

Running head: REVERSING THE ENROLLMENT DECLINE IN CTE CCP
PATHWAYS

REVERSING THE ENROLLMENT DECLINE IN CAREER AND TECHNICAL
EDUCATION CAREER AND COLLEGE PROMISE PATHWAYS:
AN INTERVENTION AT LENOIR COMMUNITY COLLEGE

A disquisition presented to the faculty of the Graduate School of
Western Carolina University in partial fulfillment of the
Requirements for the degree of Doctor of Education.

By

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DEDICATION

To Chris, we have grown together for better, for worse, for richer, for poorer, in sickness and in health. Until death do us part, my love. Thank you for being my rock.

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ABSTRACT

REVERSING THE ENROLLMENT DECLINE IN CAREER AND TECHNICAL
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Maggie L. Brown

Western Carolina University (April 2019)

Director: Dr. Kofi Lomotey

While data forecast that America will face a shortage of skilled workers in technical and advanced manufacturing jobs within the next 10 years, enrollment in high school and college career and technical education pathways is down. Many of these jobs offer wages and benefits that equal or rival those of jobs requiring advanced degrees. If the demand for skilled workers exists, why is the supply of qualified applicants dwindling? High schools and community colleges offer coursework and hands-on training in these areas. Can these two systems work together to encourage students to enter career and technical education pathways? This disquisition addresses (1) the history of the declining enrollment in these programs, (2) the intersystems cooperation that must happen to matriculate students from high school to college Associate in Applied Science programs, and (3) one intervention that attempted to cross systemic barriers to connect high school staff and community college career and technical education programs.

SUMMARY DESCRIPTION OF DISQUISITION PROCESS AND PAPER

Are you almost finished with your dissertation? This is a question I think many of us EdD students at Western Carolina University hesitate to answer. Do we pause to explain the difference between a research-based dissertation and the improvement science-based disquisition process? Does the word dissertation carry more status than the word disquisition? Does one connote more rigorous scholarship than the other? In my experience, the disquisition process and resulting products have provoked me to evolve and perform at the furthest limits of my abilities as a scholar-practitioner.

Western Carolina University redesigned its educational doctoral program in 2013 in accordance with the Carnegie Project on the Educational Doctorate (CPED) following the model of developing “scholar practitioners” (Lomotey, 2019, p. 3). This objective was particularly effective to me as I began this program in the summer of 2016. After serving in my institution’s developmental and college transfer programs for 12 years as a faculty member and in various leadership positions, I was offered the position of Associate Dean of Business and Emerging Technologies. I was faced with new programs, new outcomes, budgets the like of which I had never worked with, and 12 sets of technical vocabularies that were foreign to me. Through the disquisition process, I delved more deeply and in a more scholarly way into this new position and into the problems of practice I encountered.

The disquisition is problem identification and improvement science-based. Early on, students in the program identify a problem of practice, do scholarly research, analyze drivers and change concepts and outcomes and, through the disquisition, record the students’ scholarly growth in “leadership expertise in organizational improvement”

(Lomotey, 2019, p. 5). Starting my new position and starting this program in the same summer allowed me to identify a problem facing my new division and systematically approach the problem and possible improvements with a comprehensive methodology.

This three-year experience has been truly enriching as I undertook my coursework and matriculated through the phases of the development of the disquisition. The four goals WCU has identified as desired outcomes of the disquisition would be beneficial to any successful educational leader (Lomotey, 2019).

. . . leaders in education who complete the WCU EdD disquisition will (1) possess enhanced comprehensive research skills; (2) provide a significant and meaningful benefit to identified constituencies around them; (3) embody the enhanced values traditionally associated with the doctoral experience, e.g., critical thinking, disciplinary inquiry and argumentation; and (4) encounter a unique and rewarding educational experience. (p. 9)

I am confident that the problem of practice I selected and the resulting research, artifacts, change concepts, and implementation have benefitted (1) me as a new career and technical education professional, (2) my institution as a gateway to opportunity for our service area students, and (3) local industry as they seek highly qualified skilled technicians.

I cannot imagine having been an effective Associate Dean and then Dean in an EdD program that did not allow me to begin research on my problem of practice during my very first semester. WCU's focus on equity and improvement science-based design helped me to develop an intentional and reiterative process in my professional and educational endeavors that is demonstrated in the following disquisition. I am both proud

of and fulfilled by the work I have completed and that I will continue to improve upon in the future.

INTRODUCTION AND STATEMENT OF THE PROBLEM OF PRACTICE

The Career and College Promise (CCP) program allows high school students to take credit bearing college classes for dual credit toward high school graduation requirements. Students take the courses through a partner service area community college, and the tuition is waived by the state. Many school systems also furnish the college textbooks to the students free of charge. Pending their grade level and grade point average (GPA) eligibility, high school students may opt to take courses in certificates leading toward an Associate of Science or Associate of Arts degree, or they may elect to take courses leading to an Associate in Applied Science in a Career and Technical Education (CTE) discipline. The CCP program provides early access to college credit bearing coursework which students with little or no familial legacy of higher education may otherwise struggle to obtain. Another critical aspect of CCP is that the program provides equity by removing financial barriers such as tuition and textbook fees.

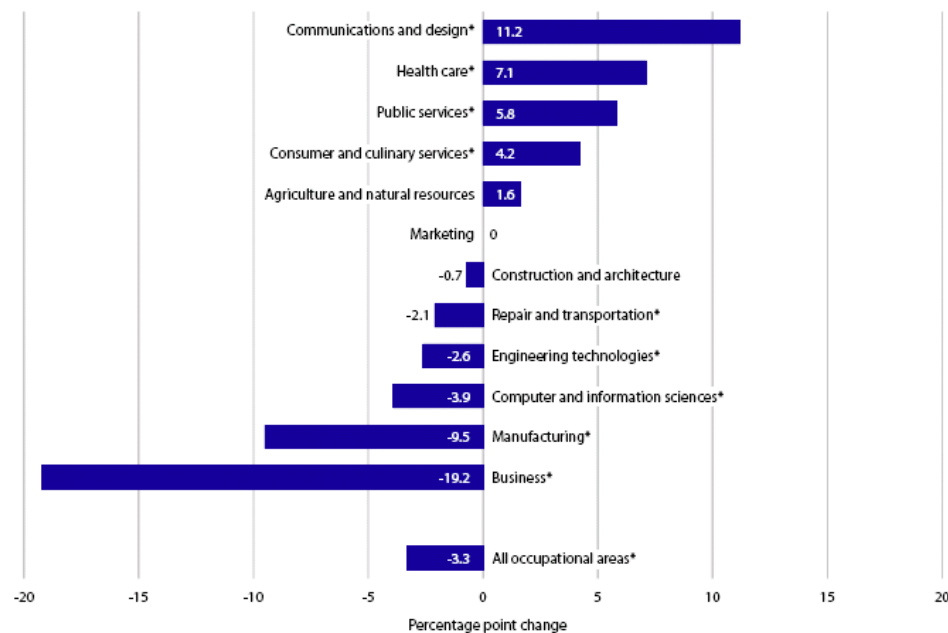
Placement in CCP courses is closely regulated by the state with the goal of ensuring student readiness for college curriculum. As noted in the North Carolina Community College Career and College Promise Policies (2017), students who opt for the courses leading toward Applied Science degrees may begin as early as their sophomore year if they score within acceptable ranges on end-of-grade testing indicating their proficiency in reading comprehension. The GPA eligibility for CTE CCP courses is a 2.5. Alternately, students wishing to take Associate of Science or Arts degree courses must wait until their junior year and have a higher qualifying GPA and higher reading and math scores (Appendix A). Despite the hands-on appeal of CTE courses and the high

paying careers available in technical fields, according to the U.S. Department of Education (2013), student enrollment in high school CTE courses is declining (see Table 1). The problem that I address in this disquisition is the currently limited connection between high school Career and College Promise Pathways and college CTE degrees. I address this problem through capacity building of high school CTE instructors and counselors and through publicizing the value of career and technical jobs to students and parents.

Table 1

Changes in Amount CTE Credits Earned by High School Students

Change in the percentage of public high school graduates earning credits in each occupational area from 1990 to 2009



*Significantly different ($p < .05$) from zero.

NOTE: Tabular data for percentages and their standard errors are available in tables H126 and SH126, at <http://nces.ed.gov/surveys/ctes/tables/index.asp?LEVEL=SECONDARY>.

SOURCE: U.S. Department of Education, National Center for Education Statistics. (2013). *DATA POINT: Trends in CTE Course-taking* (NCES 2014-901).

As shown in Table 1, while CTE enrollment in some programs such as communications and design, health care, and other public service coursework had an increase over the 20-year study, trade skills course enrollment in areas such as construction, engineering, and manufacturing are decreasing. This decline in enrollment is alarming when compared to the projection that 3.5 million manufacturing jobs will need to be filled as the baby boomer generation retires over the next 10 years (Johnsson, 2016). So, if jobs are available in career and technical fields, why is CTE enrollment declining? A study done by Deloitte and the Manufacturing Institute (2016) suggests that American perceptions of manufacturing work as unstable and low-paying contribute to parents discouraging their children from seeking careers in manufacturing (see Figure 1). Perhaps what parents do not realize is that CTE prepares students for manufacturing jobs that are unlike the dirty, low wage jobs of generations past.

Figure 1

Public Perceptions of Manufacturing Careers



The manufacturing industry has been quickly recovering from the economic recession and began adding new jobs in 2010 (Torpey, 2014). During this upturn, it became more mechanized, cleaner, and safer. For students who do not have an interest or aptitude for pursuing a four-year degree right out of high school, these careers provide good wages, benefits, and opportunities for advancement. As the Deloitte and Manufacturing Institute study indicates, there is a gap between the reality of today's technical careers and public perceptions of those careers. It is clearly a misconception that all technical skill jobs offer lower pay than other occupations. With proper guidance, technical students can take advantage of CTE classes that will lead to lucrative careers in these fields. In fact, the pay for manufacturing jobs that require various levels of education is often higher than median wages for other types of employment as seen in Table 2.

Table 2

Occupation, Wages, and Education

Occupation	Median Wage	Education Needed
Hand laborers and material movers	\$27,340	Less than high school
Assemblers	\$30,200	High school
General Maintenance and Repair	\$42,080	High School
First-line supervisors	\$55,010	Post-secondary certificate
Industrial Engineers	\$78,690	Bachelor

*data from U.S. Bureau of Labor as reported in Torpey (2014)

Blame for low high school CTE enrollment does not rest solely with parents. Local Educational Agencies (LEA's), the community colleges, employers, and the students themselves all have responsibility for being better stewards of student awareness regarding opportunities in CTE fields. Problems can arise when enrollment is diluted with too many options. Not every high school can sustain enrollment in several different CTE pathways.

If colleges do not recruit properly in order to capture students with a real interest in the programs, students become apathetic about their coursework and are less likely to matriculate to the collegiate pathway. And if regional employers do not effectively combat the negative perceptions of manufacturing careers, teachers and parents are less inclined to steer students toward CTE classes if they do not feel that the outcome will be a worthwhile career opportunity. It is certainly advantageous for the colleges and the industries to combine their efforts to rebrand education and careers in technical fields in order to attract students and create a larger pool of highly trained, skilled individuals. The connection between industries who need a skilled workforce and community colleges' who have the credentialed faculty and the budget to equip industrial training programs should be a seamless connection point. Facilitating the connection between the high school and College CTE pathways is beneficial for the colleges and the employers, but it is also a social justice obligation for these two entities as stakeholders in the growth and advancement of the communities in which they operate.

When the students do not take ownership of their educational decisions and/or do not have post-secondary education goals, it is difficult for teachers and counselors to meet their needs. Today's millennials have a reputation for being technology-driven and

used to having their individual needs placed above the needs of the community. Whether this proves true or not, many teenagers do not have a conventional work ethic when faced with general education courses that do not cater to their interests. Students are sometimes used to having academic schedules prepared for them by their parents; however, it is in everyone's best interest if students take charge of their educational pathways. Students who have direct input in their educational pathways should feel more invested in their own success.

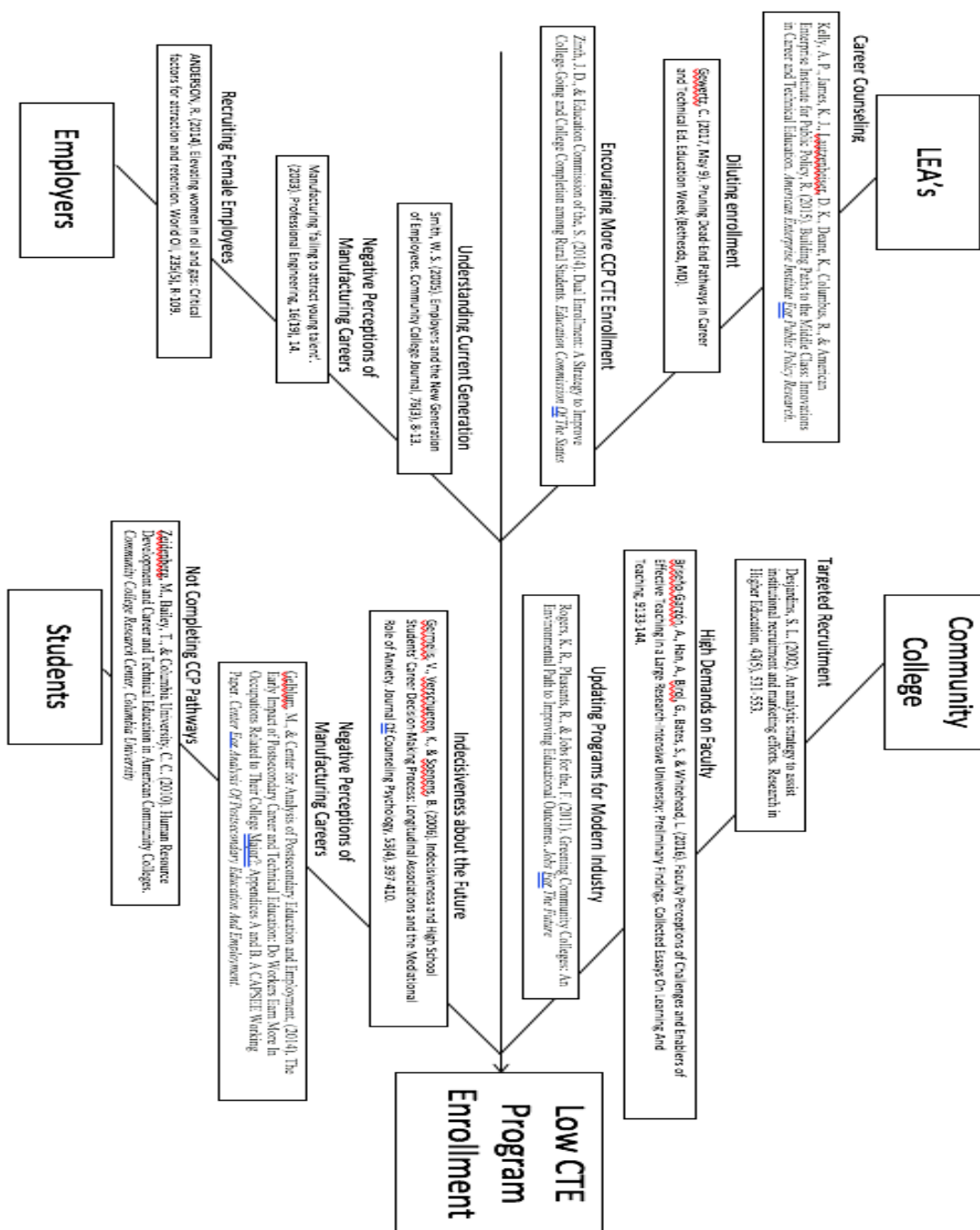
By recognizing and bridging the gaps in communication between industry, the public school system, colleges, and students and parents, not only will CTE enrollment improve, but several aspects of social justice will be addressed. The equity in college access created by CCP programs inspires more students to realize that a college degree is obtainable, even if there is a lack of financial resources and college literacy in the home. The specific benefit of CTE programs is that students can improve their economic status immensely by obtaining highly sought after, well-paid skills in a relatively short amount of time in the two-year AAS programs. In addition, having a well-trained local workforce will attract industry to the region, which will bolster regional economic development and provide a higher revenue base for locally funded community resources.

LITERATURE REVIEW

The American skills gap coming for future generations due to a decline in student interest in career and technical trades and education and possible solutions have been studied extensively. As America consumes more and more goods and materials for building, manufacturing, and personal use, that demand will either be met domestically or

through outsourcing and enriching other countries' economies. If manufacturers cannot find skilled workers in America, there will be an even higher trend in relocating industries to other countries. Data in this literature review show that there is a high demand currently and more coming for skilled, manufacturing-related workers and technicians. This is a case where the supply of CTE students is not meeting the demands of the employers. A review of the literature related to these possible causes for low CTE enrollment is shown in Figure 2. In summary, this figure suggests the issues that community colleges face may be the most controllable factors related to improving CTE enrollment.

Figure 2

Factors Contributing to Low CTE Enrollment

Research shows that America will be facing a shortage of skilled technical workers in the next decade. As America struggles to retain and grow its domestic sources of raw manufacturing materials and increase its output of fabrication and mass production, a pipeline of skilled workers and industrial leaders of innovation will be critical. Varas' (2016) research estimates that by 2024, there will be a shortage of roughly 1,000,000 skilled workers in America, specifically in the areas of engineering, science, and technology related occupations. The future implications of this upcoming shortage may cause many industries to relocate or outsource to other countries which will adversely affect the economic well-being and supported community services across the country. Varas (2016) speculates that political opposition to the federal Optional Training Program that allows foreign students in STEM related careers to stay in American internships and employment will further widen the coming skills gap. If American students are not going into technically skilled careers and foreign graduates are prohibited from benefiting the industry, it will be difficult to address the shortage of workers.

There seems to be a decline in CTE interest among millennial students. Despite being the most digitally literate generation yet, this interest in technology does not translate to their course-taking choices. So and Strobel (2017) note a ten year "sluggish" trend in CTE credits by American high school students. They cite a study of high school course credits from 1990-2009 that showed a marked decline in CTE enrollment. Their research revealed an increase in liberal arts and even math and science but a coinciding decline of CTE credits earned by high school students across the country. So and Strobel's (2017) focused research on high school CTE enrollment in Texas also revealed significant gender gaps with markedly fewer female students electing to take engineering

courses than male students. While a Texas House bill encouraging CTE course elections by students resulted in an overall increase in CTE course taking, So and Strobel's (2017) research showed a continuing decline in CTE achievement by Hispanic and African American students during the time following the initiative. It is clear that encouraging minority and female CTE enrollment will be key to solving the skilled worker shortage.

While literature reflects the downward data trends, it also documents encouraging practices in educational policy. One of the most incentivizing initiatives to encourage CTE enrollment is the emergence of dual credit programs. These programs allow students to take college coursework for both high school graduation and associate degree credit. This early access to college programs allows students to be exposed to more advanced CTE programs and CTE counseling and recruiting.

