCrory "talks about technology and vocational [education]. You know, that hearkens back to the old low expectations and low status quo of the mid part of the twentieth century—you've got to have a pathway for education, whether it's vocational, community college or the university. You gotta do it all."[11]

Perdue won the election, and as governor, she has acted on this vision, introducing a 2011 initiative, Career and College Promise, that will "prepare students for life after high school—that means college credit for some, job training for others."[12] In 2012, Democratic gubernatorial candidate Walter Dalton affirmed that more and better-quality education has been "'part of North Carolina's DNA' under governors such as Terry Sanford and Jim Hunt."[13] To punctuate his point about the importance of education, Dalton challenged McCrory to eight town-hall-style debates on education at community colleges around the state.

Which way will we have it? McCrory clearly has support for his vision of the future. For example, as George Leef, research director for the John William Pope Center for Higher Education Policy, argues, "For about the last thirty years, one of the key elements in job hunting was being able to show that you had completed a college degree. Without a degree, a great many doors to career paths were locked. Often, it was irrelevant what the degree was in and how much you had learned; employers assumed that just having a college degree indicated a reasonably good level of skill and trainability. College degrees have in many cases become empty credentials that don't necessarily betoken any advanced knowledge, skills, or desirable occupational traits."[14]

But Perdue and Dalton have their supporters as well. For example, Anthony P. Carnevale, director of the Georgetown University Center on Education and the Workforce, claims that Samuelson and others "'screwed it up a little bit' by focusing only on degrees...The completion push is really about 'postsecondary education and training for all.'...But that doesn't fit on anybody's bumper sticker."[15]

It is clearly time to accept the fact that occupational requirements should shape or influence career passways and that in some occupations, forms of "vocational" training can and should trump formal educational attainment or degree level. Some young

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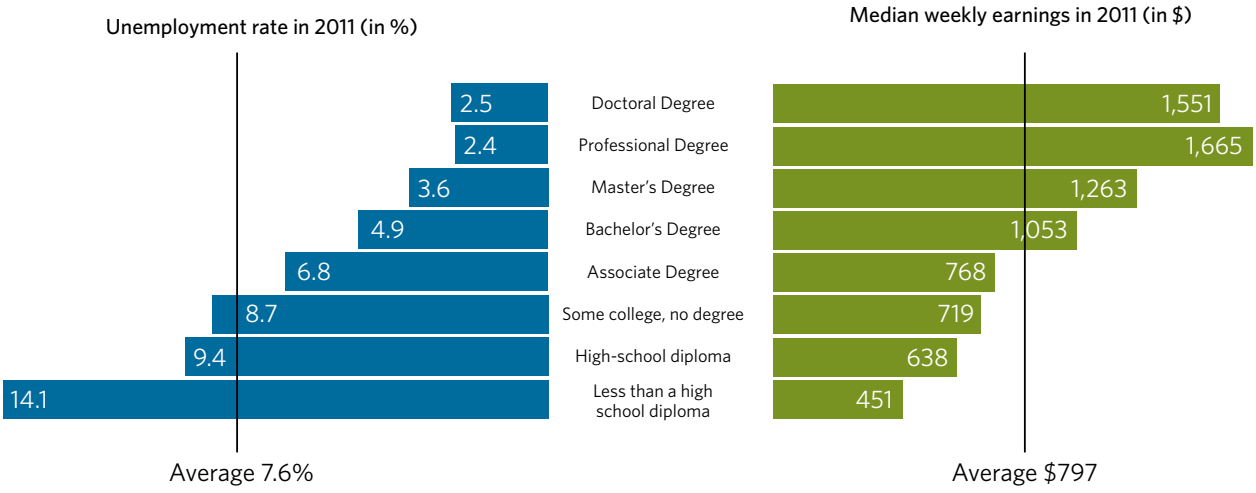
adults with less education in high-paying occupations can earn more than young adults with more education in less well-paying occupations.

For some, then, studying Plato is the right way to go; for others, it is mastering plumbing. In simple terms, our bumper sticker for 2012 reads, "individualized education and career passways—IECP's—for all."

Assessing "Goodness of Fit" among Education, Training, and Labor Market Opportunity

Indeed, education pays. National data clearly affirm that more education pays in terms of higher earnings and lower unemployment rates at each level of educational attainment. Evidence also shows, however, that in an increasingly large number of cases, people with less educational attainment have higher earnings than those with more education (See Figure 1). For example, 23.1 percent of those with some college earn more than the median holder of a bachelor's (four-year college) degree.

figure 1 **MEDIAN WEEKLY EARNINGS AND UNEMPLOYMENT RATES BY EDUCATIONAL ATTAINMENT, ADULTS AGES 25 AND OLDER, UNITED STATES, 2011**

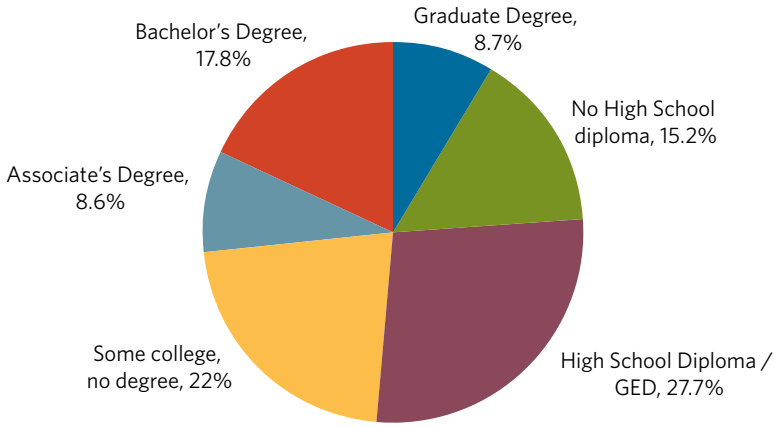


NOTE: AVERAGE WEEKLY EARNINGS FOR ALL AMERICANS IN 2011 TOTALED $797, AND THE AVERAGE UNEMPLOYMENT RATE WAS 7.6%.
SOURCE: US BUREAU OF LABOR STATISTICS, CURRENT POPULATION SURVEY, 2011.

In 2010, 17.8 percent of North Carolinians (ages twenty-five and older) had completed a bachelor's degree as their highest level of educational attainment, while another 8.7 percent possessed post baccalaureate degrees (See Figure 2 on the following page).

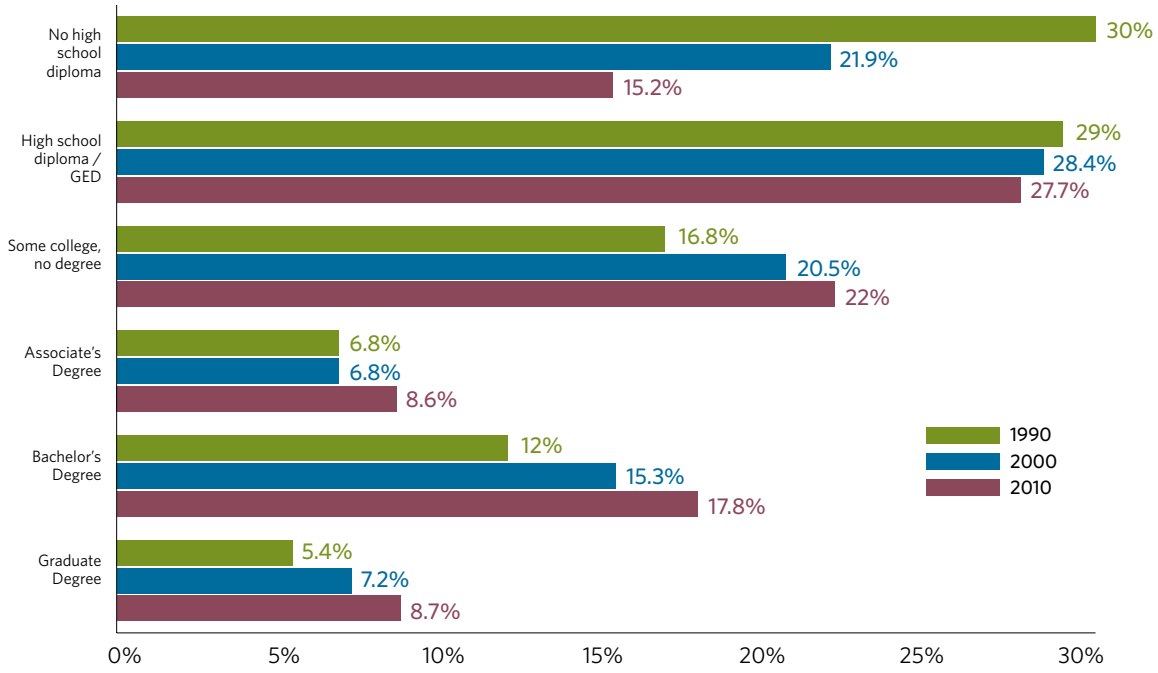
North Carolina has experienced improvements in educational attainment over the past twenty years.[16] The share of the adult population without a high school diploma fell by roughly half between 1990 and 2010 (See Figure 3 on the following page). Similarly, the share of the population with an associate's degree or higher climbed from 24.2 percent to 35.1 percent over the same period. Moreover, 8.6 percent of the state's adult population had earned an associate's degree, and another 22 percent of the adult population had completed at least some college, which brought the total share of the population with some level of education beyond high school to 57.1 percent. At the other end of the educational spectrum, 15.2 percent of the adult population lacked high school diplomas or equivalent credentials.

figure 2 **HIGHEST LEVEL OF EDUCATIONAL ATTAINMENT, ADULTS AGES 25 AND OLDER, NORTH CAROLINA, 2010**



SOURCE: US CENSUS BUREAU, AMERICAN COMMUNITY SURVEY, ONE-YEAR ESTIMATES, 2010. GLOBAL RESEARCH INSTITUTE ANALYSIS.

figure 3 **CHANGES IN HIGHEST LEVEL OF EDUCATIONAL ATTAINMENT, ADULTS AGES 25 AND OLDER, NORTH CAROLINA, 1990, 2000, AND 2010**

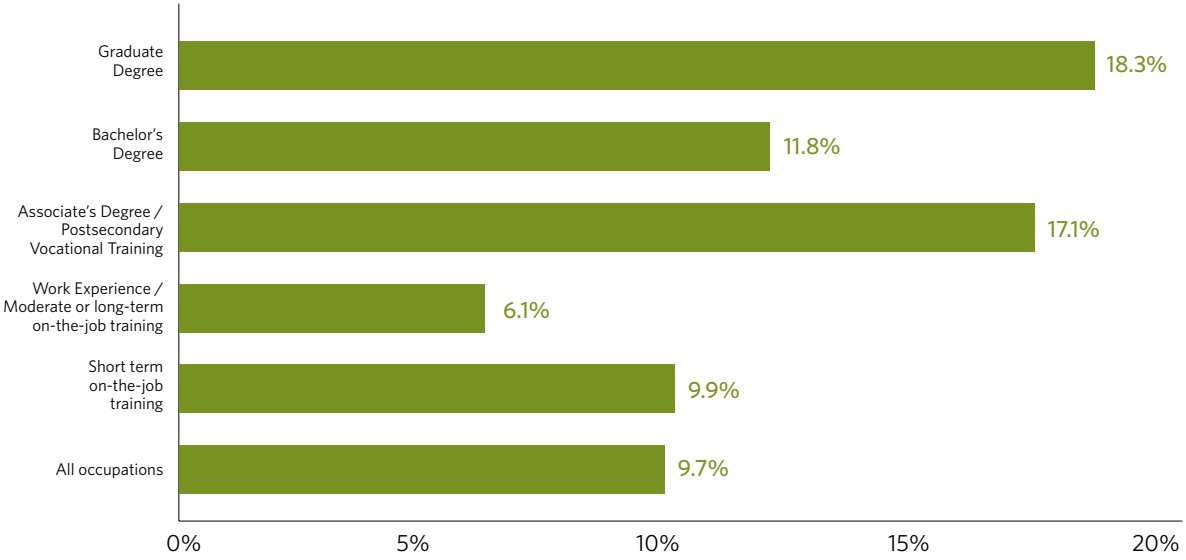


SOURCE: US CENSUS BUREAU, DECENNIAL CENSUS, 1990 AND 2000; AND AMERICAN COMMUNITY SURVEY, ONE-YEAR ESTIMATES, 2010. GLOBAL RESEARCH INSTITUTE ANALYSIS.

In coming years, the occupational structure of the North Carolina economy will continue to evolve. The Georgetown Center for Education and Workforce estimates that in 2018, 59 percent of all jobs in North Carolina (2.9 million jobs) will require some postsecondary training beyond high school. Moreover, according to the most recent state estimates prepared by the North Carolina Department of Commerce's Labor and Economic Analysis Division for the period spanning 2008 to 2018, BLS data show that occupations requiring workers with postsecondary educations are likely to grow at faster rates than those requiring workers with less formal education (see Figure 4). Yet because the high growth rates are coming off small numerical bases, such occupations will account for relatively few jobs. In absolute numbers, then, the vast majority of jobs that the state will likely add in coming years will be jobs that require no postsecondary education. By 2018, for example, an estimated 71.3 percent of the occupations expected to exist in North Carolina will require no more than on-the-job training or work experience (See Figure 5 on the following page).

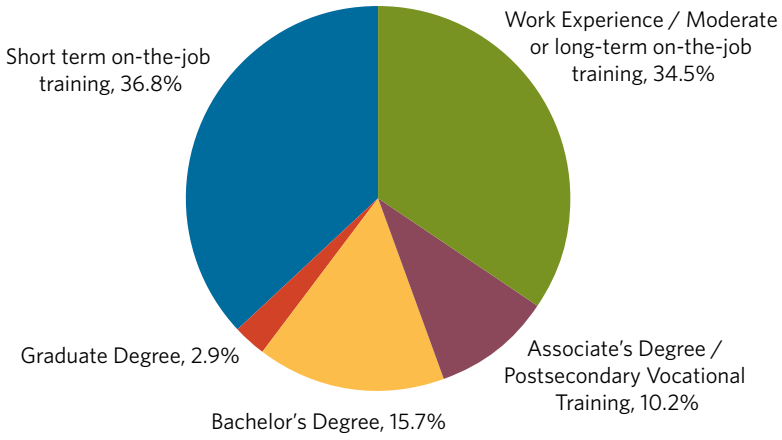
In actual numbers, the vast majority of the jobs that North Carolina is expected to add by 2018 are in lower-paying fields such as food service that require less skilled workers. In fact, only two of the ten occupations expected to add the most positions by 2018—registered nurses and accountants/auditors—require workers with postsecondary educations (See Table 1 on the following page). At the same time, those are the only two occupations in the top ten that today pay anything close to an annual income in excess of forty thousand dollars.

figure 4 **PROJECTED EMPLOYMENT GROWTH BY EDUCATIONAL OR TRAINING REQUIREMENTS OF OCCUPATION, NORTH CAROLINA, 2008-2018**