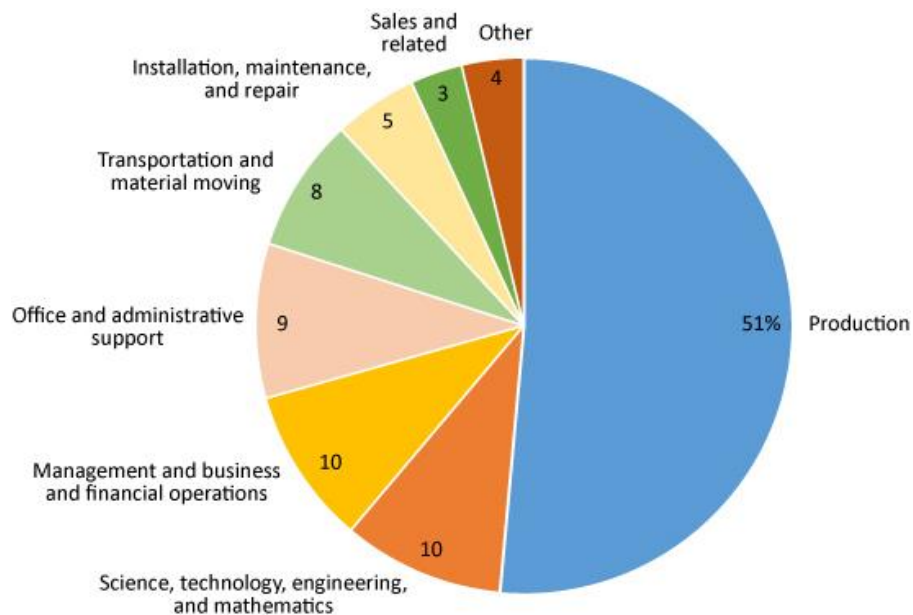
CAREER AND COLLEGE PROMISE LITERATURE

One of the biggest benefits of Career and College Promise (CCP) CTE pathways is the increased access to higher education these programs afford to high school students. In North Carolina, when high schools have the appropriate facilities to house programs like automotive, welding, machining, or industrial engineering, students can complete a certificate in the trade while still in high school at no cost to them or their parents. These certificates symbolize the acquisition of real job skills as well as a start on completing an Associate in Applied Science degree. As the manufacturing industry mechanizes and is growing in the US, available jobs requiring an AAS or certificate are expanding. Deeper technical skills, including programming, are needed in order to operate more advanced digital and electronic components. The two-year community college degree gives

students the time to learn the deeper and broader scope of practice in these technical fields. Figure 3 below (Torpey, 2014) represents the 2013 distribution of manufacturing jobs in the United States for which CTE students might train in CTE CCP pathways. According to this figure, there are ample employment opportunities related to careers in technical fields.

Figure 3

Distribution of Manufacturing Jobs in the US



An additional benefit of CCP CTE courses is that all students with qualifying high school GPAs are able to participate. This includes undocumented students. H. Kenny Nienhusser (2014) studied the impact of community college on undocumented students' access to higher education and noted, "The historic 1982 Supreme Court decision in *Plyer v. Doe* ensures undocumented students free K-12 public education" (p. 4). CCP pathways

are included in K-12 public education. So undocumented students get the benefit of free college courses while in high school.

It is clear that students today have a variety of choices following high school, and without intervention by the LEA's, employers, and the college, industrial programs can appear to be an unattractive choice. Intentional action on the part of these stakeholders can help show both parents and students that there are viable opportunities for learning and employment with a technical degree.

The first step in addressing declining enrollment will have to be assessing current recruiting activities. There is no panacea that will be the key to successful recruiting at all institutions. Without initial assessment of the specific institutional norms, it is difficult to identify current weaknesses and opportunities for improvement. Are current standards outdated and of low-impact? A willingness to focus on educating the high school community, strengthening relationships with local industry, and investing in intervention strategies to support student success could change the community outlook of the local institution. Perna (2006) recommends developing a, "unique selling proposition (USP) that boasts your advantages and reasons for enrollment" (p. 32). Being mindful of the positive attributes of the institution should be fundamental to developing a recruitment plan.

SCTC DUAL ENROLLMENT LITERATURE

The South Carolina Technical College System (SCTCS) has very progressive state-wide programs to recruit and attract dual credit high school students. The state enacted high school and college dual enrollment programs in 2005 with the Education

and Economic Development Act (www.sctechsystem.com, “Dual Enrollment”). This legislation outlined eligibility provisions and several ways in which Technical Colleges could implement dual enrollment programs. SCTCS offers four types of dual credit/enrollment opportunities for high school students.

The PACE program allows 11th and 12th grade students to take credits through the colleges that are applied toward their high school graduation requirements and toward college degrees (www.hgtc.edu, “PACE”). This program should not only speed the timeline to associate degree completion, but will also decrease the overall expense of college costs. The program also allows the colleges to form early partnerships with high school students so that more students should transition from the service area high schools to the colleges.

The Early College programs in South Carolina accept students in 9th grade and go through associate degree completion in a four to five-year timeframe (www.hgtc.edu, “Early College High School”). Early colleges operate on the understanding that all of their students will complete an associate degree or higher. M.M. Karp (2015), explored the “leaky pipeline” from high school to postsecondary and noted that building the higher education expectation into the student cohort from 9th grade and blending college courses into the four years of high school eliminates the gap through which students can disconnect from the goal of higher education after high school (Karp, 2015, p. 105).

The SCTCS system and the state’s public high schools share a Technical Advanced Placement articulation agreement. Students can be awarded college credit in technical programs through high school Career and Technical Education (CTE) courses

(www.hgtc.edu, “TAP”). The program encourages high school CTE enrollment and speeds the time to completion for college technical and industrial degrees.

The Technical Scholars Program is specifically related to Technical and Industrial degrees. High School students take two college courses a semester for both high school and college credit (www.hgtc.edu, “Technical Scholars Program”). In most cases, students will have earned skills certificates within the degrees by the time they graduate from high school. This will give students employable skills immediately upon high school graduation and will also prepare them for a faster track to completing the associate degree.

Working within the SCTCS governance on dual enrollment programs has allowed the development of partnerships that encourage higher education attainment by students in regional high schools. Because the SCTCS state policy provides guidance on giving dual enrollment access to all high school students who meet eligibility, Karp (2015) would agree that the state is being proactive in addressing the “equity gap” (Karp, 2015, p. 109).

CALIFORNIA CASE STUDY LITERATURE

California’s community college system has been exploring and documenting initiatives in high school and community college partnerships to increase enrollment in career and technical education (CTE) pathways. The 2014 Career Technical Education Pathways Initiative Annual Report states that 176,058 students participated in community college courses in CTE pathways. Part of the initiative was “Business and Industry Engagement” that included student internships. Forty-two thousand and nine hundred and

forty-nine students participated in internships. The industry partnership grants and internships were a driving force behind growing the community college enrollment in these areas (p. 10). When educational institutions and local industry become partners, both agencies have a stake in promoting the program.

In order to help increase student participation in college opportunities like those reported on in California, surveys to show how prospective students best receive information about community college programs will be instrumental in refining recruiting practices for colleges with a downward enrollment trend. O'Meara and Carmichael (2004) compare how Iowa high school students receive data about University of Northern Iowa programs in a counselor and student survey. In 1999, the most common survey answer was by CD-ROMs and Internet (p. 15). Today, the University is using a site-based Industrial Technology Day followed by a student survey reporting which activities were most effective in gaining their interest in the programs. Students reported that, "hands-on experience, viewing labs, and being able to work directly with faculty, staff, and college students," were activities with the highest impact (p. 14-15). As work in industry has evolved from being loud, dirty, and labor-intensive into a more highly technological process, it would follow that seeing these processes firsthand would be a valuable recruiting tool.

Multiple case studies suggest that making a career connection is an effective recruiting strategy. David Fein (2016) reports on the internship initiative utilized by the non-profit organization Year One in conjunction with community colleges that provides a six-month industry internship to all of its student participants; during the implementation period, student enrollment doubled. Similarly, institutions that incorporate capstone

projects with partner industries providing the potential for post-graduation employment have strong returns on recruiting efforts. The California Community Colleges Career Technical Education Enhancement Fund Report (2015) outlines the purpose of Senate Bill 852, “which allocated on a one-time basis \$50 million in the 2014-15 budget year to expand, enhance, and improve upon CTE programs statewide (p. 5). Noted within the budget allocation was the criteria requiring programs to address regional labor demands and insufficiency of skilled workers (p. 5). These funds spurred closer partnerships between California community colleges and regional businesses and industries. College and industry consortiums developed work experiences and internship programs to get job training for students who would then be ready to enter the workforce upon graduation (p. 6). In rural areas, the promise of obtaining a job with a living wage after college should be a strong recruiting tool.

College fair recruiting has been shown to be the least targeted and least successful form of recruiting. Squires and Case (2007) explain that, “Typically a college is invited to visit a high school for recruiting a limited number of times. Furthermore, the time that can be allotted is very short...something more must be arranged” (p. 42). This cattle call of students moving from one college program table to another during a 30-minute period provides little meaningful contact between potential students and college faculty. Squires and Case go on to say that strategic classroom visits targeting CTE courses provide a more interactive and effective environment. Following up the classroom visit with a college campus visit where students can tour the program is a valuable suggestion: “It is ideal if students can tour the facility that houses the equipment used by each tech program, allowing students to watch and learn what each occupation is about” (p. 43).

Seeing college students operating expensive and intricate machinery in person gives the high school recruits a chance to imagine themselves in the same situation.

Developing strong relationships between industrial college instructors and their public school career and technical educator cohorts should be a high priority. California community colleges' CTE partnership pathways with the California high schools served 176,058 dual enrolled high school/community college students in 2014 (California Community Colleges, 2014, p. 10). Local high school students can provide a significant clientele for community colleges due to proximity and local employment opportunities.

Connecting with parents is a strategy that cannot be devalued. Making this connection while students are early in their high school careers may influence parents to talk to their children about dual enrollment opportunities. High schools in Arlington, Virginia host parent information nights with breakout sessions for parents that show them what technical and vocational education is like and what the viable employment opportunities are for graduates of those programs (Reese, 2007, p. 16-17). Parent education results in building a college's visibility in the community.

Successful recruiting strategies combine student support services to aid student persistence. Parents and students seem to respond to the promise that someone will be there to monitor and support progress toward graduation. Kennamer and Campbell (2011) state that over half of first-time freshman must take developmental coursework before they can begin general education courses (p. 46). Knowing that the community college open door policy results in a large need for remedial coursework, colleges should be prepared to show how those students are being supported.

CHALLENGES OF CCP AND OPEN-DOOR POLICIES LITERATURE

As a result of focusing on the success of younger student recruits, many colleges have started TRIO programs and other support programs to attract underrepresented students and to encourage student persistence. Pitre and Pitre (2009) studied the efficacy of TRIO programs and determined that, “TRIO educational opportunity programs have been successful in increasing both the higher education attendance rates and educational attainment of students from low-income, first generation college, and underrepresented ethnic minority backgrounds” (p. 96). These programs not only focus on academic progress, but also help students find a supportive subculture within academic institutions.

Unfortunately, a younger and less prepared student body has also led to higher rates of withdrawals. Research reviewed by Scoggin and Styron (2006), indicated that students aged 16-22 most often cited “personal reasons” as the factor leading them to withdraw from community college courses (p. 121). With other concrete survey answer options such as financial, academic difficulty, work, and faculty relationships being available, these responses would indicate that this younger demographic was simply underprepared psycho-socially to deal with the commitment of college coursework.

Because of the nature of the open-door policy at community colleges, continuing to serve returning, nontraditional students can create its own opportunities and challenges. Lipp (1974) noted that, “companies have found them [community colleges] to be a valuable source of inexpensive education, training, and recruitment of personnel” (p. 12). Of course, being an industrial training center also requires that the community college industrial programs maintain the same or similar caliber of equipment as is found in local industry.

It is up to community colleges to take the lead in recruiting for CTE CCP programs. By combining the resources of the high schools, the industry, and the college, all the benefits of CTE can be presented to students in a cohesive message that encourages more students to enroll in CTE CCP programs.

PROBLEM OF PRACTICE WITHIN THE LOCAL CONTEXT

The broad spectrum of competing options for students is a problem for community college CTE enrollment. Data on student enrollment show a decline across rural North Carolina community colleges. A four-year enrollment analysis of several technical programs at rural Lenoir Community College as compared with other like-size but more metropolitan community colleges in North Carolina details the decline in several technical programs' enrollment (Appendix B). In most areas, percentwise, all colleges are showing decreases in enrollment, but most of LCC's technical programs are showing a larger decrease than other colleges in the study.

Part of the decline in enrollment is attributed to the end of the unemployment bubble in the early 2000's as noted by Kennamer and Campbell (2011), "By 2005, enrollment was increasing significantly. This upward pattern was accelerated with the downturn that occurred in the U.S. economy" (p. 44). Most NC community colleges experienced temporary three-year peaks in enrollment due to education and retraining incentives for unemployed workers. Now that unemployment rates are so low, the temporary population of nontraditional students has left the colleges and have gone back to work. So once again, recruiting is focused on the traditional high school graduates.

Lenoir Community College's enrollment issues are also a product of its rural geographic setting. To further understand the College and its opportunities and weaknesses, I will describe the College and its service area demographics. Lenoir Community College is a mid-size community college, "serving approximately 4,000 curriculum students and 10,000 extension students annually" ("LCC History"). The College has five major divisions: Health Sciences, Arts and Sciences, Business

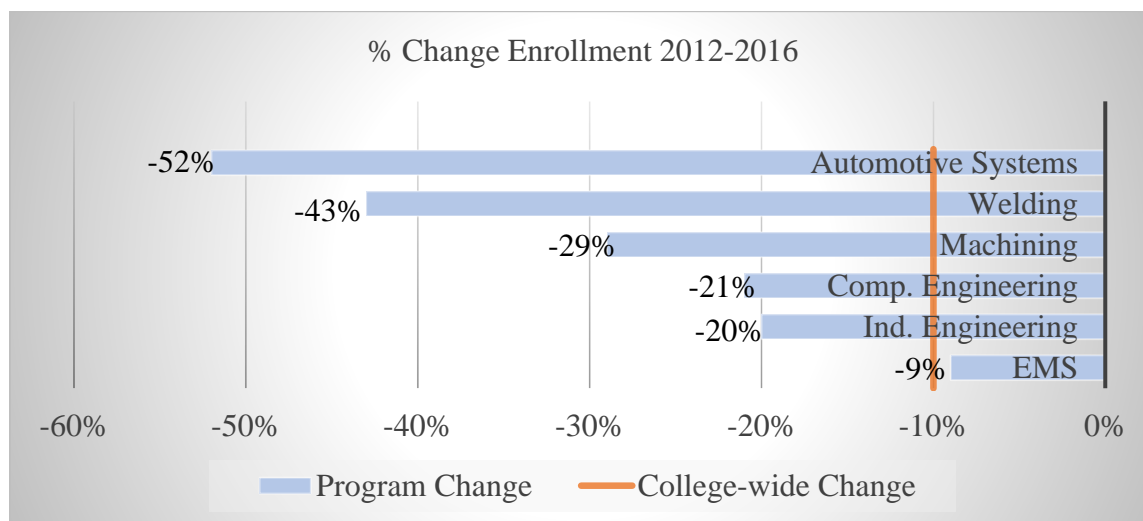
Technologies, Industrial Technologies, and Continuing Education. According to the 2017 NCCCS Performance Measures report, LCC falls above Baseline, but below Average in the areas of First Year Progression, College Transfer Performance, Curriculum Student Completion, Student Success Rate in College-Level English Courses, and Student Success Rate in College-Level Math Courses (p. 3). These measures capture the College's CTE student performance as well as transfer students. All CTE-related Associate in Applied Science degrees offered at the College require 15 hours of general education credits, including six hours of English and communications, three hours of fine arts/humanities, three hours of social/behavioral sciences, and three hours of mathematics/natural sciences. Currently only 13% of students who enroll at LCC graduate within 150% of the expected timeframe of their various programs ("Lenoir Community College," nces.ed.gov/collegenavigator).

In Lenoir County, according to 2000 census data, only 13.3% of residents age 25+ have a bachelor's degree, compared to the national rate of 22.5% ("About Lenoir County," www.co.lenoir.nc.us/statistics.html). This means that most transfer students from Lenoir Community College who went on to obtain a bachelor's degree have left Lenoir County in search of employment. The 2000 census data report that the median household income in Lenoir County was \$30,952 dollars, compared to the national median of \$39,438. So, although the institution is creating upward mobility for transfer students, the transformative power of their earning potential is then lost to the county as they leave in search of better employment prospects. Skilled technical jobs could be transformative for the socioeconomic development of the service area.

The North Carolina Community College System archives annual enrollment reports, including curriculum program enrollment unduplicated headcount. These enrollment data are available to the public and are a valuable source for charting trends in enrollment by institution, region, age, and program. The Lenoir Community College technical programs enrollment study (Appendix B) shows enrollment data in industrial programs from 2012 to 2015. The data show that LCC's program enrollment is trending down at higher rates than is the case in other like-size colleges. Recruitment efforts at LCC consist mainly of high school academic fairs. Exploring more targeted recruitment efforts may help reverse the downward enrollment trend in CTE programs.

Analyzing these data against the general decline in enrollment at Lenoir Community College shows that the downturn in CTE enrollment is more extreme than the overall enrollment decline. This has also been apparent in the smaller class sizes and the fewer sections being offered in some CTE programs. Program chairs and instructors in these disciplines have expressed concern, not only for their own jobs as student enrollment decreases, but also about meeting local industries' needs for enough skilled technicians to fill vacancies. Chart 1 shows that over a four-year period, individual CTE programs at LCC have declined between 9% - 52% while the overall LCC enrollment decline has been 10% during the same time period. In some programs, this may be a sign that the program could end or continue on in only a continuing education capacity.

Chart 1

College Enrollment versus Program Enrollment

DESCRIPTION OF STAKEHOLDER GROUPS

In considering how best to stem and reverse declining enrollment in LCC's technical and industrial programs, it was critical to analyze how two primary stakeholder groups—high school guidance counselors and LCC program chairs—view the promotional practices for these programs. LCC's service area covers a three-county region: Lenoir, Green, and Jones. There are three public high schools in Lenoir County: Kinston High School, North Lenoir High School, and South Lenoir High School. The only Greene County high school is Greene Central High School, and the sole Jones County high school is Jones Senior High School.

The Lenoir County high schools have the largest average enrollment in the service area and routinely send more of their graduates to LCC than do the high schools in the other two counties. Kinston High School has an enrollment of 1,200 students who are

served by three guidance counselors (“Public School Review”). NLHS has an enrollment of 922 students served by three guidance counselors (“Public School Review”). South Lenoir High School’s enrollment is 824 students who are served by two guidance counselors (“Public School Review”). Greene Central High School in Greene County has an enrollment of 865 students (“Public School Review”). There are three guidance counselors at GCHS. Jones Senior High School (JSHS) in Jones County enrolls 297 students (“Public School Review”). Due to the small enrollment, there is only one guidance counselor at JSHS.