NOTE: OCCUPATIONS WITH SUPPRESSED DATA ARE EXCLUDED. SOURCE: NORTH CAROLINA DEPARTMENT OF COMMERCE, LABOR AND ECONOMIC ANALYSIS DIVISION, OCCUPATIONAL EMPLOYMENT PROJECTIONS, 2008-2018. SOUTH BY NORTH STRATEGIES, LTD. ANALYSIS.

figure 5 **PROJECTED OCCUPATIONAL COMPOSITION BY EDUCATIONAL OR TRAINING REQUIREMENTS, NORTH CAROLINA, 2018**



NOTE: OCCUPATIONS WITH SUPPRESSED DATA ARE EXCLUDED. SOURCE: NORTH CAROLINA DEPARTMENT OF COMMERCE, LABOR AND ECONOMIC ANALYSIS DIVISION, OCCUPATIONAL EMPLOYMENT PROJECTIONS, 2008-2018. SOUTH BY NORTH STRATEGIES, LTD. ANALYSIS.

table 1 **TEN FASTEST-GROWING OCCUPATIONS (PROJECTED) RANKED BY NUMERICAL CHANGE, NORTH CAROLINA, 2008-2018**

Occupation	Numerical Change	Percentage Change	Estimated Average Hourly Wage in NC (2012)	Entry-Level Educational Qualifications	On-the-Job Training
Home Health Aides	32,910	40.2%	$9.43	Less than high school	Short-term on-the-job training
Registered Nurses	22,800	27.1%	$29.31	Associate's degree	None
Combined Food Preparation and Serving Workers	18,940	18.5%	$8.64	Less than high school	Short-term on-the-job training
Retail Salespersons	15,720	11.4%	$11.45	Less than high school	Short-term on-the-job training
Customer Service Representatives	14,230	19.8%	$15.65	High school diploma or equivalent	Short-term on-the-job training
Cashiers	8,260	8.2%	$9.10	Less than high school	Short-term on-the-job training
Waiters and Waitresses	7,750	10.1%	$9.33	Less than high school	Short-term on-the-job training
Personal and Home Care Aides	7,160	44.7%	$9.47	Less than high school	Short-term on-the-job training
Landscaping and Groundskeeping Workers	6,930	19.0%	$11.16	Less than high school	Short-term on-the-job training
Accountants and Auditors	6,710	22.1%	$32.10	Bachelor's degree	None

SOURCES: NORTH CAROLINA DEPARTMENT OF COMMERCE, LABOR AND ECONOMIC ANALYSIS DIVISION, OCCUPATIONAL PROJECTIONS, 2008-2018; OCCUPATIONAL EMPLOYMENT AND WAGES, 2012; AND US BUREAU OF LABOR STATISTICS, OCCUPATIONAL OUTLOOK HANDBOOK: 2012-2013 EDITION. SOUTH BY NORTH STRATEGIES, LTD. ANALYSIS.

The BLS provides national-level information about education and training requirements for hundreds of occupations. In each of the occupations for which the BLS publishes projections, data are assembled in separate categories for education, work experience, and on-the-job training (short-term, moderate, and long-term). Examples of occupations in the short-term category include retail salespersons and maids and housekeeping cleaners. Examples of occupations in the moderate-term category include school bus drivers and advertising sales agents. Examples of occupations in the long-term on-the-job training category include opticians and automotive service technicians and mechanics.[17]

We need to assess whether newly reported BLS national projections for 2020 also will hold true for the future of North Carolina's labor market. [18]

- Occupations that typically need some type of postsecondary education for entry are projected to grow the fastest between 2010 and 2020. Of the thirty detailed occupations projected to have the fastest employment growth, seventeen typically require some type of postsecondary education for entry.
- Two-thirds of the thirty occupations projected to have the largest number of new jobs typically require less than a postsecondary education, no related work experience, or short- or moderate-term on-the-job training.
- More than two-thirds of all job openings are expected to be in occupations that typically do not require postsecondary education for entry. Eighteen of the thirty occupations with the largest number of projected total job openings are classified as typically needing less than a postsecondary education and needing short-term on-the-job training.

Whether or not we want to accept the "projected" reality, more than two-thirds of all job openings are expected to be in occupations that typically do not need postsecondary education for entry. Absent an increase in the number of middle-skill, middle-wage jobs and in the appropriately skilled workforce, North Carolina's economy is apt to lag behind those of other states across the region and the nation.

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The Road(s) to Recovery

What do the data tell us? What public policies do they point to for the future? How can we forge a new policy consensus? Currently, the total share of our population with some level of education beyond high school is 57.1 percent. In brief, the goal should be to increase opportunities for young adults to earn credentials or postsecondary degrees that prepare them to embark on meaningful career paths. We offer six guiding principles to develop individualized educational and career passways for all.

1. Foster Individual Education and Career Plans and Build Multiple Formal Passways

We need to move beyond the college-for-all-versus-some debate and create multiple educational passways to the future. Why passways, not passages or pathways? Two reasons really: (1) The Harvard Graduate School of Education has already taken pathways, and (2) more important, we're writing about the South. With this in mind, we thought it fitting to borrow a similar word from the legendary Mississippi bluesman Robert Johnson's iconic song, "Stones in My Passway." This song can of course be read in many ways, but we prefer to be straightforward: passway as path or route. For some, it's studying Plato. For others, it's plumbing. For others it's something else still. We must encourage and respect multiple passways for building an economically secure future for today's young adults.

David Stern, a University of California education professor, for example, has argued that some features of our high schools must be reformed if they are to serve all students successfully. "Our high schools must continue to provide young people with the preparation, skills and experiences that pave the way to both college and careers."[19] As the Harvard Graduate School of Education's 2011 *Pathways to Prosperity* report affirms, "Our current system places far too much emphasis on a single pathway to success: attending and graduating from a four-year college after completing an academic program of study in high school. Every high school graduate should find viable ways of pursuing both a career and a meaningful post-secondary degree or credential. For too many of our youth, we have treated preparing for college versus preparing for career as mutually exclusive options."[20] Indeed, it's time for North Carolina to eliminate this false choice for its young adults.

In North Carolina, our goal should be to assist all young adults by the end of middle school and start of high school in developing individualized education and career plans that include a program of study aligned with the new Common Core standards requirements; future degree and/or certificate objectives; and related work-linked learning experiences. As the *Pathways to Prosperity* report concludes, high school education could be strengthened "if the pathways to all major occupations were delineated so that students and their families could see the patterns of course-taking and other experiences that would best position them to gain access to college or to a specific career field."[21]

What is the best way to create multiple passways within the forthcoming Common Core standards?

Though not perfect, these Common Core standards, as developed by the National Governors Association Center for Best Practices and the Council of Chief State

School Officers, represent an important step toward more uniform national academic standards. The Common Core Initiative establishes a shared set of clear educational standards for English language arts and mathematics that states can voluntarily adopt.[22] These standards are designed to ensure that students graduating from high school are prepared to go to college or enter the workforce.

In June 2010, North Carolina adopted the Common Core in K–12 mathematics and English language arts.[23] However, one still must ask whether Common Core standards are more of the same one-size-fits-all boilerplate. We must continue to encourage efforts underway to align Career and Technical Education (CTE) and Common Core standards. For example, the CTE Division at the North Carolina Department of Public Instruction is working to create some online modules that will provide a structure for teachers to facilitate finding informational text that is appropriate in complexity for the CCSC and that also matches CTE content for their subject matter. As the Common Career Technical Core (CCTC) is more fully evaluated and adopted, North Carolina will have additional opportunities for alignment.[24]

In May 2012, Achieve, a bipartisan, non-profit organization that helps states raise academic standards, improve assessments, and strengthen accountability to prepare all young people for postsecondary education, work, and citizenship, laid out a blueprint for increased engagement between state education leaders and the career and technical education (CTE) community. The report, *Common Core State Standards & Career and Technical Education: Bridging the Divide between College and Career Readiness*, was developed in partnership with the Association of Career and Technical Education (ACTE) and the National Association of State Directors of Career and Technical Education Consortium (NASDCTEc).[25] North Carolina's challenge is to build some 'differentiation' within the Common Core standards (particularly in grades 11 and 12) so that young adults opting for "occupations that require less formal academic training also can take the initial steps toward viable career ladders."[26] According to Nancy Hoffman, vice president and senior adviser at Jobs for the Future (JFF), "The Common Core is supposed to signal college and career readiness, but 'career' has not received the attention it needs, especially given college costs and the demands of the 21st century economy."[27]

The interest generated by the *Pathways* report has led to the launch of the Pathways to Prosperity Network, a collaboration among Harvard's Education School, the JFF, and six states (including North Carolina) committed to ensuring that more young adults complete high school, obtain postsecondary credentials with value in the labor market, and get launched on careers while leaving open the prospect of further education. The multistate, multiyear initiative is managed by JFF. To accomplish these goals, North Carolina will engage with employers and educators to build career pathways systems for high school students. Each state effort will be led by a coalition of key public and private sector leaders committed to mobilizing and sustaining political and financial support for the agenda and addressing legislative or regulatory barriers that inhibit progress.[28]

The work will focus initially on northeastern (Washington, Halifax, Martin, and Beaufort counties) and southwestern (Rowan, Iredell, and Cabarrus counties) North Carolina, but the long-term goal is to create a statewide system of career pathways that can serve a majority of the state's students.[29] The North Carolina New Schools Project will support the state board in its efforts to assess gaps in the system and identify the tools and policy outcomes needed to create a seamless statewide workforce development system. The North Carolina Community College system also is a partner.[30] Hopefully,

North Carolina can continue to build grade 9-14 career pathways aligned with high-growth sectors of the regional economy that combine academics with career and technical education. In the twenty-first century, those entering the labor market need immediate job skills and all students need a range of cognitive and career competencies that will enable them to handle changing jobs and career contexts and sustain a capacity for job enhancement through lifelong learning.

Another well-established model for promoting a combined academic and career-technical curriculum is the Southern Regional Education Board's High Schools That Work (HSTW) initiative, which aims "to prepare students for careers and further education by improving curriculum and instruction in high schools." HSTW has grown into a model effort to integrate challenging academics and CTE.[31] In fact, new CTE programs bear little relationship to older vocational education programs. The program is based on the belief that most students can master complex academic and technical concepts if schools create environments that encourage students to make the effort to succeed.[32] In any case, North Carolina's participation in the Pathways to Prosperity Network is a promising development in an effort to develop future best practices.

2. Nothing's Wrong with a Certificate and Its Rate of Return

Second, we find ourselves in some agreement with Jane Shaw, president of the Pope Center for Higher Education Policy, and a range of policy thinkers in affirming that certificate programs are viable alternatives to college degrees. For example, as Shaw argued in a recent *USA Today* piece, "There's a debate going on whether everybody ought to go to college. Though college should be available for all serious students, a four-year degree is not the route for everyone. Certificates offer those with a vocational interest opportunities for solid job prospects for less time and money (and thus lower debt) than do many four-year degrees. They show that people have more opportunities to pursue their self-interest than we often think."[33] And many other experts across the ideological spectrum—all over the world—agree with her conclusion.

Certificates are recognition of completion of a course of study based on a specific field, usually associated with a limited set of occupations. Certificates differ from other kinds of labor market credentials such as industry-based certifications and licenses, which typically involve passing an examination to prove a specific competency, completing an apprenticeship, or attending company or government training programs. Certificates refer to awards from business, vocational, trade, and technical schools as well as to technical and nondegree awards from two- and four-year colleges. Certificates tend to be occupationally focused and to rely on training in specific fields as opposed to the broader general education approach of two- and four-year degrees. These programs function as occupationally oriented classroom learning platforms in trade, vocational, technical, and business fields. Certificates can provide flexible learning environments that fit an "increasingly nonlinear education and training system" and can be combined with stackable industry certifications as different competencies are certified.[34] (See Appendix 2 for the range of credentials available within the North Carolina Community College System (NCCCS).

The Georgetown Center for Education and the Workforce has recently issued a report concluding that certificates can serve as "the first rung on the ladder to a college degree or as training for workers with degrees engaged in the process of lifelong learning and career

development."[35] Robert Lerman of American University and the Urban Institute agrees: "We need more systematic research and analysis that identifies what workers must be able to accomplish to qualify for specific occupations and levels within these occupations. Overall, the evidence is strong that the overwhelming majority of workers rarely use the advanced academic skills expected of a four-year college applicant and certainly those lesser skills acquired by those attending four-year colleges who don't graduate."[36]

Brian Bosworth, founder and president of Future Works, concludes that a commitment to expanding high-quality certificate programs (subbaccalaureate) of at least one year offers a strategy for reversing the likely decline in labor force educational attainment, meeting postsecondary attainment objectives, reaching hard-to-serve populations, and strengthening economic growth. Bosworth suggests that North Carolina and other states "should encourage community colleges to build out certificate programs with labor market payoff."[37]

These certificate jobs pay more than many of the jobs held by those with bachelor's degrees. For example, 27 percent of people with postsecondary licenses or certificates—credentials short of an associate's degree—earn more than the average bachelor's degree recipient. On average, certificate holders earn 20 percent more than workers with only a high school education—about $240,000 in lifetime earnings. More than 60 percent of certificates have a clear economic payoff over high school diplomas: The holders of certificates earn 10 percent more than the median high school graduate. [38]

A variety of public and private institutions and organizations in North Carolina have established correlate skill certification programs in recent years, with the North Carolina Community College System taking the lead. Many such programs reflect true public sector–private sector collaborations, whereby a person seeking training can receive privately branded skill certifications—whether from Cisco or Siemens or from Snap-On or AutoCAD—via training (publicly subsidized) at a state community college. Because such skill certifications are stackable, a person can amass a diverse portfolio of skills relevant to today's and tomorrow's labor market in a relatively brief period of time. We need to embed industry-based credentials in education pathways and by forming a common metric of standards and competencies, this will increase the acceptance of credits for articulation across programs and institutions in North Carolina, enhancing efficiencies in our education system.

For many young adults in North Carolina, a certificate can thus be a valuable pathway to an economically secure future. Certificate programs that promote sustained job security and provide an articulated passway toward an associate or baccalaureate degree can help North Carolinaians achieve their postsecondary and workforce goals. We need to study which certificate investments will produce a high return on investment and meet workforce needs.

3. Investing in "Middle-Skill" Jobs and "Globally Competitive and Competent" Workers

During the past decade, job losses in traditional manufacturing sectors have resulted in significant economic hardship across the state. North Carolina's workforce and education leaders face the challenge of preparing a larger proportion of our citizens for better-paying, higher-skill jobs. This challenge is made more daunting by the large existing pool of workers who lack the most basic skills or credentials (e.g., a

high school degree or postsecondary training and education) necessary for these new higher-quality jobs. As a result, North Carolina must seek to provide the state's existing workforce with better access to longer-term training and education to meet the needs of its fast-growing industries.[39]

As we have seen, more than two-thirds of all job openings are expected to be in occupations that typically do not need postsecondary education for entry. Thus, projections might suggest a future of low-education, low-skill, low-wage jobs for North Carolina's workers. However, the National Skills Coalition argues that middle-skill jobs, which require more than high school but not a four-year degree, make up the largest part of our labor market. These postsecondary education or training requirements can include associate's degrees, vocational certificates, significant on-the-job training, previous work experience, or generally some college less than a bachelor's degree.