The second stakeholder group includes LCC technical and industrial program chairs. Although the College employs a recruiter who helps facilitate some high school visits and other promotional opportunities, the program chairs are largely responsible for their own program recruiting. In the last three academic years, three programs were cut; one of the instructor/program chairs was non-renewed due to several years of declining enrollment. One program chair was reassigned to continuing education, and one program chair was assigned to another program. The chairs clearly feel the pressure to recruit students, but some program chairs do little more than attend “career fair” gym visits at the high schools to promote their programs.

In 2016, LCC surveyed both high school counselors and some CTE program chairs to gather data about what they understood about the CCP CTE pathways and their fellow stakeholders. Understanding the perceptions of these two groups, the high school counselors who have high contact with the students as they are making decisions about their career pathways and the College CTE program chairs who rely on student

enrollment to continue their programs, was a foundational place to start examining the gaps in the partnership between the high school and the college.

Survey Feedback Synthesis

All 12 guidance counselors received the survey questions with a brief introduction stating their superintendents' approval of the survey and the intent of the survey: to improve promotional experiences for their students. There was an overall 50% response rate. Lenoir County High School counselors participated with one counselor from each of the three high schools responding. As it happens, the head counselor at the Lenoir County school that sends the fewest freshmen to LCC required prompting twice for responses and responded after the requested deadline. Of the four Greene and Jones County counselors, all but one counselor responded.

To question one, regarding the high school counselors' perceptions of student awareness of LCC's technical and industrial programs, four counselors answered that students were aware of the programs, and two answered that students were aware of some of the programs. As shown in Table 3, only four out of seven LCC program chairs felt that area students were aware of their programs, and both groups indicated that student visits to the LCC campus to see the programs in person had the highest impact on student awareness. Also shown in Table 3, LCC program chairs stated that "lunchroom visits" were not effective in raising student awareness.

Table 3

Perceptions of Student Awareness

	Students Have Some Awareness of Programs	Highest Impact on Student Awareness	Least Impact on Student Awareness
HS Counselors	100%	Visits to LCC campus	Lunchroom
LCC Program Chairs	57%	Visits to LCC campus	visits

Question two, regarding counselor awareness of programs, had the widest range of responses when comparing those of the high school guidance counselors and the LCC program chairs. Four counselors reported feeling sufficiently aware of the programs, one reported awareness of some programs but not others, and one new counselor did not feel sufficiently aware of the programs. Five out of seven LCC program chairs did not feel that the counselors were sufficiently aware of their programs. Four cited limited contact with counselors as a barrier to awareness.

Table 4

Perceptions of Counselor Awareness

	Counselors Have Some Awareness	Barriers to Counselor Awareness
HS Counselors	83%	17%-Being New
LCC Program Chairs	29%	57%-Limited Contact

Question three, regarding why students select college programs, yielded similar responses. All respondents cited student interest and earning potential as reasons for the selection of program majors.

The open response question, regarding better promotional practices, was largely left blank by the counselors. Only two counselors responded, both requesting more targeted interaction between students and the program chairs. The LCC program chairs were highly responsive to the open prompt. Five chairs requested that students be brought to the campus for tours, shadowing, and hands-on experiences in their programs. Two chairs suggested that visits to the high school campuses be arranged for specific classes in which students were interested in the program curriculum. Clearly there is a disconnect between what the College is offering in the CTE program areas and how the high school counselors perceive and value those offerings because of a lack of knowledge about the programs and the career potential for the graduates.

THEORY OF IMPROVEMENT

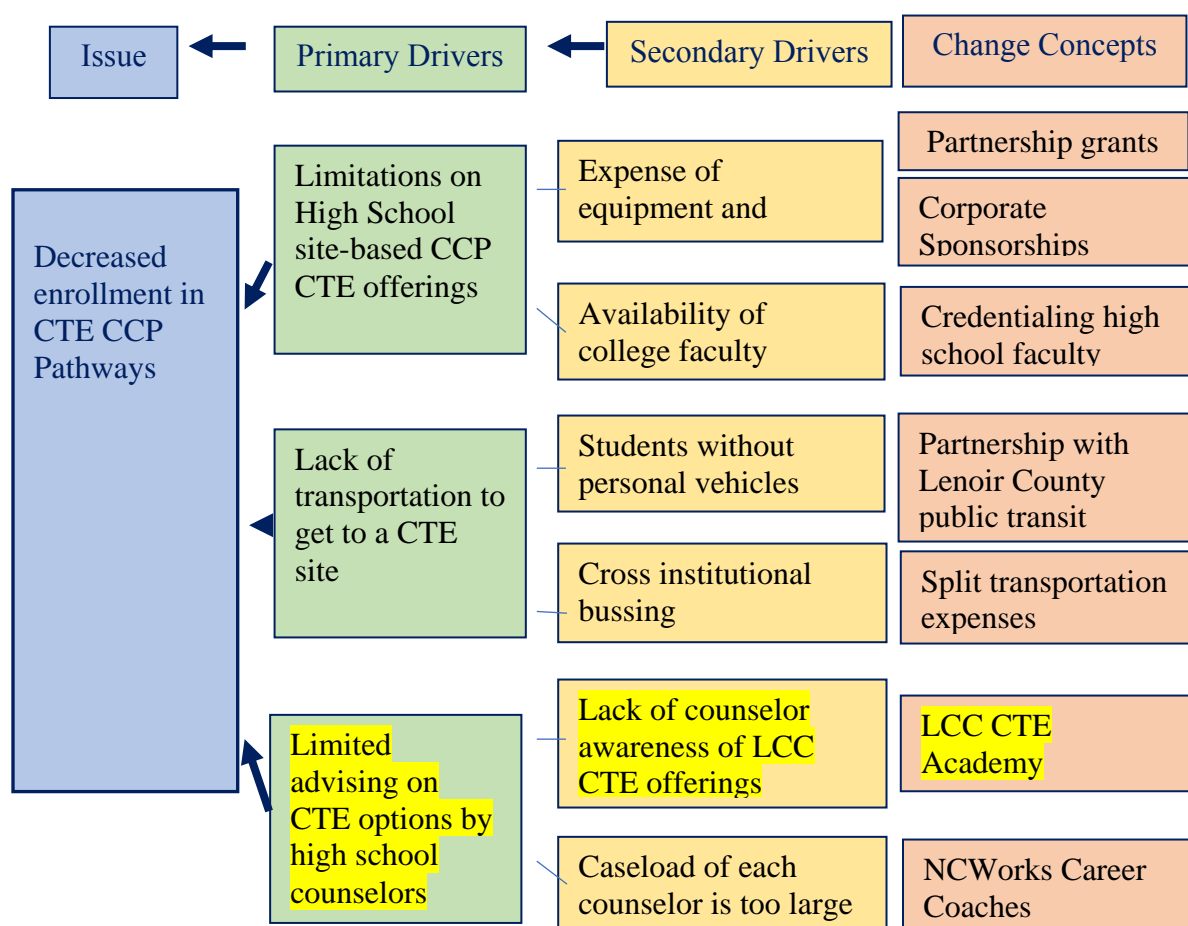
The goal of my improvement effort is to reverse declining CTE enrollment and to enhance the way LCC recruits prospective students and markets its CTE CCP programs in order to increase awareness of -- and enrollment in -- CTE courses. By increasing CTE enrollment, LCC will fulfill its regional responsibility to provide a highly skilled workforce and improve long term regional economic development. If the College can connect with CTE students who have an affinity for hands-on technical programs, the students will naturally be more motivated to succeed and complete their program pathways. Starting the connection with students while they are early in their high school careers will allow them to maximize both high school and College CTE CCP pathways. Students receive the training needed to gain desirable and sustained employment and are able to enter the workforce as well-paid technicians.

In order to meet these short and long-term goals, it was necessary to study the primary and secondary drivers behind the current low enrollment in CTE programs. Which change concepts proved to be attainable within the scope of authority and time available to produce meaningful changes in CTE CCP enrollment? The scope of authority when dealing with two different systems, the College and the public-school system, was a real consideration in deciding where the College could and could not affect change. The demands of the jobs of the high school personnel and the differing operational calendars of the high schools and the College were also obstacles to consider.

Limitations on high school site-based offerings, lack of student transportation to leave the high school sites to get to the College, and limited advising on career options during and after high school all arose as primary drivers of low CCP CTE enrollment.

Funding for appropriate technology to duplicate a College program at the high schools while trying to ensure equitable access among all of our service area high schools was a challenge. As Figure 4 illustrates, the solution the College had the most control over was to help increase the capacity of high school staff to knowledgeably counsel their students about opportunities in CTE programs that matriculate to AAS degrees.

Figure 4

Increasing CTE Enrollment Driver Diagram

GOALS

Due to limitations of equipment budgets and the limited availability of credentialed faculty, it was not feasible to create more equipment-heavy CTE programs in each of the service area high schools. With the problems inherent in sharing transportation costs between the high school and the College, at the time, it was not possible for the high schools nor the College to fund additional transportation to bring high school students to the College campus. Increasing high school counselor awareness of CTE offerings was the change initiative that met the desired criteria:

Specific- Bring the service area counselors and CTE instructors together for CTE training.

Measurable- How many hours of training can be provided?

How many additional high school students will enroll in CTE CCP courses?

Agreed Upon- Both the high schools and the College agree that connecting students with careers upon graduation is an important goal.

Realistic- High school counselors and CTE instructors are already obligated to earn continuing education credits each year.

Time-based- CTE training could be scheduled to meet the needs of the high school and the College staff and faculty. Enrollment trends can be studied yearly following the training.

IMPROVEMENT INITIATIVE AND METHODOLOGY

School counselors serve a vital role in directing students toward post-secondary education and career choices. Besides being responsible for the scheduling of students for courses, school counselors also must serve in a three-fold capacity to address academic, career, and personal development goals individualized to each student's needs (Gysbers, 2013, p 285). The caseload of each counselor can prevent a connection that would facilitate the preparation of truly individualized plans. It is unlikely that counselors have the time to stay current with the regional technical trades that might offer viable career choices to their students. It is then up to the community college to be a comprehensive source of professional development in CTE for those counselors.

The state of Missouri has implemented standards of counseling organized in the three areas of development and has rolled out the plan for a strategic counseling approach. These objectives provide an ideal model for career counseling. The objectives of career development are the following.

Students in Missouri schools will acquire knowledge of career development needed for:

CD 7: applying career exploration and planning skills in the achievement of life career goals.

CD 8: knowing where and how to obtain information about the world of work and post-secondary training/education.

CD 9: applying employment readiness skills and the skills for on-the-job success.

(Gysbers, 2013, p. 285-286)

Without access to curated career information, counselors will be left to their own means to try to fit in career research among their other responsibilities. This is an opportunity for the community colleges to serve as providers of that information to the counselors who then will be able to steer students who are inclined toward technical occupations to the CTE CCP pathways available through the community college. Designing professional development that would keep the counselors and instructors engaged and interested in the training was of primary importance.

DESIGN TEAM

In order to ensure that the design and implementation of the change initiative met both the needs of promoting the College programs and the needs of the public school CTE professionals, I sought individuals who worked regularly with our public school CTE partners. The initial design team included the LCC Marketing Director, the Student Recruiter, and the Director of High School Programs. Each of these stakeholders was chosen because of their comprehensive background in LCC's service area high schools, partnerships with the counselors, and good relationships with LCC CTE instructors.

The design team wanted professional development in which the participants would have some first-hand insight into the program experience just as their students who might enroll in the pathways. The design team and I formulated an approach guided by the Missouri standards: career research, planning, and skill development. We were intentional in creating a design that would replicate, in a short snapshot, the program experience for our students. The design of the CTE education initiative, illustrated in Figure 5, included counselor training sessions that were facilitated by the program chairs

of the CTE areas, including curriculum overview, industry connection, and hands-on projects so that the counselors could have a simulated student experience.

Figure 5

Three-Phase Professional Development Design



In order to have a design team that not only understood the technical aspects of the industry but also the logistical aspects of working within the schedules of the counselors, it was necessary to consult community college CTE faculty and high school staff. The design team helped to provide information and perspective regarding opportunities for professional development, timing of the initiative, and personnel contact. The team met with and surveyed seven CTE program chairs and LEA CTE directors from each of the service area counties.

IMPLEMENTATION

The design and implementation team met early in the fall of 2017 in order to identify the participants for the counselor CTE professional development program and to decide on the most advantageous time to offer the professional development.

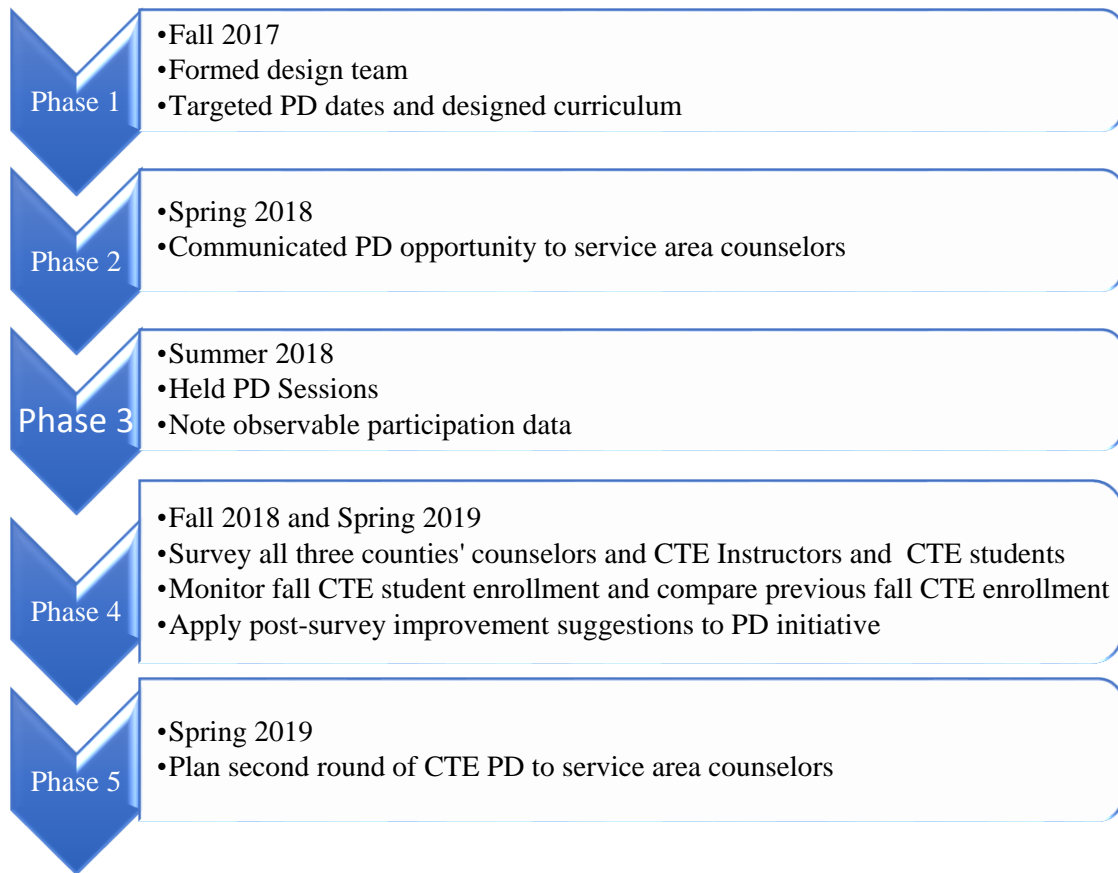
The team discussed opportunities for improvement within LCC's recruiting practices and how to address those areas with professional development. The idea of increasing awareness of what LCC already had to offer in the CTE areas arose as an opportunity to capitalize on existing resources. It was decided to survey the high school CTE instructors and counselors in order to determine the best timing for offering the professional development program. Once consensus had been reached as to the timing of the CTE development meetings, the design team selected the appropriate CTE programs to feature and worked with the CTE program chairs to develop the delivery of the content.

Since counselors and students meet late in the spring semester to plan the students' academic schedules for the following year, it was noted that it would be ideal to begin the CTE development sessions in spring 2018; however, the high school CTE directors indicated that summer would be the only time that many participants would be able to participate. Sessions were held over a five-week period during the public school summer break. The College CTE programs included in the 2018 summer CTE PD sessions were Computer-Integrated Machining, Industrial Systems Technology, Computer Engineering, Mechanical Engineering, and Welding Technology. These programs all have the opportunity for fulltime employment in the region, including

benefits such as health insurance and tuition reimbursement for higher education. Figure 6 illustrates the plan for design and implementation that was followed.

Figure 6

Initiative Timeline



EVALUATION OF IMPROVEMENT METHODOLOGY

Post-implementation of the CTE PD sessions, participant survey feedback and student survey feedback were used to determine perceptions of the efficacy of the PD in helping high school CTE professionals guide students toward LCC CTE pathways. Participant and student surveys were distributed at the end of the Fall 2018 semester so that anecdotal data on counseling sessions for the new academic year were captured. Participant surveys will also be used to select the next group of CTE programs to be highlighted and to make any suggested changes to the timing or format of the professional development curriculum in subsequent iterations of the initiative.

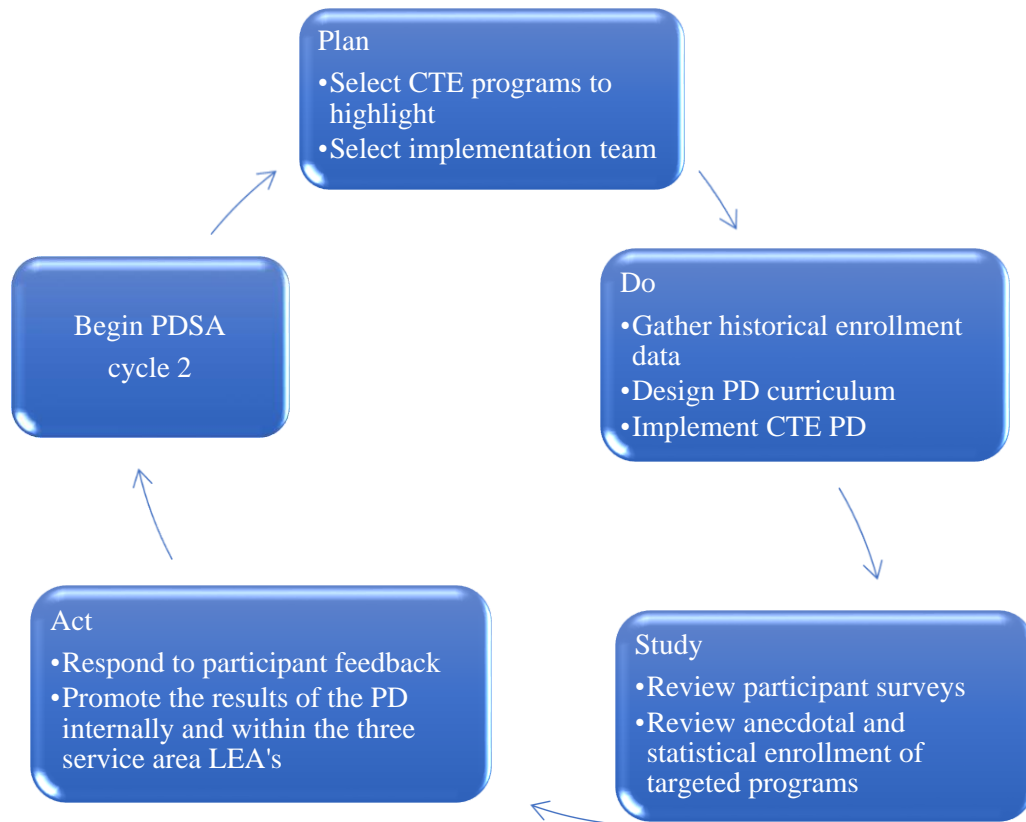
Improvement science outlines objective ways to ground change initiative in fact rather than in gut instinct alone. As defined by the W. Edwards Deming Institute (2018), the Plan-Do-Study-Act cycle is a recursive process involving the continuous collection of data and constant reflection regarding forming change initiatives and monitoring and refining success throughout the implementation. The design team met several times as a group but also by email and conference call in order to refine the implementation design and to make sure that all constituents' needs were met in both the design of the change initiative and in the timing of the implementation cycle.