All too often, key North Carolina industries are unable to find enough sufficiently trained workers to fill these jobs. In recognition of this problem—or opportunity—public and private sector interests again are collaborating in innovative and exciting ways. For example, representatives from a number of community colleges and universities around the country (including the North Carolina Community College System) are working with the National Association of Manufacturers' 501(c)3 arm, the Manufacturing Institute, not only to improve the NAM-endorsed Manufacturing Skills Certification System but also better to align educational passways for vocationally oriented students. The latter initiative entails closer integration of secondary schools, certificate programs, and two-year and four-year degree programs. Other exciting possibilities on the horizon include—at the high end—proposals to establish "manufacturing universities," wherein leading manufacturers and universities would work together to build the type of applied (cooperative learning) curriculum relevant to manufacturing needs in the twenty-first century. Models for such institutions already exist, most notably the venerable Kettering University (formerly the GM Institute) in Flint, Michigan, and the much younger Franklin W. Olin College of Engineering in Needham, Massachusetts.[40]

In another new development, Central Piedmont Community College (CPCC) has announced the launch of Apprenticeship Charlotte, a new career-training program, which will customize education and training to meet the specific needs of individual companies. CPCC has created Apprenticeship Charlotte by drawing on its experience with its Apprenticeship 2000 program, which focuses on high school students and serves about a dozen European manufacturing companies in the Charlotte region. Through Apprenticeship Charlotte, CPCC will offer multiple apprenticeship models, including associate degree, diploma and certificate options with multiple entry points from high school through experienced workers. The goal is to make apprenticeships more flexible to meet employer needs and provide shorter training experiences to address critical workforce needs.

A couple of local and national workforce development trends affirmed CPCC's decision to develop Apprenticeship Charlotte. First, there is a well-documented skills gap or shortage of trained workers for high-tech manufacturing jobs and in other technical fields. Second, most companies only want job candidates that already have some level of experience.

Many policy observers also suggest that building a globally competitive workforce depends on an identification of the basic skills required for a globally ready worker. According to Harvard competitiveness guru Michael Porter, a globally competitive

workforce has the "knowledge, skills, attitudes, and behaviors to continually adapt to ever-changing and escalating labor market requirements"[41]

The Pope Center's George Leef brought our attention to a very promising effort to build this new globally competitive workforce: the MacArthur Foundation's Badges for Lifelong Learning Competition.[42] According to the program, "Learning happens everywhere and at every age. Traditional measures of achievement, like high school diplomas, GEDs and college degrees, do not adequately convey the full range of knowledge and skills that students and workers master. Badges are a simple, visible representation of accomplishment that can be earned through a variety of formal and informal learning environments. They can present a more nuanced picture of what an individual knows and can do. These competencies can then be demonstrated and marketed to employers, academic institutions and peer communities"[43]

One promising example is the National Manufacturing Badge System. As proposed by the aforementioned Manufacturing Institute, the nonprofit, nonpartisan affiliate of the National Association of Manufacturers, this system recognizes the wide range of skills, competencies, and achievements that students and workers need to be competitive in an advanced manufacturing workplace. This initiative supplements formal learning requirements and pathways, providing individuals with an additional online platform for conveying their knowledge and skills to employers.[44]

Employers demand workers who can think critically and solve problems. These job-based educational requirements reflect a need for highly skilled workers who can perform complex, ever-changing tasks. Evidence indicates that both cognitive and noncognitive skills affect labor market outcomes. Cognitive skills include a wide variety of abilities that are necessary for analyzing sounds and images, recalling information, making associations among different pieces of information, and maintaining focus on a given task. These skills include literacy, numeracy, and an ability to solve abstract problems. Although educators have not traditionally highlighted or perhaps valued interactive ("soft") skills such as effective communication and the ability to work well with others, awareness of their importance for young adult success is growing.

As the Organization for Economic Co-Operation and Development, a grouping of the world's most developed countries, acknowledges in several reports, many other nations now prepare much larger fractions of their young adults with occupationally relevant skills and credentials by their early twenties.[45] Young people in other countries acquire many such skills in nonacademic settings, and educators and policymakers around the world (including in the United States) have increasingly taken notice. As a result, secondary CTE is no longer seen as the alternative—and lesser—track for students who do not take the traditional academic pathway to college. Rather, it can link secondary and postsecondary education with the labor market and provide opportunities and passways for students pursuing a variety of careers, including both those students who are college-bound and those who are not. Many observers conclude that workplace learning can play an important role because workplaces are a favorable learning environment for the development of soft skills and the blend of school and workplace learning is a powerful and effective method of preparing young people for jobs.

Other observers conclude that we need to ensure that our high school (and college) graduates are globally competent as well as trained in specific skills. As former North Carolina governor Jim Hunt concluded, "If we do not reinvent education for a new era, our children will simply not be able to compete in the global economy."[46] This

global competence skill set would include knowledge of other world regions, cultures, languages, economies, and global issues; the ability to work in cross-cultural teams; the ability to assess information from different sources around the world; and respect for other cultures.

4. Building Diverse Passways from Community College to a Four-Year College Degree

Young adults' aspirations and goals can change; a community college degree can be a stepping-stone to a four-year college degree. An important and promising pathway in North Carolina is the Carolina Student Transfer Excellence Program (C-STEP). In 2006, with the help of the Jack Kent Cooke Foundation, the University of North Carolina at Chapel Hill launched C-STEP to enable more community college students to transfer to and graduate from UNC. C-STEP currently serves nearly 180 students, more than 50 of whom have already enrolled at Chapel Hill.[47]

Students participating in C-STEP agree to earn appropriate associate's degrees and participate actively in the program. C-STEP offers special events and advising, both at students' home colleges and at Carolina, while they are pursuing their associate's degrees and provides exemplary transition and support services once they have enrolled at UNC and are pursuing their bachelor's degrees. While the C-STEP partnership is currently limited to Alamance Community College, Carteret Community College, Central Carolina Community College, Craven Community College, Durham Technical Community College, Fayetteville Technical Community College, and Wake Technical Community College, this program can serve as a model for other schools within the UNC and community college systems, and C-STEP can be expanded across the state.[48]

Moreover, annually, we need to review and strengthen the North Carolina Comprehensive Articulation Agreement (CAA), the agreement governing the transfer of credits between the state's community colleges and public universities, to meet its stated objective of a "smooth transfer of students."[49] The 2012 Transfer Student Success Conference, a collaboration between East Carolina University and the UNC General Administration, represents the start of an important dialogue to strengthen bridges as well as to support these students during their transitions from community colleges to four-year college environments. For some young adults, a certificate or a community college degree could be the finish line; for others, it could represent a meaningful way to build a bridge to a college degree at any school within the UNC system.

5. Assessing Future Fits among Education, Training, and the Labor Market

Policymakers and educators must pay particular attention to the fit between educational qualifications and future labor market opportunities. What data can help us connect the dots?

U.S. government data can certainly help. The BLS provides information about education and training requirements for hundreds of occupations. For each of the occupations for which the BLS publishes projections, national-level data are assembled in separate categories for education, work experience, and on-the-job training. Occupations—

categories of jobs that are similar with respect to the work performed or skills possessed by incumbent workers—can be grouped to create estimates of the education and training needs for the labor force as a whole and estimates of the outlook for occupations with various types of education or training needs. The North Carolina Department of Commerce's Industry and Occupational Projections Program makes some data available at the state level.[50]

Compared to the old BLS education and training categories, the system implemented in 2012 presents a more complete picture of the education, related work experience, and training needed for entry into a given occupation and to become competent in that occupation. The new BLS education and training system allows for a fuller understanding of the preparation needed for entry into and competency in a given occupation by examining the work experience in related occupations as well as the on-the-job training and the required education. For example, among occupations assigned to the high school education category, those in which apprenticeship is the typical on-the-job training are projected to grow by 22.5 percent by 2020 and to have higher wages than those in the high school group as a whole.[51]

With this in mind, our fifth recommendation puts us at UNC-Chapel Hill to work—to assemble North Carolina data and to paint a more complete picture of the education, related work experience, and training needed for entry into a given occupation and to become competent in that occupation. We need to make such data widely accessible at the regional level and available to the public school, higher education, commerce and workforce development, and employer communities. Policymakers, education leaders, high school students, their teachers, counselors and parents, and all high school and postsecondary students entering the labor market can use the data to align their individual education and career plans with future occupational trends and employment opportunities.

6. Innovating while Insuring against Future Economic Uncertainty

Given the fact that North Carolina is one of the leading U.S. financial centers—home to large banks and insurance companies—over the intermediate term it would behoove the state's public and private sector leaders to explore the creation of new types of labor market risk-reduction tools via insurance instruments and financial products. In a sense, such tools can be seen as American, private sector analogues to public "flexicurity" policies common in parts of Europe. One exciting new possibility is "livelihood insurance." According to Yale economist Robert Shiller, one of the country's leading experts on finance, livelihood insurance could come in the form of a long-term insurance policy that an individual could purchase on a career, an education, or a particular investment in human capital. One could choose to specialize far more narrowly than is commonly done today—say, in a particularly interesting career direction—developing the expertise for such a career without fear of the consequences if the initiative turned out badly. The insurance policy would pay off with a supplement to one's lifetime income if it turned out years or decades later, based on verifiable data, that there was less of a market or even no market at all for people with this career."[52]

Moreover, according to Shiller, "[s]omeday there could also be marketplaces, like futures markets, for career incomes by occupation. If the markets were long term, they would entail price discovery for the career decisions individuals made. Promising careers would be indicated by high market prices."[53] Such marketplaces would appeal to certain segments of the labor forces in North Carolina and other states.

Conclusion: Forging a 'Purple' Consensus for the Future North Carolina

These are highly partisan times. Our fellow citizens are ready for pragmatic policies. How can we move beyond red versus blue and secure a hopeful purple future for tomorrow's young adults? For all our young adults, affirming different passways to high-quality education and training is good policymaking rather than more of the same old partisan politics.

North Carolina's economy cannot create better jobs if we do not produce workers qualified to fill them. Almost all individuals seek to acquire skills and knowledge—in other words, human capital—to increase their value in labor markets. Experience, training, and education are the most common mechanisms for acquiring human capital, with formal education being primary for most individuals. Generally speaking, education facilitates the acquisition of new skills and knowledge that increase productivity.

How can we move beyond red versus blue and secure a hopeful purple future for tomorrow's young adults?

Most experts emphasize the importance of human capital, particularly as gained through formal education, for economic progress. Indeed, policy-oriented social scientists have reached a consensus that education is an important determinant of individual earnings as well as of economic growth. The amount of education individuals receive affects not only their earnings but also the quality of their employment. Moreover, although educational attainment has a positive effect on workers' earnings, the types of knowledge required in an occupation also play important roles in shaping future labor market success.

For decades, North Carolina's policymakers have clung to one widespread article of faith: the more education, the better. To be sure, the positive link between schooling and productive skills remain the starting point for any consideration of the subject. But we must also focus on particular skills, not just on the level of formal education attainment. Moreover, our formal educational and training system must produce graduates with knowledge, skills, and experience relevant to labor market demand.

The type of specific skills facilitated by formal education and training will matter. However, given the wide range of knowledge and skills that is important to job performance, the number of years of formal education provides too simplistic a view of human capital. Research findings show that although educational attainment has a positive effect on workers' earnings, the types of knowledge required in an occupation play equally important roles.

Back in 2004, prior to the Great Recession, the Federal Reserve Bank of Dallas released a report, *What D'Ya Know? Lifetime Learning in Pursuit of the American Dream*. In advocating the importance of lifetime learning in a rapidly changing, knowledge-based economy, the report concludes, "Learning doesn't stop once we have a diploma in hand. Continually expanding knowledge and updating skills are important to individual workers as well as the economy."[54] E-learning—utilizing electronic technologies to access educational curriculum outside of a traditional classroom—can be a powerful medium for delivering lifelong learning opportunities.

North Carolina is already recognized as a national leader in developing early college high schools. Early college high schools are small schools designed so that young adults can earn both a high school diploma and an Associate's degree or up to two years of credit toward a Bachelor's degree. Since 2005, the number of early college high schools in North Carolina has increased more than fivefold, from 13 to 70. Located on the campuses

of two- and four-year colleges and universities, early college high schools can help attract students who often are under-represented in college: minorities, students from low-income families and those whose parents never attended college.

North Carolina is poised to be a leader in STEM education. Under the state's $400 million federal Race to the Top grant, the North Carolina New Schools Project, in cooperation with the N.C. Department of Public Instruction, higher education and the private sector, is developing statewide networks of STEM schools oriented to four fields that are consistent with North Carolina's economic and workforce development requirements: health and life sciences; energy and sustainability; biotechnology and agriscience; and aerospace and advanced manufacturing.

Most state policymakers and higher education leaders would agree that North Carolina must increase the number of students who earn high-quality postsecondary degrees and credentials because the skills and knowledge thereby provided are essential to our future economic growth and to the prosperity of our young adults. As part of this new consensus, our new governor, legislators, and state higher education and workforce development policymakers must collaborate in a bipartisan way and with private sector employers to increase high school and postsecondary achievement.

While policymakers must consider education and training a key part of their governing mandate as well as arrive at a consensus on appropriate levels of state spending, learning opportunities are not provided and supported only by state governments. The federal government, the private and nonprofit sectors, and philanthropy are all involved and can all help guide the way. If we continue to forge innovative partnerships, invest in education and training, and educate young adults who are flexible in their skill sets, North Carolina can prepare the adaptable, globally ready students and workers who will be in demand tomorrow.

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We have no illusions that we have treated all of the relevant policy themes in this brief discussion paper. We could have devoted attention, for example, to the possibilities already opening up here in North Carolina as a result of exciting secondary school/community college dual-degree programs. Moreover, we could have mentioned the possibility that in the not-too-distant future, Massive Open Online Courses (MOOCs) offered by academic institutions, trade associations, or individual corporations here or abroad may play a significant role in educational training and workforce development. But we have made a start.

North Carolina's policy and educational leaders therefore need to continue to support efforts to expand our people's knowledge, skills, and experience from kindergarten through adult career and technical education. The recommendations contained herein can help. Let's continue the dialogue in a bipartisan way and build a purple future for all our young adults.

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46 *Putting the World into World-Class Education: A National Imperative and a State and Local Responsibility*, n.d., http://asiasociety.org/files/nationalpolicyrecommendations.pdf.

47 *Carolina Student Transfer Excellence Program (C-STEP)*, n.d., http://admissions.unc.edu/CSTEP/.