Working with members from different systems meant that we had to be flexible in the ways we shared feedback. Often group email correspondence was the most effective method of communication that honored everyone's schedules. In the end, the design team was able to develop a comprehensive design that addressed the original aims of the initiative and allowed for reflection points along the way. The PDSA cycle in Figure 7

shows how this initiative was planned, researched, implemented, reviewed, and will be improved.

Figure 7

PDSA Cycle for CTE Initiative



Since student outcomes with regard to counseling about LCC's CTE programs should have helped to measure the instructors' and counselors' increased capacity as a result of the PD opportunities, student survey data were collected. Short surveys were administered to secondary students in career and technical education classes to indicate

the effectiveness of the intervention regarding how well CTE teachers and counselors are communicating AAS CTE opportunities through the College (see appendices, Student Survey 1). The analysis of the student data shows if there has been any effect on career counseling that can be attributed to the high school staff and faculty participation in the PD sessions.

ATTENDANCE OF INITIATIVE

The service area CTE counselors were asked to identify specific individuals who were high school CTE professionals (coordinators, counselors, coaches, and instructors) they wanted to be invited to the professional development. I also included other individuals from both the public and private schools with whom either I or the LCC program chairs have worked in the past. I also felt it was important to invite individuals from our NCWorks office and our Workforce Innovation Opportunity Act (WIOA) office. The NCWorks staff connect the public to industrial jobs for which they might require training. The WIOA staff often are able to fund student tuition and travel reimbursement for AAS degrees. Both of these offices are located on the campus of LCC, so it made sense to include them in the initiative. Appendix J is the CTE professional development artifact that was developed and shared with the NCWorks staff and the Eastern Carolina Workforce Development Board.

In advance of the offering of the CTE professional development, potential participants received emailed fliers promoting the experience and the 3-phase model—class time, industry speaker, lab/shop time—that would be offered during the experience. An email from the county CTE directors was sent in advance of the invitation so that the

invitees knew the initiative had the support of the three county Boards of Education and the three CTE directors. The emailed flier and invitation followed with a detailed description of the program, dates, and how to RSVP for sessions. Figure 8 is the flier that potential attendees were sent approximately one month prior to the first week of the program.

Figure 8

Promotional Flier

Lenoir Community College

2018 Industrial and Technical Academy

a five-week professional development experience
for counselors and CTE professionals

Wednesdays and Thursdays 2pm - 4pm, June 27 - July 26

What is it?

The Industrial and Technical Academy's purpose is to provide hands-on immersion in LCC's Industrial and Technical programs for information "gatekeepers": counselors, advisors, instructors, and coaches who help connect students to LCC's Industrial and Technical programs. For the five-week summer sessions, participants will rotate through hands-on learning experiences in Industrial and Technical programs, twice a week, for two hours each session. Participants may sign up for all or specific sessions.

Goals

- To familiarize participants with the learning environments and lessons typical to the Industrial programs.
- To build relationships between participants and Industrial and Technical program chairs.
- To build momentum in connecting high school students to Industrial and Technical programs at LCC and increase program enrollment and completers.

Class Structure

```

graph LR
    A[Class Time  
• Course of Study  
• Gen Ed Requirements] --> B[Industry Guest  
• Employment Opportunities  
• Earning Potential]
    B --> C[Participant Lab Time  
• Hands On  
• Tools  
• Skills]
  
```

Please RSVP no later than the Monday prior to each session to
Maggie Brown, Dean of Industrial Technologies
mlbrown46@lenoircc.edu

Week 1 – June 27 & 28
Bullock 104
Machining

Week 2 – July 5 only
Bullock 107
Welding Technology

Week 3 – July 11 & 12
Bullock 104
Industrial Systems

Week 4 – July 18 & 19
Global TransPark
Mechanical Engineering

Week 5 – July 25 & 26
Business Technologies 135
Computer Engineering

Classes located on the LCC Kinston Campus except where otherwise indicated. Casual attire with close-toed shoes required.

While participants ranged from LCC employees seeking more familiarity with CTE programs to middle school counselors and instructors, for purposes of this reporting, the data analyzed reflect only participants who advise high school students so that any possible correlation between better high school awareness of College CTE pathways and participation in the professional development can be made clear. In the past, I have included homeschool representatives in outreach and had several homeschoolers participate in our engineering degree event. Although I reached out to my previous contact with the local home school association, I was not able to get any home school participation in this initiative. In total, there were 20 participants who were classified as having direct contact with high school students in the course of their work. These participants completed a total of 99 hours of training. Table 3 is the participant log for each week of the program.

Table 5

Participant Attendance Log

Attendee	Institution	Machining	Welding	Industrial Systems	Mechanical Engineering	Computer Engineering	Totals
		W1	W2	W3	W4	W5	
Batchelor, Julie	GC CTE Dctr	2					2
Campbell, Chris	GCHS Cnslr	4					4
Carter, Trey	GCHS Ag Ins	2	2	2		2	8
Chamblee, Shannon	KHS Cnslr	4					4
Hill, Karen	LCC Plmt Adv	4	4				8
Jones, Amy	LC CTE Dctr	2	4				6
Lee, Barbara	JC CTE Dctr	1	4				5
Miller, Samee Jo	Bethel Cnslr	2	2	2	2	2	10
Nelson, Tina	JSHS Cnslr	2	2				4
Phillips, Lindsay	LCPS Car Cch	2		2			4
Rasberry, Beth	GCHS Cnslr						0
Roddy, Karen	LCECHS Cnslr	2	4	2	2	2	12
Shimer, Jessica	LCPS CTE Crd	4	4	2	2	2	14
Schwartz, Thomas	GCHS CTE Ins				2	2	4
Sparrow, Zikiya	GCHS Car Cch						0
Tyndall, Candice	SLHS Cnslr						0
Tyndall, Scarlett	JCPS CTE Cch	2		2			4
Vickory, Mary	SLHS Cnslr						0
Wilson, Athena	HS Prog Dctr	2	2				4
Wynne, Joy	LCC HS Liais	4	2				6
Number of Participants 20							99

COUNSELOR AND STUDENT FEEDBACK

The hypothesis behind the CTE professional development was that by building the counseling capacity of the “gatekeepers,” the information would spread throughout

the high school network of CTE teaches, counselors, and students. Due to the limited window of time between the IRB approval and the writing of this disquisition, I relied on a combination of high school counselor, teacher, and student survey responses and the change in only one year of LCC CTE programs enrollment post-intervention to indicate the effectiveness of the intervention. On responses where participation in the PD and how well the College connects with each county is a factor, I disaggregate the survey responses from high school staff and students by county.

CTE PROFESSIONAL SURVEY RESPONSES

All CTE professionals, both initiative participants and nonparticipants were asked to respond to the CTE Professional survey in order to see how well professional networking between the two groups helped to disseminate CTE program information. Lenoir County high schools have the largest population of students in our service area. Seven of the 20 participants in the intervention were employed by Lenoir County Public High Schools (LCPHS), and one of the participants was employed by a large private school in Lenoir County. Twenty-nine LCPHS CTE staff responded to the CTE Professional survey. Six of the participants in the intervention were employed by Greene County Public High Schools (GCPHS). There were 10 GCPHS responders to the survey. Three Jones Senior High School (JSHS) CTE professionals participated in the intervention. There were also three JSHS responders to the survey.

Question 1 of the CTE Professional survey asked the participants to describe their attendance in the LCC CTE professional development. From Lenoir County, eight of the

responders reported having attended some sessions that corresponds to the seven LCPS and one private school attendees recorded in the attendance log taken during the initiative. For Greene County, only one survey responder reported having attended any sessions. However, six attendees from Greene County did attend the sessions as recorded on the attendance Table 3 above. Five of the attendees failed to complete the survey. Similarly, none of the three survey responders from Jones County reported having attended the PD sessions, even though Table 3 shows that there were three participants from Jones County in the PD sessions. Unfortunately, those three participants did not respond to the survey. Survey responses from both attendees and non-attendees is valuable given that part of the goal of educating key gatekeepers in each county is to see how effectively they disseminate the information following their participation. Table 4 shows the responses.

Table 6

Responder Participation by County

Response Choice	Lenoir County	Greene County	Jones County
I attended most of the sessions	3	1	0
I attended about half the sessions	1	0	0
I attended less than half the sessions	2	0	0
I attended 1 or 2 sessions.	2	0	0
I did not attend any sessions.	21	9	0

Question 2 of the survey asked responders who reported little to no participation in the professional development to select why they did not attend or attend more often. Responders had the ability to select more than one reason. It is clear from both these data and the research cited previously that the high school staff have many conflicting demands on their time. It is also apparent that the program needs more promotion than just the email flier that was sent a month prior to implementation. Another key finding is that seven responders entered the school system after the PD opportunity. It would be worthwhile for the College to look at ways to be informed of new high school hires and make an effort to acquaint those new employees with LCC's CTE pathways. Table 5 reflects those responses.

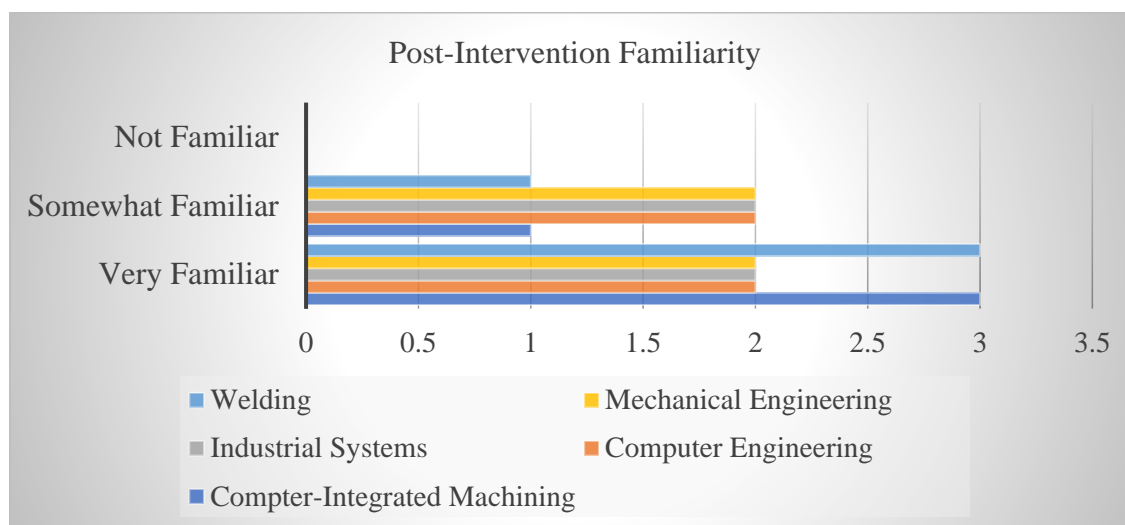
Table 7

Responder Reasons for Lack of Attendance

Response Choice	% of Responses	N. Responses
Conflicting professional responsibilities.	40%	16
The method of delivery (face to face) was not convenient for my personal schedule.	12.5%	5
I already feel well-informed about the CTE pathways at LCC.	5%	2
I did not feel the material was relevant to my professional role.	7.5%	3
I was not aware of the professional development.	17.5%	7
I was not working for the school system at that time.	17.5%	7

Question 3 of the survey asked only those respondents who reported having attended some of the professional development sessions to rate their familiarity with each of the advanced manufacturing related LCC programs. Nine of the survey respondents were referred to this question. Computer-Integrated Machining and Welding were ranked top in familiarity with the rating “Very Familiar.” The hands-on activities in these two program sessions included the attendees using a manual mill to plane down a block of aluminum and using both the virtual welder and a real stick welding process to join two pieces of steel. While the other sessions included wiring a circuit board, building a virtual widget using design software, and an industry tour, it is likely that being able to operate large, heavy machinery and to use the welding torches made a more lasting impact on the participants. Also of note is the fact that nine survey participants attended all or some sessions, but only three respondents answered this question. Chart 2 shows how each of the five programs ranked in terms of post-intervention familiarity.

Chart 2

Post-Intervention Familiarity

Question 4 of the survey presented five of the key components of the professional development and asked the responders to rate how important each of those types of activities were (if they participated) or would be (for future participation) in helping them become more familiar with LCC CTE programs. Hearing from LCC students currently in the CTE programs had the most value for participants. They likely were able to identify those students with their own advisees in their high schools. Table 6 shows how the items were ranked by the respondents from all three counties combined.

Table 8

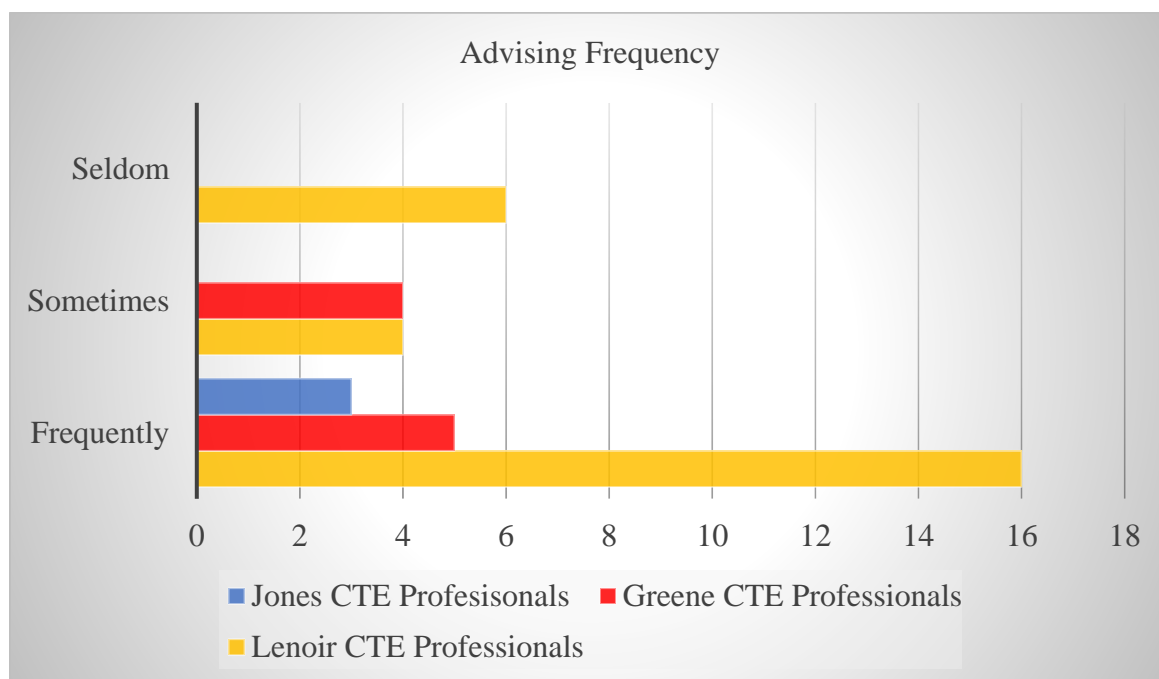
Importance of PD Components

Response Choice	Minimum	Maximum	Mean
Q & A with current program students.	1	5	3.85
Meeting regional employers in that field.	1	5	3.36
Doing a project in the lab/shop.	1	5	3.18
Classroom discussion with program chair.	1	5	2.42
Learning some of the basic concepts taught in the course.	1	5	2.18

Question 5 asked the responders to rate the frequency of students coming to them for information about options after high school. It is interesting to note that of the three counties, only Lenoir County CTE responders indicated that they seldom advise students about options after high school. Lenoir County has both the largest numbers of

counselors and CTE instructors in each of the three high schools compared to the smaller counties, Greene and Jones. Perhaps the larger number of counselors and dedicated CTE positions allows the students to rely on dedicated career counselors whereas the smaller school systems rely on all counselors and staff to do student career advising. It would be difficult for the single counselor at Jones Senior High School to do individual advising of all of the students in her building. The instructors and other school personnel must aid in the dissemination of career information to those students. Chart 3 displays the frequency of that contact between the CTE professionals and students.

Chart 3
Frequency of Options after High School Advising



Question 6 was open-ended, asking for the responders' suggestions on future LCC CTE professional development opportunities. Throughout the three counties, only 11

responders completed this section. Upon coding the responses, I discovered that they fell into three general categories: kudos, format suggestions, and requests for specific programs to be highlighted in the future. Three responders offered general appreciation of the CTE PD opportunity and hopes that the program will continue.

In terms of the format of the PD, one suggestion was to provide tours of the program areas, presumably a suggestion to move through multiple programs at a much quicker pace than the two-hour sessions in each program. Another response in this area suggested that instead of the summer PD offering, the program should be moved to the county's required professional development days that occur throughout the school year.

Three responses requested other programs be moved into the rotation of programs being highlighted. All three of these responders requested that the culinary department be included at the next offerings. This is an interesting suggestion as typically, graduates of this program who stay within the region to seek employment earn much less than graduates of the five advanced manufacturing related programs that were part of the original offering. This would indicate that those CTE professionals are aware of student interest in the culinary program that is not primarily motivated by immediate earning potential. LCC Career Coach (2019) indicates that restaurant cooks within 100 miles of the College make about \$22,000 yearly. It is surprising that this occupation is associated with enough interest that three responders specifically requested to learn more about this program.