48 Jack Kent Cooke Foundation, *University of North Carolina at Chapel Hill—Achievements and Promising Practices*, n.d., http://www.jkcf.org/grants/community-college-transfer/grant-recipients/the-university-of-north-carolina-at-chapel-hill-unc/university-of-north-carolina-at-chapel-hill-achievements-and-promising-practices/.

49 The CAA defines a forty-four-credit-hour general education core that, if completed at the community college, is fully transferable to UNC institutions and will satisfy general education requirements. This means that a transfer student who completes the general education core at a North Carolina community college will not be required to take other general education courses at a UNC institution even if that credit hour core does not precisely match the university's. Thus, all North Carolina community college students who earn an associate's degree according to the guidelines of the CAA will be treated as juniors at the receiving UNC institution. All sixteen UNC public universities endorse the CAA. In addition, the following private colleges and universities endorse the Independent Comprehensive Articulation Agreement: Barton, Belmont Abbey, Bennett, Brevard, Campbell, Catawba, Chowan, Gardner-Webb, Johnson C. Smith, Lees-McRae,

Livingstone, Louisburg, Mars Hill, Montreat, Mount Olive, North Carolina Wesleyan, Pfeiffer, Queens, St. Andrews University, Saint Augustine's, Salem College, Shaw, Warren Wilson, and Wingate.

50 The information contained in North Carolina Occupational Trends is prepared according to the procedures outlined in various memoranda and technical manuals from the U.S. Department of Labor and the BLS. For more information on BLS projections methodology, visit http://bls.gov/opub/hom/homch13_itc.htm. The primary goal of the Occupational Projections Program is to determine specific future occupational trends and labor market demands.

51 Dixie Sommers and James C. Franklin, "Employment Outlook: 2010–2020: Overview of Projections to 2020," *Monthly Labor Review,* January 2012, http://www.bls.gov/opub/mlr/2012/01/art1full.pdf.

52 Robert Shiller, *Finance and the Good Society* (Princeton: Princeton University Press, 2012), 67.

53 Ibid.

54 *What D'Ya Know? Lifetime Learning in Pursuit of the American Dream* (Federal Reserve Bank of Dallas, Annual Report), 2004, http://dallasfed.org/assets/documents/fed/annual/2004/ar04.pdf.

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APPENDIX 1: PRESENTERS AND PARTICIPANTS IN THE CAROLINA SEMINAR ON THE FUTURE OF NORTH CAROLINA, 2011-2012

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Executive Director
Southern Growth Policies Board

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Policy Director
Office of the Governor of North Carolina

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*Presenter

APPENDIX 2: INDUSTRY-RECOGNIZED CERTIFICATIONS OFFERED BY THE NORTH CAROLINA COMMUNITY COLLEGE SYSTEM BY COLLEGE

College	Certifications
Alamance Community College	
Asheville Buncombe Technical Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, American Society for Quality Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications.
Beaufort County Community College	North Carolina or National Career Readiness Certificate, Cisco Certifications.
Bladen Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications.
Blue Ridge Community College	SkillsUSA Workforce Ready System, North Carolina or National Career Readiness Certificate, Manufacturing Skill Standards Council (MSSC) Certifications, OSHA Certifications, Mobile Air Conditioning Society Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications.
Brunswick Community College	North Carolina or National Career Readiness Certificate, Water Quality Association Certifications, National Center for Construction Education and Research (NCCER) Certifications, LEED Certifications, OSHA Certifications, Certified Photovoltaic Installer, Microsoft Office Certifications.
Caldwell Community College and Technical Institute	SkillsUSA Workforce Ready System, North Carolina or National Career Readiness Certificate, American Composites Manufacturers Association Certifications, American Welding Society (AWS) Certifications, National Institute for Metalforming Skills (NIMS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, Certified Electronics Technician (CET), International Fluid Power Society Certifications, National Center for Construction Education and Research (NCCER) Certifications, Building Performance Institute Certifications, LEED Certifications, OSHA Certifications, Certified Photovoltaic Installer, Mobile Air Conditioning Society Certifications, Cisco Certifications, Microsoft Office Certifications, Mechatronics Certification, National Institute of Automotive Service Excellence (ASE) Certifications, Federal Aviation Administration.
Cape Fear Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, American Society for Quality Certifications, Certified Electronics Technician (CET), Water Quality Association Certifications, Building Performance Institute Certifications, OSHA Certifications, Certified Photovoltaic Installer, Mobile Air Conditioning Society Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications, Federal Aviation Administration.
Carteret Community College	North Carolina or National Career Readiness Certificate, American Composites Manufacturers Association Certifications, American Welding Society (AWS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, Water Quality Association Certifications, National Center for Construction Education and Research (NCCER) Certifications, OSHA Certifications, Microsoft Office Certifications.
Catawba Valley Community College	North Carolina or National Career Readiness Certificate, National Institute for Metalforming Skills (NIMS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, American Society for Quality Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications, Mechatronics Certification, National Institute of Automotive Service Excellence (ASE) Certifications.
Central Carolina Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, National Institute for Metalforming Skills (NIMS) Certifications, Building Performance Institute Certifications, LEED Certifications, Certified Photovoltaic Installer, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications.
Central Piedmont Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, National Institute for Metalforming Skills (NIMS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, American Society for Quality Certifications, National Center for Construction Education and Research (NCCER) Certifications, Building Performance Institute Certifications, LEED Certifications, OSHA Certifications, Packaging Machinery Manufacturers Institute (PMMI) Certifications, Cisco Certifications, Microsoft Office Certifications, Mechatronics Certification, National Institute of Automotive Service Excellence (ASE) Certifications.
Cleveland Community College	SkillsUSA Workforce Ready System, North Carolina or National Career Readiness Certificate, National Institute for Metalforming Skills (NIMS) Certifications, Certified Electronics Technician (CET), International Society for Automation (ISA) Certifications, National Center for Construction Education and Research (NCCER) Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications.