STUDENT SURVEY DATA

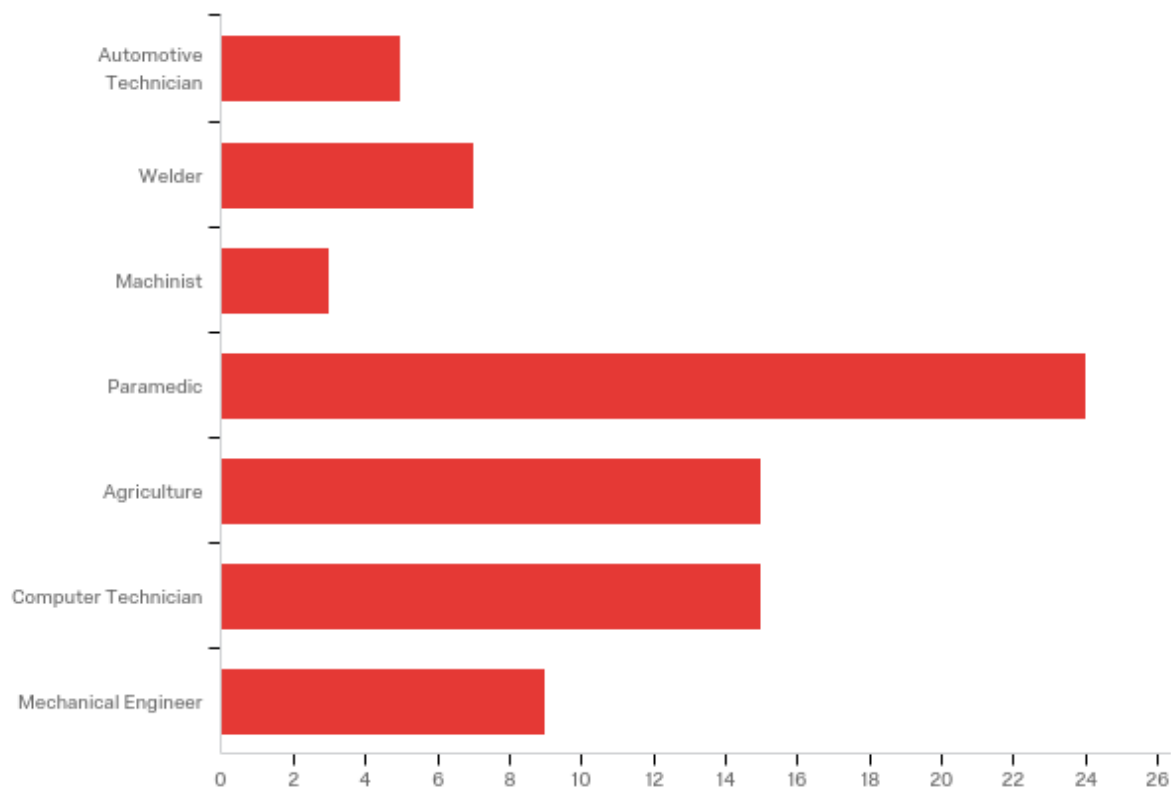
The three county CTE directors were asked to identify one CTE class in each of the high schools to take a computer or paper-based survey about their knowledge of LCC CTE pathways, their interactions with career advisors, and their intentions post-high school. I intentionally asked that the classes be high school CTE classes, not LCC CCP CTE classes. I felt the awareness data would be biased in the groups taught by LCC instructors who are very motivated to encourage students to matriculate to the AAS degree pathways. Since the purpose of this study is to educate high school CTE professionals about LCC pathways in order for them to be better able to counsel students on their choices at LCC, the student data collected shows the perceptions of students who have had little contact with LCC instructors. Five high schools' CTE classes were surveyed: the three Lenoir County public high schools including Kinston High School (KHS), North Lenoir High School (NLHS), and South Lenoir High School (SLHS); the only Jones County high school, Jones Senior High School (JSHS); and the one traditional high school in Greene County, Greene Central High School (GCHS). The Greene and Lenoir Early College High Schools were excluded from the survey as those students are all on LCC degree pathways.

Eighty-one students in five separate high school CTE classes were surveyed. Four classes were surveyed electronically, and one class was surveyed on paper due to the lack of an available computer lab. These results are shown as aggregated and disaggregated in order to make apparent any variations in responses from county to county.

Question 1 asked students to rate a set of careers with corresponding LCC AAS degree options as to which they were most interested in pursuing after high school. This

question was answered by almost all students. It is notable that simple, one answer survey questions were more likely to get a response than more complex questions asking students to choose more than one response or rating per item. Students were given choices in both manufacturing-related and nonmanufacturing-related careers in order to compare their answers to the previously discussed report from the Deloitte and The National Association of Manufacturers (Figure 1) that most American families do not encourage their offspring to enroll in manufacturing-related programs. Did it hold true that parents' perceptions of manufacturing jobs as unstable, dirty, labor intensive occupations were passed on to their students? Indeed, the results of the student survey mirrored the previous study, with Paramedic and Agriculture and Computer Technician being top choices. Being from a community in which agriculture is highly visible in the community and given the fact that most of the students own computer technology, those results are understandable. Welding and Machining were rated in the bottom three choices. Chart 4 shows the aggregated student responses from all three counties.

Chart 4

Careers of Interest After High School

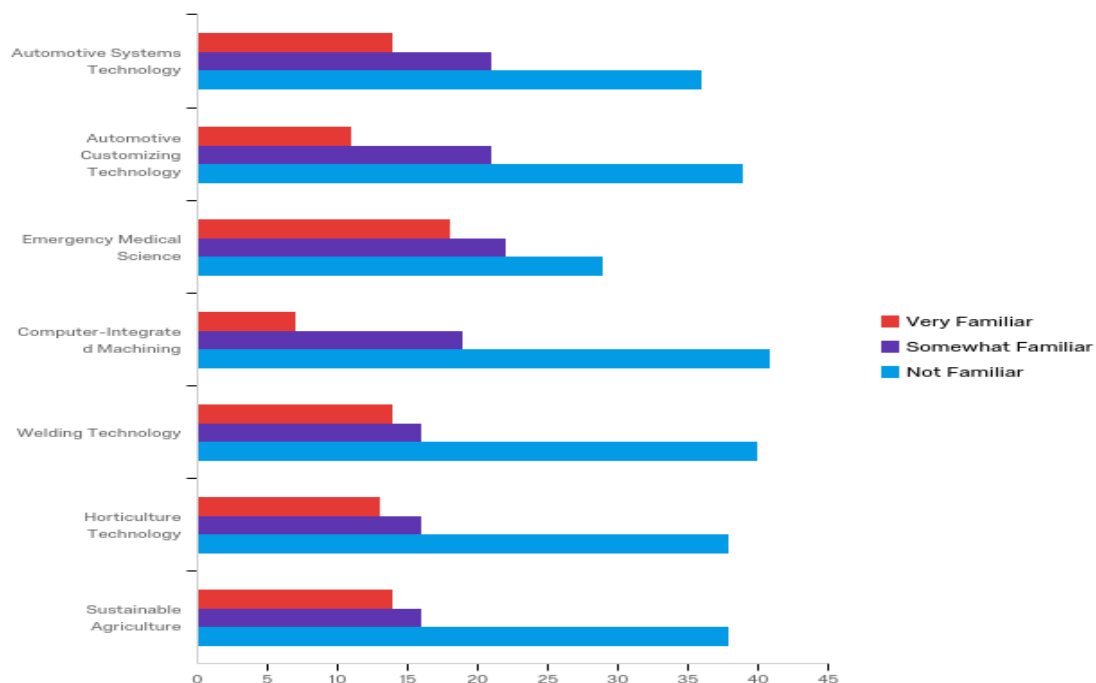
Question 2 asked students to rate their familiarity with several LCC programs. This question was designed as a drag and drop response in the electronic version and a table with categories of familiarity to mark for each program in the print version. This question received fewer answers than more simple questions. I have attempted to compare the aggregated data to the county-specific data in order to show which counties have the best and poorest dissemination of LCC program information. The accuracy of the comparison may be skewed by the complexity of the response required. Compared to the aggregated data shown below, Jones and Lenoir County students had similar

responses with the Emergency Medical Science (EMS) program ranking as one of the most familiar programs with both schools. EMS ranked in the lower middle third of familiarity for Greene students. Ranked in the lower third among all students were the Automotive, Welding, and Computer-Integrated Machining programs. While still largely unfamiliar, Greene students ranked Welding and Computer-Integrated Machining slightly more familiar than Lenoir and Jones students. This is likely due to the fact The Early College High School next to GCHS has both of these LCC programs on their campus. Even so, given the proximity of the programs to the GCHS campus, it is surprising that machining and welding still ranked in the lower third of the programs listed. Chart 5 displays the aggregated program familiarity results.

Chart 5

Aggregated Student Familiarity with LCC Programs

How familiar are you with the following Lenoir Community College programs?...



Question 3 asked students to rate the frequency with which their teachers tell them about degrees at Lenoir Community College related to their interests. The choices were 1-Never, 2- Very Seldom, 3-Sometimes, 4-Often. GCHS students appear to get the most program information from their teachers. LCPHS students averaged a rating about halfway between Very Seldom and Sometimes. JSHS students rate the information about LCC programs they are given at slightly more than Very Seldom. Table 7 represents the responses from all three counties.

Table 9

Frequency of Dissemination of LCC Program Information

	Minimum	Maximum	Mean	Count
GCHS	1	4	3.17	18
Lenoir	1	4	2.45	51
JSHS	1	4	2.25	12

Question 4 asked students about their active participation in seeking information from their counselors about options after high school. The frequency choices were 1- Never, 2-One or Two Times a Year, and 3-Several Times a Year. Interestingly, the counties' frequency order of receiving information in Question 3 and the order of seeking information in question 4 are in the same order. Greene Central students report receiving and seeking information at the highest frequencies. Lenoir students rated their information seeking frequency in the middle. Jones Senior students report receiving and seeking information at the lowest frequencies. It would follow that the culture of information sharing creating by the school staff is mirrored by the students in the school.

It would be a worthwhile exercise to have Jones Senior staff intentionally increase their instances of information sharing to see if the students' active seeking of information corresponds with the increase in regularly being given unsolicited information. Table 10 shows the disaggregated frequency of students' information seeking.

Table 10

Frequency of Seeking Counseling about Post-Graduation Options

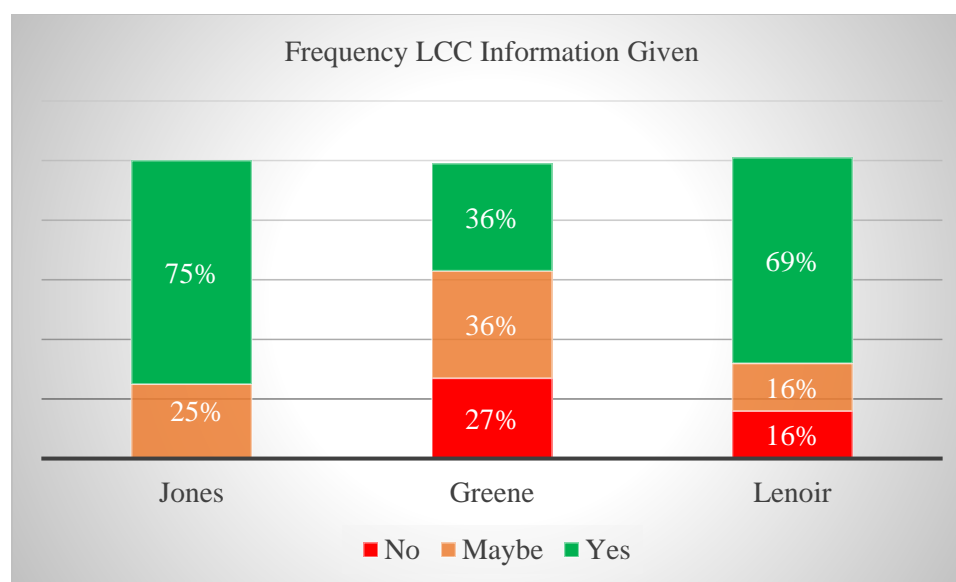
	Minimum	Maximum	Mean	Count
GCHS	1	3	2.33	18
Lenoir	1	3	2.24	51
Jones	1	3	2.17	12

Question 5 asked only the students who reported seeking information from their counselors in Question 4 to state how often they were given LCC program information related to their goals after high school. With the exception of Greene Central High School students, most students who saw their counselors reported being presented information about LCC programs. Anecdotally, the perception of LCC faculty and counselors is that most students at GCHS are encouraged to bypass the community college and apply directly to four-year colleges. Several LCC program chairs have been told by students that GCHS counselors encouraged them to only apply to four-year institutions. This anecdotal evidence seems to be supported by the data below.

This is an opportunity to educate those GCHS counselors and instructors about the wages for occupations requiring a two-year degree or less shown previously in Table 2. Many counselors also may be unaware that all of LCC's AAS degrees in the advanced

manufacturing-related fields now transfer to several four-year institutions. Students and their families would benefit by knowing they could save money by attending LCC for the first two years and transfer into four-year institutions without a loss of freshman and sophomore credits. Chart 6 shows the percentages of students who report being given information about LCC during advising sessions at each school.

Chart 6
Frequency of LCC Program Information Given

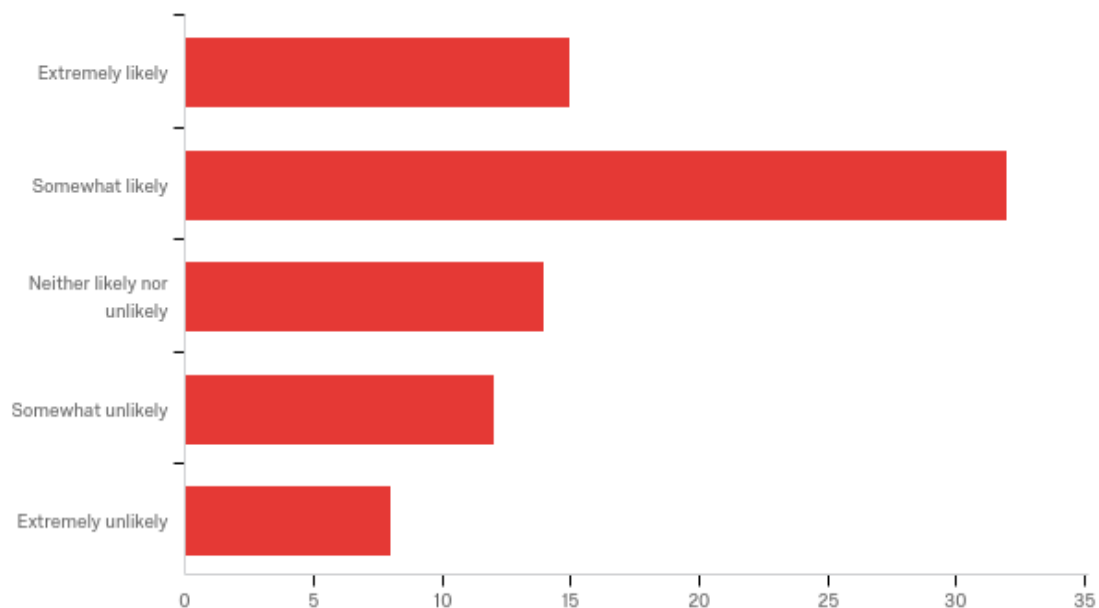


Question 6 asked students if they were likely to attend LCC after high school graduation. The majority of students were at least considering enrolling at LCC after graduation. Forty-seven students rated themselves as Extremely Likely or Somewhat Likely to attend LCC. As this number is roughly half the students surveyed, if LCC were able to maintain their interest in those intentions from the time of the survey to registration, the College would be growing in enrollment. Perhaps if LCC were to

administer this survey during students' high school junior year with identifying data, more targeted contact with these potential future students each semester through high school graduation would encourage them to follow through seeking higher education at LCC. Having that type of connection to the College and a college advisor would certainly strengthen the students' feelings of connectedness to the College. Chart 7 shows the breakdown of students' reported interest in enrolling at LCC.

Chart 7

Are Students Likely to Attend LCC After High School

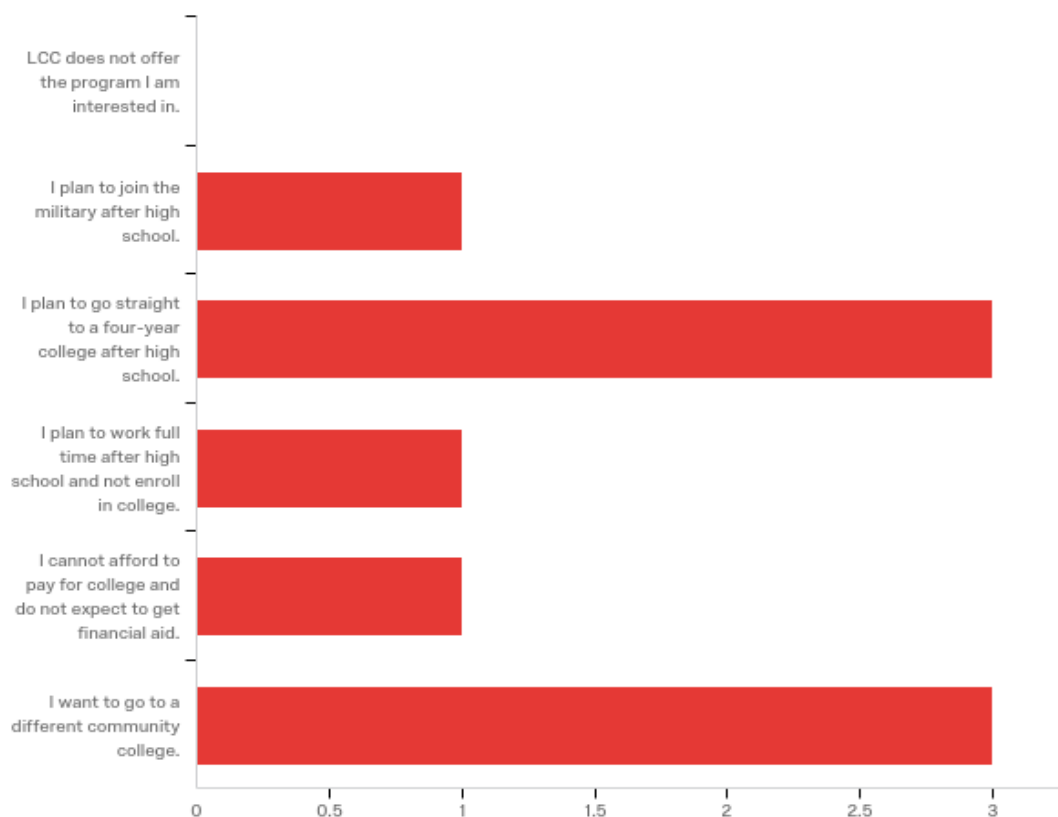


The nine students who rated their intentions as extremely unlikely were given the opportunity to select their reasons. The positive result of their data is that no students reported that LCC did not have the major of interest of the students. Instead, other institutions of higher learning seem to be attractive to these students. Universities are

often included in high school career fairs, and there is the perception of increased status (through announcements of senior signing day and bulletin board postings) attached to students who are accepted to four-year institutions. For students interested in going directly to four-year institutions, LCC could better educate them on the savings and transferability of LCC's programs. The Lancer Guarantee is a new scholarship initiative that awards full tuition and fees to qualifying students (Appendix F).

Another piece of information that may sway these students is knowing that most of LCC's AAS degrees transfer to 4-year institutions. One such example is that all of LCC's advanced manufacturing-related degrees are accepted for East Carolina's Bachelor of Science in Industrial Technology for the first two years of credit. Students then may go on to complete a bachelor's degrees in the disciplines of logistics, applied engineering, and management (Appendix G). Chart 8 below shows the reasons given by students for not considering enrolling at LCC post high school graduation.

Chart 8

Reasons Given for Not Considering LCC

ENROLLMENT DATA

Determining if the CTE professional development (PD) program had the desired effect can also be partially based on post-initiative enrollment data. The previously discussed Lenoir Community College enrollment trend study prior to the initiative (Appendix B) was compared to the enrollment trends following the implementation. Due to the limitations of the timeline, there was only one annual enrollment cycle between implementation and the conclusion of the process. Post-initiative, three of the five programs highlighted in the summer CTE PD sessions showed enrollment growth. Table

9 below shows the last four years of enrollment data by unduplicated headcount specifically for the programs that were highlighted in the CTE professional development.

Table 11

Four Year Enrollment Data for CTE PD Programs

	Fall	Fall	Fall	Fall
	2015	2016	2017	2018
Computer Engineering	37	45	40	46
Computer-Integrated				
Machining	69	59	59	51
Industrial Systems	0	0	3	4
Mechanical Engineering	0	0	1	12
Welding Technology	49	56	57	56

Note. Enrollment data sourced from LCC Institutional Effectiveness Office

The College had an Industrial Systems program in the catalog for several years, but the program chair who was assigned to this program was charged with overseeing four programs. This multi-systems program went without attention until I, as the new Dean of Industrial Technologies, assigned that program to a new faculty hire in the machining department who had several years' experience in industrial systems. I selected this program to be highlighted for the initiative because every plant manager I have spoken with has expressed a need for cross-trained maintenance and repair technicians. The program chair has (1) been with the College for one year, (2) acquired training

equipment for the program, (3) realigned the curriculum to meet current industry needs, and (4) begun teaching Continuing Education Customized Industry Training courses (not reflected in the curriculum enrollment numbers below). Post-initiative, as of the close of Fall 2018, the data reflect that this program has gained only one student since the previous year. However, as this program encompasses classes in other disciplines, some students may be listed within other majors. However, the data show only fall semester headcount. Due to the many proactive measures taken by the program chair, there were several new students in the spring 2019 semester. As of Spring 2019, the program chair has eight advisees assigned to him and taking coursework in the Industrial Systems Technology program. One very positive outcome from the initiative is that the new instructor got to network with 20 key high school CTE professionals who will help to match students to his program.

Mechanical Engineering showed growth from one student to 12 students post-initiative. This was also one of the programs the College had for several years with no enrollment. Again, this was one of the programs lumped into the group of four programs under one program chair. I worked with administration to eliminate the chair's other low enrollment programs that did not meet industry needs. The chair and I worked together to relaunch this Mechanical Engineering program, which encompasses industrial design and mechatronics, both growing technologies in the regional advanced manufacturing industries. The chair provided a wonderful experience for the CTE initiative participants, utilizing 3D design tools and the mechatronics equipment. The PD experience was a definite change agent for the program as it helped the participants to understand what

mechanical engineering is and how it differs from the Associate in Engineering (transfer-based program).

The Computer Engineering program also experienced an increase from 40 to 46 students post-initiative. Unlike the two previously discussed programs, the Computer Engineering program has been well-established at LCC. As the four-year enrollment data show, this program fluctuates in enrollment from year to year. The correlation between the program growth and the implementation of the CTE PD is inconclusive.

Two programs slightly declined in enrollment in the fall semester following the initiative: Computer-Integrated Machining and Welding Technology. It is interesting to note that the demand for welders and machinists is perhaps higher in our region than for the other programs. Both of these disciplines are needed for machine maintenance and production of components in all advanced-manufacturing industries. It can be speculated that the rise in enrollment of the other three programs is connected to the slight decline in these two programs. In such a rural region with a declining population, there are only so many potential students available. Populations Estimates (2018) show that between the 2010 and the 2017 census, LCC's three service area counties decreased in population from -1.6% to -5.6%. Appendix H shows the exact numbers. The dominos of population decline, high school enrollment decline, and College enrollment decline, if not reversed, will continue causing industries to find it difficult to fill skilled technical positions.

IMPLICATIONS AND RECOMMENDATIONS

After studying the wealth of participant, nonparticipant, and student data generated by this initiative, there are several lessons learned. This implementation provided valuable networking between the College faculty and the high school CTE staff. The CTE professional surveys revealed an appreciation for the PD by those who attended and a desire to take advantage of future opportunities. The attendance data also reveal that there are schools who participated minimally or not at all in the PD.

IMPLICATIONS FOR LEADERSHIP PRACTICE

In the next iteration of CTE professional development, adjustments to the schedule will be made in an effort to offer sessions when more high school CTE staff are available to attend. As suggested in one CTE professional survey response, the College will seek approval of the public school system to offer CTE PD sessions during the counties' planned professional development days. This will likely mean that sessions will have to be shorter so that several programs can be highlighted within one afternoon. However, utilizing the time the school system has already dedicated to professional development will benefit the maximum number of personnel. It will be of further impact that the College's new Aerospace and Advanced Manufacturing Center (AAMC) will be renovated and open by Fall 2019. This will allow the CTE instructors and counselors to come to LCC's new, state-of-the-art facility and see what a truly enriching environment the Center will be for students.

This intersystems change initiative revealed the need for a more hands-on approach to leading the College toward increased student success in CTE programs. The College has several key personnel, many of whom were members of the initial design team, who work with the local school systems: the marketing director, the College recruiter, high school program director, and high school liaisons. All of these people work with different facets of encouraging students to explore and choose LCC programs. However, I learned that each of these personnel have ownership of small pieces of connecting students to the College, and sometimes, we are all unaware of the efforts of our coworkers. This lack of information-sharing can lead to working at cross purposes and sending a discordant message to our constituents. Moving forward, it will be important for me to model the practices I learned during the design phase. All key stakeholders of future initiatives should be involved in planning and implementing efforts to increase student interest and enrollment in our CTE programs.

Not only is it important for College personnel to keep each other informed, but we also must make sure our message is getting to future students. High school CTE student data revealed there are students who may not be aware of the LCC CTE pathways because they are not given or do not seek counseling about options after high school. Due to the increased demand on the time of high school staff, it is necessary for the College to also connect directly with the high school students and their parents. Toward this goal, I have used the opportunity of LCC's advanced manufacturing programs being moved to a new site for fall 2019 to create a CCP CTE afternoon program in which high school students can join the traditional first year students in their coursework and lab work at the new site. I currently meet biweekly with the LCC faculty who will be relocating to the

new site, and they report being pleased that the high school students will have access to all of the programs' equipment under one roof. In an effort to continue the practices of the design team approach, I have also included the College and the high school systems' stakeholders in the planning process and the roll out of program information.

Using the lessons learned during and after the implementation of the CTE PD sessions, I have worked with our marketing department to develop materials we will send directly to CCP qualified students and their parents. This direct marketing approach will allow the College to control the quality, timing, and accuracy of our messaging.

However, I felt it was important to involve the high school partners in helping to target students who would be well-served by the new opportunity. I have worked with the local public schools to identify qualified high school CCP CTE juniors and senior to receive the marketing materials. In the promotion of the new program, part of LCC's message is that taking the high schools' own CTE programs as freshman and sophomores will give students a strong foundation of technical skills. This should help to assuage the concerns that high school CTE courses will suffer a major decline in enrollment. During our original intervention, the LCC program chairs noted the fears of the high school partners that their own CTE programs are suffering low enrollment. Their worry was that increasing access to LCC's CTE programs to their high schoolers would do further harm to their enrollment numbers. By emphasizing the foundational skills students develop in the high school CTE classes, we are able to make sure students take advantage of the high school courses early in their high school careers and then will be more successful in building those skills in the college courses. In the high school CTE classes, students learn the foundations of metrology, OSHA regulations and job safety, and about careers in

different CTE fields. These foundations will allow students who matriculate from high school CTE to the College's CTE programs to be receptive to building upon those skills and hopefully, to be even more successful in completing the pathways.

I will also meet with the administration of each of our service area high schools to go over the terms of the new student opportunity and to make sure they feel well-informed about our new integrated approach to advanced manufacturing CCP CTE pathways. Allowing the students to leave the high school campus for part of the day will be an adjustment that all parties need to closely regulate in order to ensure we have united and clearly communicated expectations for the students and parents.

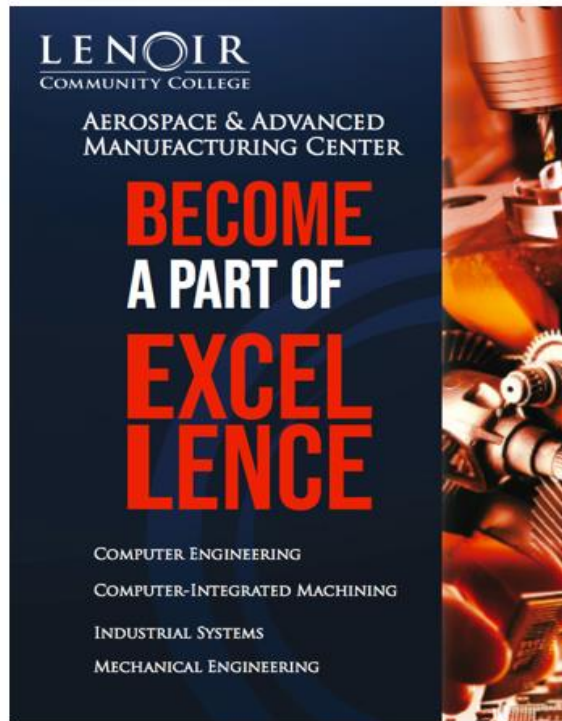
In marketing to our high school constituencies, I will continue my efforts to involve local home school organizations. If students are in a North Carolina registered home school curriculum, they are eligible for the CCP program benefits. I think the half day high school program at the new AAMC will be a perfect opportunity for home school students to begin integrating into an institution of higher learning.

Bringing the high school students to the College's new facility will ensure equity in enrollment opportunities for students throughout our service area. Currently, we are limited to hosting only a handful of CTE programs in only one high school site each due to the limitations of college faculty and equipment. In the new CTE CCP initiative, students from all of the service area high schools will be able to apply. To further ensure equity in access, the College is working with the county's transit system to provide transportation for students who do not drive themselves to school. Figure 9 is the direct mailer being sent to qualified high school CCP CTE students.

Figure 9

High School GTP Promotional Card

Mailer Front and Back



RECOMMENDATIONS FOR FUTURE RESEARCH AND SCHOLARSHIP

As the baby boomer generation moves closer to retirement, it will be important to continue to stay abreast of employment data in LCC's service area counties. Identifying the regional economic trends will help the College to ensure that the programs the College invests in are of value to local economic development. It will also be critical to study if parent and student perceptions of CTE professions are improved by involving the high school personnel in professional development and by highlighting the progress of

the College's new Aerospace and Advanced Manufacturing Center. The AAMC will be an excellent place to invite local CTE professionals to for professional development opportunities and to connect regional industrial employers to students and staff. As evidenced by the post- professional development survey, hearing from current and former program students has a great impact on understanding the importance of these CTE pathways. At the AAMC, part of the direct marketing approach will be to have evening open-house events for parents and future CCP students. The current students and recent graduates of the programs will function as "Program Ambassadors" whose experience and job placement will be clear evidence of the success of the programs of study.

The first cohort of high school dual credit students at the AAMC will be a valuable source of data to reveal what support services are needed to ensure the success of the current students and of future cohorts. Having the connection between the College CTE program chairs at the center and the CTE professionals and counselors at the students' high schools will help to ensure that students receive early interventions and support from both institutions. Data on attendance, grades, retention, and completion will help to indicate what practices are most effective and indicate areas future improvement.

Following our CTE completers from graduation to employment will also help to create a picture of how well the College is serving the students and the community. It would be valuable to create a database or some type of social network to track when graduates receive job offers, where they are working, if they require advanced degrees, and what promotions and earnings they may receive within a set timeline. This data will help the College to ensure that the academic investment made by the students and by the College Foundation (with regard to scholarship recipients) is literally paying off. Having

this concrete data will also help to show future students and their parents, as well as our high school partners, that engaging in CTE pathways is a fulfilling and financially rewarding educational choice.

CONCLUSION

Knowing that high school CTE enrollment is declining as the nation is approaching the retirement of the baby boomers and that there are 3.5 million openings in manufacturing jobs is a call to action for promoting CTE CCP pathways. It is up to the community college system to anticipate regional needs for training the next generation entering the workforce to fill those vacancies. Capturing students' career interest in time to take advantage of the state's CCP initiatives will benefit students by helping them to engage in the CTE pathways.

As LEA's and community colleges collaborate in more cohesive ways to guide students and to provide state-of-the-art technical training, it is important that colleges do not neglect high school counselor and instructor professional development. Providing direct CTE professional development will (1) allow the community college to engage directly with the information gatekeepers, (2) build relationships among community college faculty and high school staff, and (3) involve industry professionals as partners in the development process. Counselors also have valuable student data which may have an impact on curriculum design. During this implementation, Lenoir Community College was undergoing Guided Pathways redesign, which gave programs the opportunity to consider their discussions with the high school counselors during the summer professional development sessions. The service area counselors noted student academic barriers in gateway English and math courses. In response to these concerns, several program chairs elected to include non-transfer courses like ENG 110 Freshman Composition and MAT 110 Math Measurement & Literacy to fulfill the general education requirements for the AAS degrees. The additional choice allows students to

take either the transferable courses or the courses necessary to reinforce discipline-relevant communication and math skills.

This improvement initiative shows the importance of relationships between secondary and post-secondary institutions affecting student matriculation to collegiate CTE programs of study. The components necessary for students to have access to CTE programs are already in place. The missing elements are direct high school student contact and the inter-systems approach to capacity building for the personnel who are most influential in the high school students' academic and professional decision making—the high school counselors and CTE instructors. However, as this intervention shows, educating high school CTE professionals is only a piece of the solution. The College and industries must advocate for and control their own messaging about the rich opportunities available in today's advanced manufacturing careers.

Regional economic development should also be positively impacted by this initiative. Graduates of CTE programs tend to stimulate the local economy by providing a well-trained workforce to attract industry to a region and to prevent existing industry from relocating to find a skilled workforce.

If our community colleges are going to have the greatest impact on social justice, we must interrupt the reproduction of inequity in the community. It is a misconception that only students headed directly from high school to a four-year institution will be economically successful. Spreading the self-empowering potential of CTE programs will be transformative to those of our rural students classified as low-socioeconomic status. The marginalized view of technical vocations is outdated and elitist. As seen in Table 2, "Occupation, Wages, and Education" and Figure 3, "Distribution of Manufacturing Jobs

in the US,” jobs requiring technical skills and less than a four-year education are plentiful and well-compensated.

My operating hypothesis was that providing more information about the college’s CCP CTE pathways and the resulting career opportunities for students would help teachers, counselors, and parents to guide students who have an affinity for technical skills toward CTE classes while in high school and to then transition from the CCP courses to the AAS degree upon graduation. The results of the PDSA cycle provide indicators through the gathered data that this strategy must be combined with direct contact from the College to the students and parents in order to be most effective.

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APPENDIX A

Career and College Promise Eligibility Policy

Career and College Promise - Pathways				
	College Transfer Pathways	Career Technical Education Pathways		Cooperative Innovative High School Programs
		Curriculum	Workforce Continuing Education	
Definition	Tuition free course credits toward the Associate in Arts, Science, Engineering, Nursing, AFA Visual Arts, and a four-year degree.	Tuition free course credits toward an entry level job credential, certificate or diploma for eligible high school students.	Tuition free course hours toward an entry level job credential for eligible high school students.	Leads to the completion of a high school diploma and associate degree or provides up to two years of college credit within five years.
Eligibility	<ol style="list-style-type: none"> 1. Be a high school junior or senior; 2. Have a weighted GPA of 3.0 on high school courses; and 3. Demonstrate college readiness in English, reading and mathematics on an assessment or placement test or meet provisional status. (See Attachment A) 	<p>Be a high school Junior or Senior and:</p> <ol style="list-style-type: none"> 1. Have a weighted GPA of 3.0 on high school courses or have the recommendation of the high school principal or his/her designee (assessment scores should be considered); <i>and</i> 2. Have received career pathway information outlining program requirements for completion of the certificate or diploma. <p>Be a high school Freshman and:</p> <ol style="list-style-type: none"> 1. Passed Math I with a grade of C or better; 2. Scored a 3, 4, or 5 on the End of Course assessment (EOC) for Math I; 3. Scored a 3, 4, or 5 on the 8th grade End of Grade ELA assessment. See page 14-13 for 	<p>Be a high school Junior or Senior and:</p> <ol style="list-style-type: none"> 1. Have a weighted GPA of 3.0 on high school courses or have the recommendation of the high school principal or his/her designee (assessment scores should be considered); <i>and</i> 2. Have received career pathway information outlining program requirements for completion of WCE pathway. 	<p>High School students in grades 9 to 12 with access to an approved CIHS. Eligibility requirements for Cooperative Innovative High School programs are established jointly by local boards of trustees in accordance with G.S. 115C-238.50.</p> <p>Special emphasis and preference given to first-generation college students.</p>

Career Technical Education Pathways Curriculum:

Juniors and Seniors

1. The Career and College Promise Career Technical Education Pathway for juniors and seniors leads to a certificate or diploma aligned with a high school Career Cluster.
2. To be eligible for enrollment, a high school student must meet the following criteria: a. Be a high school junior or senior; b. Have a weighted GPA of 3.0 on high school courses or have the recommendation of the high school principal or his/her designee; and c. Have received career pathway information outlining program requirements for completion of the certificate or diploma.

3. High school counselors should consider students' assessment scores in making pathway recommendations.
4. College Career Technical Education courses may be used to provide partial or full fulfillment of a four-unit career cluster. Where possible, students should be granted articulated credit based on the local or state North Carolina High School to Community College articulation agreement.
5. To maintain eligibility for continued enrollment, a student must a. Continue to make progress toward high school graduation and maintain a 2.0 in college coursework after completing two courses. b. A student who falls below a 2.0 GPA after completing two college courses will be subject to the college's policy for satisfactory academic progress.
6. A student may be awarded a certificate or diploma prior to high school graduation. The AAS may not be awarded prior to high school graduation verification.
7. A student may only enroll in one pathway and may not substitute courses in one program for courses in another. Career and College Promise 14-12 Revised 08/18/17
8. The student may change his or her pathway major with approval of the high school principal or his/her designee and the college's chief academic officer or chief student development administrator. The college's chief academic officer or chief student development administrator shall approve a change in pathway based on verification provided by the student that the program change allows the student to meet their newly chosen career path. Verification could include (but is not limited to) a bachelor's degree plan published by the university, a career pathway plan, career information published in the Occupational Outlook Handbook and/or information published in the North Carolina Career Cluster Guide, etc.

9. With approval of the high school principal or his/her designee Career and College Promise lead to a career technical education certificate or diploma in industrial and engineering technologies.”