Coastal Carolina Community College	SkillsUSA Workforce Ready System, North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, National Institute for Metalforming Skills (NIMS) Certifications, Certified Electronics Technician (CET), National Center for Construction Education and Research (NCCER) Certifications, OSHA Certifications, Mobile Air Conditioning Society Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications, Federal Communications Commission.
College of The Albemarle	North Carolina or National Career Readiness Certificate, Federal Aviation Administration.
Craven Community College	SkillsUSA Workforce Ready System, North Carolina or National Career Readiness Certificate, American Composites Manufacturers Association Certifications, American Welding Society (AWS) Certifications, National Institute for Metalforming Skills (NIMS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, American Society for Quality Certifications, International Society for Automation (ISA) Certifications, National Center for Construction Education and Research (NCCER) Certifications, Building Performance Institute Certifications, LEED Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications, Federal Aviation Administration, Federal Communications Commission.
Davidson County Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, National Institute for Metalforming Skills (NIMS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, International Society for Automation (ISA) Certifications, National Center for Construction Education and Research (NCCER) Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications, Mechatronics Certification, National Institute of Automotive Service Excellence (ASE) Certifications.
Durham Technical Community College	North Carolina or National Career Readiness Certificate, National Institute for Metalforming Skills (NIMS) Certifications, American Society for Quality Certifications, Water Quality Association Certifications, National Center for Construction Education and Research (NCCER) Certifications, LEED Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications, Mechatronics Certification, National Institute of Automotive Service Excellence (ASE) Certifications, Federal Aviation Administration.
Edgecombe Community College	North Carolina or National Career Readiness Certificate, Manufacturing Skill Standards Council (MSSC) Certifications, Certified Electronics Technician (CET), International Society for Automation (ISA) Certifications, National Center for Construction Education and Research (NCCER) Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications.
Fayetteville Technical Community College	OSHA Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications.
Fayetteville Technical Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, Water Quality Association Certifications, National Center for Construction Education and Research (NCCER) Certifications, LEED Certifications, OSHA Certifications, Certified Photovoltaic Installer, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications, Federal Aviation Administration.
Forsyth Technical Community College	North Carolina or National Career Readiness Certificate, National Institute for Metalforming Skills (NIMS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications.
Gaston College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, National Institute for Metalforming Skills (NIMS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, Certified Electronics Technician (CET), International Fluid Power Society Certifications, International Society for Automation (ISA) Certifications, National Center for Construction Education and Research (NCCER) Certifications, Building Performance Institute Certifications, LEED Certifications, OSHA Certifications, Certified Photovoltaic Installer, Microsoft Office Certifications, Mechatronics Certification, National Institute of Automotive Service Excellence (ASE) Certifications.
Guilford Technical Community College	SkillsUSA Workforce Ready System, North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, National Institute for Metalforming Skills (NIMS) Certifications, Building Performance Institute Certifications, OSHA Certifications, Packaging Machinery Manufacturers Institute (PMMI) Certifications, Cisco Certifications, Microsoft Office Certifications, Federal Aviation Administration, Federal Communications Commission.
Halifax Community College	SkillsUSA Workforce Ready System, North Carolina or National Career Readiness Certificate, LEED Certifications, Cisco Certifications, Microsoft Office Certifications.
Haywood Community College	North Carolina or National Career Readiness Certificate, OSHA Certifications.

Isothermal	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, National Institute for Metalforming Skills (NIMS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, Certified Electronics Technician (CET), National Center for Construction Education and Research (NCCER) Certifications, Building Performance Institute Certifications, LEED Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications, Mechatronics Certification, National Institute of Automotive Service Excellence (ASE) Certifications, Federal Communications Commission.
James Sprunt Community College	North Carolina or National Career Readiness Certificate, Microsoft Office Certifications.
Johnston Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, American Society for Quality Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications.
Lenoir Community College	SkillsUSA Workforce Ready System, North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, National Center for Construction Education and Research (NCCER) Certifications, Mobile Air Conditioning Society Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications, Federal Aviation Administration.
Martin Community College	American Welding Society (AWS) Certifications, Cisco Certifications, National Institute of Automotive Service Excellence (ASE) Certifications.
McDowell Technical Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications.
Mitchell Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, American Society for Quality Certifications, Certified Electronics Technician (CET), OSHA Certifications, Microsoft Office Certifications.
Montgomery Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, Cisco Certifications, Microsoft Office Certifications.
Nash Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, National Institute for Metalforming Skills (NIMS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications, Mechatronics Certification, National Institute of Automotive Service Excellence (ASE) Certifications.
Pamlico Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, National Center for Construction Education and Research (NCCER) Certifications, OSHA Certifications, Microsoft Office Certifications.
Piedmont Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, Building Performance Institute Certifications, LEED Certifications, OSHA Certifications, Microsoft Office Certifications.
Pitt Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, American Society for Quality Certifications, National Center for Construction Education and Research (NCCER) Certifications, Building Performance Institute Certifications, OSHA Certifications, Certified Photovoltaic Installer, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications, Federal Aviation Administration.
Randolph Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, National Institute for Metalforming Skills (NIMS) Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications.
Richmond Community College	North Carolina or National Career Readiness Certificate, Manufacturing Skill Standards Council (MSSC) Certifications, Water Quality Association Certifications, OSHA Certifications.
Roanoke-Chowan Community College	SkillsUSA Workforce Ready System, North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, National Center for Construction Education and Research (NCCER) Certifications, Building Performance Institute Certifications, LEED Certifications, OSHA Certifications, National Institute of Automotive Service Excellence (ASE) Certifications, Federal Communications Commission.
Robeson Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, National Institute for Metalforming Skills (NIMS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, Certified Electronics Technician (CET), Water Quality Association Certifications, National Center for Construction Education and Research (NCCER) Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications, Mechatronics Certification.
Rockingham Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications.

Rowan-Cabarrus Community College	SkillsUSA Workforce Ready System, North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, National Center for Construction Education and Research (NCCER) Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications.
Sampson Community College	North Carolina or National Career Readiness Certificate.
Sandhills Community College	North Carolina or National Career Readiness Certificate, Water Quality Association Certifications, National Center for Construction Education and Research (NCCER) Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications.
South Piedmont	North Carolina or National Career Readiness Certificate, Manufacturing Skill Standards Council (MSSC) Certifications, Water Quality Association Certifications, OSHA Certifications, Certified Photovoltaic Installer, Cisco Certifications.
Southeastern Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, OSHA Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications.
Southwestern Community College	North Carolina or National Career Readiness Certificate, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications, Federal Communications Commission.
Stanly Community College	SkillsUSA Workforce Ready System, North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, Certified Electronics Technician (CET), National Center for Construction Education and Research (NCCER) Certifications, Building Performance Institute Certifications, OSHA Certifications, Certified Photovoltaic Installer, Packaging Machinery Manufacturers Institute (PMMI) Certifications, Microsoft Office Certifications.
Tri-County Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, National Institute for Metalforming Skills (NIMS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications.
Vance-Granville Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, Cisco Certifications, National Institute of Automotive Service Excellence (ASE) Certifications.
Wake Tech Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, American Society for Quality Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications.
Wayne Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, Water Quality Association Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications, Federal Aviation Administration.
Western Piedmont Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, Water Quality Association Certifications, OSHA Certifications, Microsoft Office Certifications.
Wilkes Community College	SkillsUSA Workforce Ready System, North Carolina or National Career Readiness Certificate, American Composites Manufacturers Association Certifications, American Welding Society (AWS) Certifications, National Institute for Metalforming Skills (NIMS) Certifications, Manufacturing Skill Standards Council (MSSC) Certifications, American Society for Quality Certifications, Certified Electronics Technician (CET), Water Quality Association Certifications, National Center for Construction Education and Research (NCCER) Certifications, Building Performance Institute Certifications, LEED Certifications, OSHA Certifications, Mobile Air Conditioning Society Certifications, Cisco Certifications, Microsoft Office Certifications, Mechatronics Certification, National Institute of Automotive Service Excellence (ASE) Certifications.
Wilson Community College	North Carolina or National Career Readiness Certificate, American Welding Society (AWS) Certifications, American Society for Quality Certifications, National Center for Construction Education and Research (NCCER) Certifications, OSHA Certifications, Cisco Certifications, Microsoft Office Certifications, National Institute of Automotive Service Excellence (ASE) Certifications.

Provided by Matthew Meyer, Associate vice president of STEM innovation, North Carolina Community College system.
Updated as of August 2012.

ABOUT THE GLOBAL RESEARCH INSTITUTE

Launched in fall 2009, the Global Research Institute (GRI) was envisioned at once as a center for scholarly research on key international questions and as a conduit through which generated knowledge can successfully be disseminated and applied to problems in the real world.

The GRI focuses on research areas in which the University already has significant strengths as a way both to advance knowledge in these areas and to help to attract world-renowned scholars to Chapel Hill. Visiting distinguished scholars will collaborate with UNC faculty members on targeted themes that will rotate over time. In addition to the first two themes: "Globalization, the Economic Crisis, and the Future of North Carolina," and "Making Scarce Water Work for All," other potential topics include corporate governance and global financial markets; immigration and migration; work and economic development; and global health and the environment.

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