Freshmen and Sophomores

1. The Career and College Promise Career Technical Education Pathway for freshmen and sophomores leads to an industrial or engineering certificate or diploma aligned with a high school Career Cluster.
2. The college may enroll high school freshmen and sophomores only in industrial technologies (program code 50xxx), engineering technologies (program code 40xxx), agriculture and natural resources (program code 15xxx), and transportation (program code 60xxx) certificate and diploma programs.
3. To be eligible for enrollment, a high school student must meet the following criteria: a. Be a high school freshman or sophomore; b. A qualified freshman must: i. have passed Math I with a grade of “C” or better; ii. scored a 3, 4 or 5 on the End of Course assessment (EOC) for Math I; iii. Scored a 3, 4, or 5 on the 8th grade End of Grade ELA assessment. (See page 14-13 for students without ELA and/or Math I scores) iv. have received career pathway information outlining program requirements for completion of the certificate or diploma.; and v. have the recommendation of the high school principal or his/her designee (based on assessment of student maturity and ability to effectively participate in a class that may include adult students). c. A qualified sophomore must: i. have passed Math I with a grade of “C” or better; ii. scored a 3,4, or 5 on the EOC for Math I; iii. Scored a 3, 4, or 5 on the 8th grade End of Grade ELA assessment. (See page 14-13 for students without ELA and/or Math I scores); iv. have a weighted GPA of 3.0 on

high school courses; v. and have received career pathway information outlining program requirements for completion of the certificate or diploma. vi. have the recommendation of the high school principal or his/her designee (based on assessment of student maturity and ability to effectively participate in a class that may include adult students). Students without ELA and/or Math I Scores For students who do not have an ELA score or Math I score (example: homeschool students, students from a private school, or students who moved to NC from another state), the college shall establish a local policy that details which alternative assessment score will be used in place of ELA or Math I. Attachment A lists the approved assessments/scores that the college can select from for alternative scores for reading, English and math for students who do not have an ELA score and/or Math I. The assessment that is chosen locally Career and College Promise 14-14 Revised 08/18/17 should be documented and used consistently for only those students without the ELA and/or Math I. Students who do have the required English and math scores (those who are attending public school in NC) must meet the eligibility guidelines outlined in items 3a-3c above.

4. College Career Technical Education courses may be used to provide partial or full fulfillment of a four-unit career cluster. Where possible, students should be granted articulated credit based on the local or state North Carolina High School to Community College articulation agreement.

5. To maintain eligibility for continued enrollment, a student must a. Continue to make progress toward high school graduation, and b. Maintain a 2.0 in college coursework after completing two courses. A student who falls below a 2.0 GPA after completing two college courses will be subject to the college's policy for satisfactory academic progress.

6. A student may be awarded a certificate or diploma prior to high school graduation. The AAS may not be awarded prior to high school graduation verification.
7. A student may only enroll in one program of study and may not substitute courses in one program for courses in another.
8. The student may change his or her program of study major to another industrial or engineering program of study with approval of the high school principal or his/her designee and the college's chief academic officer or chief student development administrator. The college's chief academic officer or chief student development administrator shall approve a change in pathway based on verification provided by the student that the program change allows the student to meet their newly chosen career path. Verification could include (but is not limited to) a bachelor's degree plan published by the university, a career pathway plan, career information published in the Occupational Outlook Handbook and/or information published in the North Carolina Career Cluster Guide, etc.
9. With approval of the high school principal or his/her designee and the college's chief academic officer or chief student development administrator, a student may concurrently enroll in two Career Technical Education Pathways available to 9th and 10th graders.
10. A student who completes the CTE certificate or diploma may continue in the same traditional AAS program as long as he or she is still eligible for CCP. In order to continue, the program code should be changed to reflect the traditional AAS program code. The student type will remain CCPP and the student code will remain CTE.
11. Colleges are responsible for adhering to external agency guidelines that may restrict CCP students from enrolling in specific programs.

12. CCP students may not enroll in developmental courses. Career and College Promise
14-15 Revised 08/18/17

13. CCP students may not audit courses.

14. Students enrolled in Adult High School, Adult Basic Education, or Adult Secondary
Education are not eligible for Career and College Promise.

Note. “CCP Operating Procedures” revised 08/18/17

North Carolina Community College, retrieved from

<https://www.nccommunitycolleges.edu/academic-programs/career-college-promise>

APPENDIX B

Four-Year Program Enrollment Study

A60190 Automotive Customizing/A60130 Collision Repair						Percent Change between first year of enrollment to most recent
	College	2012 – 2013	2013 - 2014	2014 - 2015	2015 - 2016	
	Lenoir	32	18	19	11	-65%
	Coastal	0	0	0	0	NA
	Edgecombe	33	52	47	39	18%
	Sandhills	0	0	22	16	-27%
	Wayne	35	39	34	24	-31%
A60160 Automotive Systems						Percent Change between first year of enrollment to most recent
	College	2012 -2013	2013 - 2014	2014 - 2015	2015 - 2016	
	Lenoir	60	57	50	29	-52%
	Craven	56	61	65	65	16%
	Pitt	135	182	159	140	3%
	Wayne	92	102	82	82	-11%
	Wilson	17	28	32	22	29%
A40160 Computer Engineering						Percent Change between first year of enrollment to most recent
	College	2012 -2013	2013 - 2014	2014 - 2015	2015 - 2016	
	Lenoir	56	70	50	44	-21%
	COA	43	43	32	8	-81%
	Craven	1	0	0	0	NA
	Nash	61	63	73	54	-11%
	Sandhills	64	57	59	54	-16%

A50210 – Computer Integrated Machining						Percent Change between first year of enrollment to most recent
	College	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	
	Lenoir	24	32	28	17	-29%
	Craven	24	25	28	29	21%
	Johnston	20	35	40	28	40%
	Pitt	10	16	35	18	80%
A55140 Cosmetology						Percent Change between first year of enrollment to most recent
	College	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	
	Lenoir	0	*26	48	33	27%
	Beaufort	65	66	62	35	-46%
	Carteret	0	0	0	0	NA
	Craven	0	0	0	0	NA
	Johnston	17	39	49	56	229%
C55230 Cosmetology Esthetics						Percent Change between first year of enrollment to most recent
	College	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	
	Lenoir	0	7	4	0	NA
	Carteret	5	6	8	5	flat
	Craven	6	10	5	13	116%
	Edgecombe	6	9	9	11	83%

C55160 Cosmetology Instructor Certification						Percent Change between first year of enrollment to most recent
	College	2012 -2013	2013 - 2014	2014 - 2015	2015 - 2016	
	Lenoir	0	0	0	0	NA
	Beaufort	0	7	7	1	NA
	COA	0	0	0	0	NA
	Coastal	0	0	0	0	NA
	Johnston	5	5	0	0	NA
A55220 Early Childhood						Percent Change between first year of enrollment to most recent
	College	2012 -2013	2013 - 2014	2014 - 2015	2015 - 2016	
	Lenoir	135	111	131	97	-28%
	Coastal	168	101	108	115	-32%
	Craven	111	102	99	94	-15%
	Wayne	171	173	154	122	-29%
	Wilson	143	135	107	82	-43%
A45340 Emergency Medical Science						Percent Change between first year of enrollment to most recent
	College	2012 -2013	2013 - 2014	2014 - 2015	2015 - 2016	
	Lenoir	91	85	90	83	-9%
	Bladen	0	0	0	17	NA
	Coastal	41	44	40	23	-44%
	Johnston	18	26	29	27	50%
	Sandhills	60	47	51	51	-15%
A15240 Horticulture Technology						Percent Change between

	College	2012 -2013	2013 - 2014	2014 - 2015	2015 - 2016	first year of enrollment to most recent
	Lenoir	22	21	13	8	-64%
	Brunswick	8	10	11	8	flat
	Edgecombe	0	0	0	0	NA
	Johnston	27	25	21	2	-93%
	Pitt	1	*21	39	36	71%
A40240 Industrial Engineering						Percent Change between
	College	2012 -2013	2013 - 2014	2014 - 2015	2015 - 2016	first year of enrollment to most recent
	Lenoir	15	16	21	12	-20%
	Randolph	10	1	0	0	NA
	Rowan Cabarrus	35	29	33	19	-46%
	Wake	33	38	27	10	-70%
A50260 Industrial Management						Percent Change between
	College	2012 -2013	2013 - 2014	2014 - 2015	2015 - 2016	first year of enrollment to most recent
	Lenoir	10	8	9	8	-20%
	Cleveland	16	9	15	14	-13%
	Pitt	41	43	37	36	12%
A40320 Mechanical Engineering						Percent Change between
	College	2012 -2013	2013 - 2014	2014 - 2015	2015 - 2016	first year of enrollment to most recent

	Lenoir	3	11	1	0	NA
	Beaufort	27	34	35	20	-35%
	Craven	27	25	11	2	-93%
	Wayne	51	74	70	59	16%
A50420 Welding Technology						Percent Change between first year of enrollment to most recent
	College	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	
	Lenoir	41	39	33	23	-43%
	Beaufort	85	76	61	37	-56%
	Brunswick	0	0	0	0	NA
	Craven	0	0	6	52	77%
	Wayne	0	0	0	0	NA

*Data from NCCCS Statistical Reports

APPENDIX C

Lenoir, Greene, and Jones County Superintendents' and LCC Approval

Increasing Connection to Career and Technical Education Pathways Superintendent Consent Form

Your educators and students will be asked to take part in a research study regarding increasing secondary students' connection to career and technical education (CTE) pathways to Associate in Applied Science (AAS) degrees at Lenoir Community College. Please read this form carefully and ask any questions you may have before agreeing for your educators and students to be asked to take part in the study.

What the study is about: The purpose of this study is increase secondary counselor and CTE instructors' capacity to inform students about the AAS CTE degrees at Lenoir Community College.

What we will ask participants to do: If you agree for your students and educators to participate in this study, we will ask for feedback regarding awareness of CTE pathways and professional development opportunities at Lenoir Community College. We will ask for feedback through surveys.

Risks and benefits: I do not anticipate any risks to participants in this study.

Your students and educators may benefit from this program by learning more about post-secondary opportunities.

Compensation: There is no compensation for participation.

Answers will be confidential. The records of this study will be kept private. In any sort of report we make public, we will not include any information that will make it possible to identify your students or educators. Research records will be kept in a locked file; only the researchers will have access to the records.

Taking part is voluntary: Taking part in this study is completely voluntary. Your students and educators may skip any questions that he or she does not want to answer. If your student or educator decides not to take part or to skip some of the questions, it will not affect the current or future relationship with Lenoir Community College. If your participants decide to take part, they are free to withdraw at any time.

If you have questions: The researcher conducting this study is Dean of Industrial Technologies Maggie Brown. Please ask any questions you have now. If you have questions later, you may contact Maggie Brown at mbrown46@lenoircc.edu or (252) 527-6223 x 721. If you have any questions or concerns regarding your participants' rights as subjects in this study, you may contact the Institutional Review Board (IRB) at 607-255-5138 or access their website at <http://www.irb.net.org>.

You will be given a copy of this form to keep for your records.

I have read the above information, and I consent for my educators and students to participate in this study.

Superintendent Name (print) M. Brent Williams County Lenoir
Signature M. Brent Williams Date 8-28-18

Increasing Connection to Career and Technical Education Pathways Superintendent Consent Form

Your educators and students will be asked to take part in a research study regarding increasing secondary students' connection to career and technical education (CTE) pathways to Associate in Applied Science (AAS) degrees at Lenoir Community College. Please read this form carefully and ask any questions you may have before agreeing for your educators and students to be asked to take part in the study.

What the study is about: The purpose of this study is to increase secondary counselor and CTE instructors' capacity to inform students about the AAS CTE degrees at Lenoir Community College.

What we will ask participants to do: If you agree for your students and educators to participate in this study, we will ask for feedback regarding awareness of CTE pathways and professional development opportunities at Lenoir Community College. We will ask for feedback through surveys.

Risks and benefits: I do not anticipate any risks to participants in this study.

Your students and educators may benefit from this program by learning more about post-secondary opportunities.

Compensation: There is no compensation for participation.

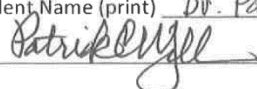
Answers will be confidential. The records of this study will be kept private. In any sort of report we make public, we will not include any information that will make it possible to identify your students or educators. Research records will be kept in a locked file; only the researchers will have access to the records.

Taking part is voluntary: Taking part in this study is completely voluntary. Your students and educators may skip any questions that he or she does not want to answer. If your student or educator decides not to take part or to skip some of the questions, it will not affect the current or future relationship with Lenoir Community College. If your participants decide to take part, they are free to withdraw at any time.

If you have questions: The researcher conducting this study is Dean of Industrial Technologies Maggie Brown. Please ask any questions you have now. If you have questions later, you may contact Maggie Brown at mlbrown46@lenoircc.edu or (252) 527-6223 x 721. If you have any questions or concerns regarding your participants' rights as subjects in this study, you may contact the Institutional Review Board (IRB) at 607-255-5138 or access their website at <http://www.irb.net.org>.

You will be given a copy of this form to keep for your records.

I have read the above information, and I consent for my educators and students to participate in this study.

Superintendent Name (print) Dr. Patrick C. Miller County Greene
Signature  Date 8/31/18

Increasing Connection to Career and Technical Education Pathways Superintendent Consent Form

Your educators and students will be asked to take part in a research study regarding increasing secondary students' connection to career and technical education (CTE) pathways to Associate in Applied Science (AAS) degrees at Lenoir Community College. Please read this form carefully and ask any questions you may have before agreeing for your educators and students to be asked to take part in the study.

What the study is about: The purpose of this study is to increase secondary counselor and CTE instructors' capacity to inform students about the AASCTE degrees at Lenoir Community College.

What we will ask participants to do: If you agree for your students and educators to participate in this study, we will ask for feedback regarding awareness of CTE pathways and professional development opportunities at Lenoir Community College. We will ask for feedback through surveys.

Risks and benefits: I do not anticipate any risks to participants in this study.

Your students and educators may benefit from this program by learning more about post-secondary opportunities.

Compensation: There is no compensation for participation.

Answers will be confidential. The records of this study will be kept private. In any sort of report we make public, we will not include any information that will make it possible to identify your students or educators. Research records will be kept in a locked file; only the researchers will have access to the records.

Taking part is voluntary: Taking part in this study is completely voluntary. Your students and educators may skip any questions that he or she does not want to answer. If your student or educator decides not to take part or to skip some of the questions, it will not affect the current or future relationship with Lenoir Community College. If your participants decide to take part, they are free to withdraw at any time.

If you have questions: The researcher conducting this study is Dean of Industrial Technologies Maggie Brown. Please ask any questions you have now. If you have questions later, you may contact Maggie Brown at mlbrown46@lenoircc.edu or (252) 527-6223 x 721. If you have any questions or concerns regarding your participants' rights as subjects in this study, you may contact the Institutional Review Board (IRB) at 607-255-5138 or access their website at <http://www.irb.net.org>.

You will be given a copy of this form to keep for your records.

I have read the above information, and I consent for my educators and students to participate in this study.

Superintendent Name (print) _____ County _____

Signature  _____ Date _____



To: Western Carolina University IRB

From: Dr. Deborah Grimes, Vice President of Instruction and Student Services

Re: Support of Doctoral Research Project by Maggie Brown

This letter is to express institutional support of and consent to Maggie Brown's doctoral research project entitled *Reversing the Enrollment Decline in Career and Technical Education Career and College Promise Pathways*. Maggie is conducting this research in order to fulfill her doctoral requirements at Western Carolina University, and it is in line with her responsibilities as Dean of Industrial Technologies.

We have reviewed Maggie's disquisition research proposal, and we understand that there are no risks to the implementation and survey participants who will be staff, instructors, and students. We also understand there will be no direct benefits to the participants other than a broader awareness of Lenoir Community College's CTE programs.

In the College's mission to be a productive community partner in regional economic development and workforce readiness and in our priority directive to fulfill our students' educational and career goals, we believe Maggie's research will be an asset to the College's Industrial programs.

Sincerely,

A handwritten signature in cursive script that reads "Deborah Grimes".
Dr. Deborah Grimes

APPENDIX D

CTE Professional Survey

Q1 During the summer of 2018, Lenoir Community College offered Industrial and Technical Academy professional development sessions to middle and high school CTE teachers and counselors. Which statement best describes your participation in the sessions?

- ☐ I attended most of the sessions. (1)
- ☐ I attended about half of the sessions. (2)
- ☐ I attended less than half of the sessions. (3)
- ☐ I attended one or two sessions. (4)
- ☐ I did not attend any sessions. (5)

Display This Question:

If During the summer of 2018, Lenoir Community College offered Industrial and Technical Aca... = I attended about half of the sessions.

Or During the summer of 2018, Lenoir Community College offered Industrial and Technical Aca... = I attended less than half of the sessions.

Or During the summer of 2018, Lenoir Community College offered Industrial and Technical Aca... = I attended one or two sessions.

Or During the summer of 2018, Lenoir Community College offered Industrial and Technical Aca... = I did not attend any sessions.

Q2 What was the reason(s) you did not attend more sessions? Please select all that apply.

- ☐ Conflicting professional responsibilities (1)
- ☐ The method of delivery (face to face) was not convenient for my personal schedule. (2)
- ☐ I already feel well-informed about the CTE pathways at Lenoir Community College. (3)
- ☐ I did not feel the material was relevant to my professional role. (4)
- ☐ I was not aware of the professional development. (5)
- ☐ I was not working for the school system at that time. (6)

Display This Question:

If During the summer of 2018, Lenoir Community College offered Industrial and Technical Aca... = I attended most of the sessions.

Or During the summer of 2018, Lenoir Community College offered Industrial and Technical Aca... = I attended about half of the sessions.

Q3 Now that you have attended some of these sessions, how familiar are you with the following Lenoir Community College programs in terms of program of study, course content, and career outlook? Drag and drop each program title into the appropriate category.

Very Familiar	Somewhat Familiar	Not Familiar
_____ Computer-Integrated Machining	_____ Computer-Integrated Machining	_____ Computer-Integrated Machining
_____ Welding Technology	_____ Welding Technology	_____ Welding Technology
_____ Mechanical Engineering	_____ Mechanical Engineering	_____ Mechanical Engineering
_____ Computer Engineering	_____ Computer Engineering	_____ Computer Engineering
_____ Industrial Systems	_____ Industrial Systems	_____ Industrial Systems

Q4 The activities below are typical of the professional development sessions. Please rank these activities in order of importance you feel they are to your becoming more familiar with LCC's CTE programs. Drag and drop each item in the list with 1 being Most Important and 5 being Least Important.

- _____ Classroom discussion with program chair (1)
 - _____ Learning some of the basic concepts taught in the course (2)
 - _____ Doing a program-related project in the lab (3)
 - _____ Meeting with regional employers in each field (4)
 - _____ Q & A with current program students (5)
-

Q5 How often do students come to you for information about options after high school?

- ☐ Frequently (1)
 - ☐ Sometimes (2)
 - ☐ Seldom (3)
-

Q6 Please give any feedback you may have regarding how professional development about Lenoir Community College CTE pathways may be improved in the future.

End of Block: Default Question Block

APPENDIX E

CTE Student Awareness Survey

What career are you most interested in working in after high school?

☐ Automotive Technician (1)

☐ Welder (2)

☐ Machinist (3)

☐ Paramedic (4)

☐ Agriculture (5)

☐ Computer Technician (6)

☐ Mechanical Engineer (7)

How familiar are you with the following Lenoir Community College programs? Drag and drop each program title into the appropriate category.

Very Familiar

Somewhat Familiar

Not Familiar

_____ Automotive

_____ Automotive

_____ Automotive

Systems Technology (1)

Systems Technology (1)

Systems Technology (1)

_____ Automotive

_____ Automotive

_____ Automotive

Customizing Technology
(2)

Customizing Technology
(2)

Customizing Technology
(2)

_____ Emergency

_____ Emergency

_____ Emergency

Medical Science (3)

Medical Science (3)

Medical Science (3)

_____ Computer-

_____ Computer-

_____ Computer-

Integrated Machining (4)

Integrated Machining (4)

Integrated Machining (4)

_____ Welding

_____ Welding

_____ Welding

Technology (5)

Technology (5)

Technology (5)

_____ Horticulture

_____ Horticulture

_____ Horticulture

Technology (6)

Technology (6)

Technology (6)

_____ Sustainable

_____ Sustainable

_____ Sustainable

Agriculture (7)

Agriculture (7)

Agriculture (7)

How often do your teachers tell you about career degrees at Lenoir Community College that are related to your interests?

- ☐ Often (1)
- ☐ Sometimes (2)
- ☐ Very Seldom (3)
- ☐ Never (4)

How often do you talk to your school counselors about your options after high school?

- ☐ Several times a year (1)
- ☐ One or Two Times (2)
- ☐ Never (3)

*Display This Question: If How often do you talk to your school counselors about your options after high school? = Several times a year
Or How often do you talk to your school counselors about your options after high school? = One or Two Times*

Does your counselor give you information about degrees at Lenoir Community College that are related to your interests?

- ☐ Yes (1)
- ☐ Maybe (2)
- ☐ No (3)

How likely are you to enroll at Lenoir Community College after high school?

- ☐ Extremely likely (1)
- ☐ Somewhat likely (2)
- ☐ Neither likely nor unlikely (3)
- ☐ Somewhat unlikely (4)
- ☐ Extremely unlikely (5)

Display This Question: If How likely are you to enroll at Lenoir Community College after high school? = Extremely unlikely

Why have you decided against enrolling at Lenoir Community College? Please select all that apply.

- ☐ LCC does not offer the program I am interested in. (1)
- ☐ I plan to join the military after high school. (2)
- ☐ I plan to go straight to a four-year college after high school. (3)
- ☐ I plan to work full time after high school and not enroll in college. (4)
- ☐ I cannot afford to pay for college and do not expect to get financial aid. (5)
- ☐ I want to go to a different community college. (6)

APPENDIX F

Lancer Guarantee Scholarship


LCC Guarantee




The LCC Guarantee scholarship will invest in high-achieving students who choose Lenoir Community College as their launching point to college transfer and career opportunities. Students may apply as they complete their CCP credits during their senior year of high school. Priority deadline date is last Friday of March each year.



If your plan is to get a bachelor's degree, you can start your first two years of college at Lenoir Community College and transfer to a four-year college or university by enrolling in one of our university transfer programs. See how much you can save on tuition by taking advantage of the Lenoir Community College Guarantee!

****Two-Year Tuition & Fees***

	NC State University	\$9,058	\$18,116
---	---------------------	---------	----------

	UNC Chapel Hill	\$9,005	\$18,010
	UNC Wilmington	\$7,048	\$14,096
	East Carolina University	\$6,972	\$13,944
\$0 <i>For those eligible for LCC Guarantee Scholarship</i>	<i>Guarantee</i>	<i>FREE</i>	<i>FREE</i>

Did you know that 100% of the course credits in our transfer programs are applied for full credit for the first two years at all of the four-year colleges in the North Carolina university system? There are also transfer opportunities for technical degrees at many of the four-year institutions.

**tuition and fee data from www.collegedata.com based on 2016-2017 rates*

ELIGIBILITY—HOW TO ENGAGE YOUR GUARANTEE

- Graduate from a service area high school—public, private, or homeschool—with NC resident eligibility
- Complete 9 CCP credits with a C or better
- Graduate high school with a 3.0+ unweighted GPA
- Enroll as a full-time student the following fall semester after high school graduation
- Complete the FAFSA and LCC Scholarship application by the last Friday in March each year
- The LCC Guarantee covers all in-state tuition and fees not covered by financial aid or scholarships
- Enroll full-time, at least 12 credit hours (based on degree plan) at LCC in a curriculum Degree, Diploma, or Certificate program
- Maximum eligibility of 60 credit hours
- No break in attendance between semesters

MAINTAIN ELIGIBILITY—GUARANTEED ACHIEVEMENT

- Complete at least 12 credit hours each semester, based on degree plan
- Maintain a college GPA of 3.0+ to renew each semester
- Allow no more than one program of study change
- Participate in at least one LCC sponsored club, sport, or work-based learning course each semester
- Meet two times each semester with the assigned academic advisor
- Have no discipline-related suspensions

WHAT IS AND IS NOT COVERED—GUARANTEED COVERAGE

- All tuition is covered
- Required general student fees are covered
- Book costs and program-specific fees are not covered
- ***LCC reserves the right to limit the number of awards. Apply early!***

GOALS OF SCHOLARSHIP—GUARANTEED INVESTMENT IN STUDENTS AND COMMUNITY

- Provide an affordable avenue to college and reduce the need for student borrowing
- Reward highly prepared students
- Encourage students to work hard and achieve in high school
- Enhance student engagement
- Produce degreed students who will be employment ready and benefit local economic development

APPENDIX G

ECU's BSIT Transfer Agreement

**Department of
Technology Systems**

College of Engineering and Technology
East Carolina University
(252) 328-9754 | tsys@ecu.edu
www.ecu.edu/BSIT

BS in Industrial Technology (BSIT) Transfer Program

The BSIT is a degree completion program designed for students who hold a qualifying associate in applied science (AAS) in an approved industrial, business, and/or technical field.

BSIT Transfer Admission Requirements

Students transferring with an Associate of Applied Science degree included in the approved list on the next page:

- Completed Associate in Applied Science (AAS) degree in approved technical area by the first day of enrollment at ECU. The approved AAS programs can be viewed at www.ecu.edu/bsit as well as listed in the next section.
- Cumulative 2.5 GPA from all post-secondary institutions attended.
- The equivalent to ECU's ENGL 1100 Foundations of College Writing.

Students transferring with an Associate of Applied Science degree not included in the approved list on the next page:

- Cumulative 2.5 GPA from all post-secondary institutions attended.
- The equivalent to ECU's ENGL 1100 Foundations of College Writing.
- Must have the AAS degree approved by the BSIT Program Coordinator.

Students planning to enroll in the BSIT program should contact the appropriate BSIT academic advisor (listed on the next page) at least six months prior to applying for admission. Inquiries may also be directed to ecuBSIT@ecu.edu.

Helpful Resources

BSIT Program Information and Resources – www.ecu.edu/BSIT

ECU Undergraduate Admissions (application and deadlines) – www.ecu.edu/admissions

ECU Tuition and Fees - www.ecu.edu/cashier/tufee.cfm

ECU Academic Calendar - www.ecu.edu/fsonline/senate/fscalend.cfm

Approved Associate of Applied Science Degrees for the BSIT

- Aerospace Manufacturing and Repair (A50450)
- Air Conditioning, Heating, & Refrigeration Tech (A35100)
- Applied Engineering Technology (A40130)
- Architectural Technology (A40100)
- Automation Engineering Technology (A40120)
- Automotive Systems Technology (A60160)
- Aviation Systems Technology (A60200)
- Biopharmaceutical Technology (A20180)
- Bioprocess Technology (A50440)
- Biotechnology (A20100)
- Building Construction Technology (A35140)
- Business Administration/Logistics Mgmt (A2512E)
- Business Administration/Operations Mgmt (A2512G)
- Chemical Process Technology (A50110)
- Chemical Technology (A20120)
- Civil Engineering Technology (A40140)
- Collision Repair and Refinishing Technology (A60130)
- Computer Engineering Technology (A40160)
- Computer Information Technology (A25260)
- Computer-Integrated Machining (A50210)
- Computer-Aided Drafting Technology (A50150)
- Computer Technology Integration (A25500)
- Construction Management Technology (A35190)
- Cyber Crime Technology (A55210)
- Electric Utility Substation & Relay Technology (A50510)
- Electrical/Electronics Technology (A35220)
- Electrical Engineering Technology (A40180)
- Electrical Systems Technology (A35130)
- Electronics Engineering Technology (A40200)
- Environment, Health, and Safety Technology (A50160)
- Facility Maintenance Technology (A50190)
- Global Logistics Technology (A25170)
- General Occupational Technology (A55280)
- Global Logistics and Distribution Mgmt Tech (A25610)
- Healthcare Business Informatics (A25510)
- Industrial Engineering Technology (A40240)
- Industrial Management Technology (A50260)
- Industrial Systems Technology (A50240)
- Information Systems Security (A25270)
- Information Systems Security/Security Hardware (A2527B)
- Information Technology (A25590)
- Interior Design (A30220)
- Machining Technology (A50300)
- Machining Technology/Tool, Die, and Mold Making (A5030A)
- Manufacturing Technology (A50320)
- Manufacturing Technology/Integrated Operations (A5032C)
- Manufacturing Technology/Composites (A5032D)
- Manufacturing Technology/Plastics (A5032A)
- Manufacturing Technology/Quality Assurance (A5032B)
- Mechanical Drafting Technology (A50340)
- Mechanical Engineering Technology (A40320)
- Mechatronics Engineering Technology (A40350)
- Mission Critical Operations – Information Tech (A40430I)
- Mission Critical Operations – Operations Tech (A40430O)
- Networking Technology (A25340)
- Nondestructive Examination Technology (A50350)
- Nuclear Technology (A50460)
- Project Management Technology (A25390)
- Supply Chain Management (A25620)
- Sustainability Technologies (A40370)
- Welding Technology (A50420)

Technical, industrial, or business related AAS degrees not listed above must be approved by the BSIT program coordinator prior to applying for ECU admission.

**For more information:**

- **BSIT Program Coordinator:**
Dr. David Batts, battsd@ecu.edu, 252-328-9673
- **BSIT ict & hit concentrations Program Academic Advisor:**
Christina Ragone, ragonec@ecu.edu, 252-328-9309
- **BSIT all other concentrations Program Academic Advisor:**
Jason Denius, deniusb@ecu.edu, 252-328-9610
- **Program Website:** www.ecu.edu/BSIT

All information provided in this flyer is subject to change without notification.

APPENDIX H

Service Area Demographics

Population	Q Lenoir County, North Carolina	Q Greene County, North Carolina	Q Jones County, North Carolina
Population estimates, July 1, 2018, (V2018)	NA	NA	NA
PEOPLE			
Population			
Population estimates, July 1, 2018, (V2018)	NA	NA	NA
Population estimates, July 1, 2017, (V2017)	56,883	21,015	9,597
Population estimates base, April 1, 2010, (V2018)	NA	NA	NA
Population estimates base, April 1, 2010, (V2017)	59,518	21,359	10,166
Population, percent change - April 1, 2010 (estimates base) to July 1, 2018, (V2018)	NA	NA	NA
Population, percent change - April 1, 2010 (estimates base) to July 1, 2017, (V2017)	-4.4%	-1.6%	-5.6%
Population, Census, April 1, 2010	59,495	21,362	10,153


Note. Retrieved from <https://www.census.gov/quickfacts>

APPENDIX I

Scholarship Artifacts Developed During Disquisition Research Which Led to Lancer

Guarantee

LAST DOLLAR SCHOLARSHIP



**STUDY OF LCC 2016FA
FIRST YEAR STUDENTS**

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**2016 HIGH SCHOOL
GRADUATE COHORT**

Artifact 1

Students by Incoming GPA

Artifact 2

Students by Service Area

Artifact 3

Eligibility Recommendations

Artifact 4

Cohort Interventions

Artifact 5

Study Byproduct Recommendations

Proposal Overview

A last dollar scholarship would be tuition assistance to cover tuition charges left after all applicable financial aid has been applied to the student's account. Incoming first year students who have graduated high school with no gap semester would be served based on eligible incoming GPA and completion of CCP credits and maintenance of above satisfactory academic progress.

Maggie Brown, Concept and Artifacts
JD Gibbs, Financial Aid Data Analysis
Kim Hill, Admissions Perspective
Athena Wilson, CCP Data

ARTIFACT 1

STUDENTS BY
INCOMING GPA

High School	GPA 3.0 +	GPA 2.6 +
Bethel	3	3
Greene Central	4	7
Jones Senior	3	4
Kinston High	4	10
LCECHS	1	2
North Lenoir	11	17
South Lenoir	30	38
STUDENT TOTAL	56	81
AMOUNT PAID FALL SEMESTER	\$20,136.04	\$28,069.42
AVERAGE CCP CREDITS	14	11
AVE. COST PER STUDENT	\$359.57	\$346.53

These numbers represent the LCC Fall 2016 freshman cohort of students who graduated from high schools in our service area in Spring 2016.

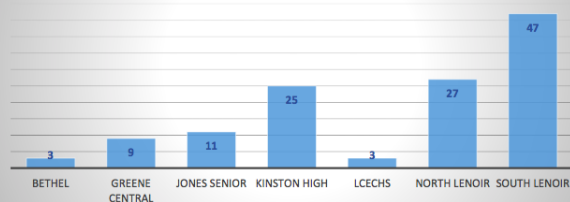
A total of 56 of these students entered LCC as freshman in 2016FA with an incoming GPA equal to or greater than 3.0. After financial aid was applied, the students in the 3.0+ group paid \$20,136.04 in tuition charges for the fall semester. The students in the 3.0+ group earned an average of 14 CCP credits while in high school.

When the GPA threshold is lowered to an incoming GPA of 2.6 or higher, the total is 81 students. After financial aid was applied, the 2.6+ group paid \$28,069.42 in tuition charges for the fall semester. The students in the 2.6+ group earned an average of 11 CCP credits while in high school.

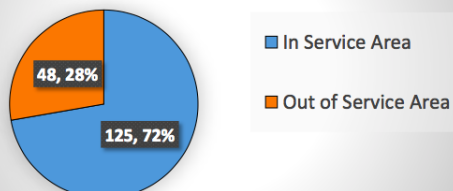
ARTIFACT 2

STUDENTS BY
SERVICE AREA

2016FA LCC Freshmen who Graduated Service Area High Schools in Spring 2016



Fall 2016 LCC Freshman Totals By Incoming Area



After taking GPA consideration out of the identifying factors, the incoming student totals for each of our service area high school becomes clear.

The three Lenoir County high school have the largest demographic: South Lenoir, North Lenoir, and Kinston High School.

Online sections of courses for CCP enrollment and some face-to-face classes on high school campuses are offered. In the Spring 2017 semester, there are 12 courses on the North Lenoir campus, 5 courses on the South Lenoir campus, and 2 courses on the Jones Senior campus.

Of the Out of Service Area LCC freshmen, only 2 students were from NC Homeschools.

ARTIFACT 3

ELIGIBILITY
RECOMMENDATIONSELIGIBILITY CRITERIA RECOMMENDATIONS FOR
LCC LAST DOLLAR SCHOLARSHIPQualification

- Must have graduated from a service area high school with NC resident eligibility
- Must be an incoming freshman the following fall after high school graduation
- Must have a 3.0 unweighted high school GPA
- Must have successfully completed 15 CCP credits
 - *9 CCP credits first implementation year
- Must complete the LCC Scholarship application
- Must be enrolled full time, at least 12 hours at LCC in an Associate or Diploma program

Renewal

- Must maintain a college GPA of 3.0 to renew each semester
- Scholarship will last up to 4 semesters
- Must participate in at least 1 LCC sponsored club or sport each semester
- Must not have any discipline-related suspensions
- Must meet 2 times each semester with their academic advisor

An unweighted high school GPA of 3.0 should be set in order encourage completion and to control eligibility numbers for the first year. After that initial period, funding and the number of qualified applicants need to be assessed.

For the first year of implementation, an eligibility waiver of 9 CCP credits instead of 15 CCP credits will allow students time to complete the CCP credits prior to high school graduation. Thereafter, students will have time to take at least 15 CCP credits before graduation.


In an effort to encourage persistence, requiring participation in a college club or sport and regular meetings with the academic advisor are practices which have good results in higher education retention research.

APPENDIX J

CTE Professional Development Brochure Artifact

**Lenoir Community College
Business, Industry, and
Emerging Technologies**

**Industrial and
Technical Academy**



*submitted by Maggie L. Brown
Associate Dean of Business, Industry, and
Emerging Technologies*

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Associate Dean of Business, Industry, and
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Important Terms


CCP—Career and College Promise is an initiative to allow qualifying high school students to take college coursework in a defined pathway for both high school graduation and college credit.

CTE—Career and Technical Education are programs designed to produce highly skilled workers. High School students in North Carolina may choose from 16 CTE pathways.

NC Certified CTE Pathways—

- Agriculture, Food, and Natural Resources
- Education and Training
- Hospitality and Tourism
- Manufacturing
- Architecture and Construction
- Finance
- Human Services
- Marketing, Sales and Service
- Arts, Audio/Visual Technology and Communications
- Government and Public Administration
- Information Technology
- Science, Technology, Engineering and Mathematics
- Business, Management and Administration
- Health Science
- Law, Public Safety, Corrections and Security
- Transportation, Distribution, and Logistics



Resulting Initiative

Industrial and Technical Academy

OVERVIEW

The Industrial and Technical Academy's purpose is to provide a hands-on introduction to LCC's Industrial and Technical programs for information "gatekeepers": counselors, advisors, instructors, and staff who help connect students to LCC's Industrial and Technical programs. For the five-week summer session, participants will rotate through hands-on learning experiences in five Industrial and Technical programs, twice a week, for two hours each session. Program participants could be high school staff or College staff.

Target LCC Programs

- Computer-Integrated Machining
- Welding Technology
- Auto Systems / Auto Customizing
- Horticulture / Sustainable Agriculture
- Emergency Medical Science

OBJECTIVES

- ⇒ To familiarize participants with the learning environments and lessons typical to the Industrial programs.
- ⇒ To build relationships between participants and Industrial and Technical program chairs.
- ⇒ To build momentum in connecting high school students to Industrial and Technical programs at LCC and increase program enrollment and completers.

Stakeholders Consulted During Data Collections

Collection One	<ul style="list-style-type: none"> • Service Area High School Counselors • LCC CTE Program Chairs
Collection Two	<ul style="list-style-type: none"> • LCC Marketing Director • LCC Recruiter • LCC High School Programs Director
Collection Three	<ul style="list-style-type: none"> • LCC Program Chairs • LCC High School Programs Director

PROCESS

Over the course of three data collection exercises, I interviewed various stakeholders to identify problems related to student connection and access to LCC's Industrial and Technical Programs.

While the different stakeholder groups had differing viewpoints, the common theme of counselor awareness of programs arose as the one issue that could be rectified easily. Educating counselors about the programs will have long term effects as these counselors continue to guide students into CTE pathways for years to come.

