

INTRODUCTION

A famous quote says, “Teaching is the one profession that creates all other professions” (author unknown). Yet, the field struggles to recruit and retain highly qualified and diverse teachers. Career and Technical Education (CTE) is not excluded from this struggle. Strong teacher preparation is a cornerstone for the advancement of high-quality, equitable CTE. The critical question of this research brief is how can one CTE teacher preparation program move toward more diverse recruitment and retention? To this end, this brief presents

- an overview of the current state of CTE teacher preparation at Appalachian State University,
- demographic data on North Carolina’s CTE participants as potential recruitment pools, and
- recommendations for narrowing racial and gender gaps in the program.

PROJECT PURPOSE

Research Objective

To date, Appalachian’s CTE teacher preparation program lacks a formal recruitment plan to attract students. Like in this program, there is a national challenge of recruiting (and retaining) both teachers of color and male teachers. With recruitment and retention improvements as an end goal, this brief seeks to

- 1) gather secondary demographic data on CTE students and teachers;
- 2) identify, through existing research, common barriers to diversifying the CTE teacher pool; and
- 3) present equity-based recommendations for CTE teacher preparation programs.

Desired Impact

Appalachian State University is a regional comprehensive institution in rural western North Carolina. The institution is one of 16 public universities in the state and serves nearly 21,000 students across baccalaureate, master’s, intermediate, and doctoral degrees. The total proportion of racially/ethnically underrepresented groups for the university is 18.6%, but the CTE programs boast higher percentages: 19.2% (undergraduate) and 31.3% (graduate). Using the most recent internal data available via the institution, demographic data for the fall 2022 undergraduate and graduate CTE enrollment is detailed below.

Fall 2022 undergraduate CTE program enrollment included the following:

- 148 students—50 on main campus and 98 in App State Online
- 62% who identified as women and 38% who identified as men
- 57% who are first generation and 57.3% who are from rural North Carolina counties

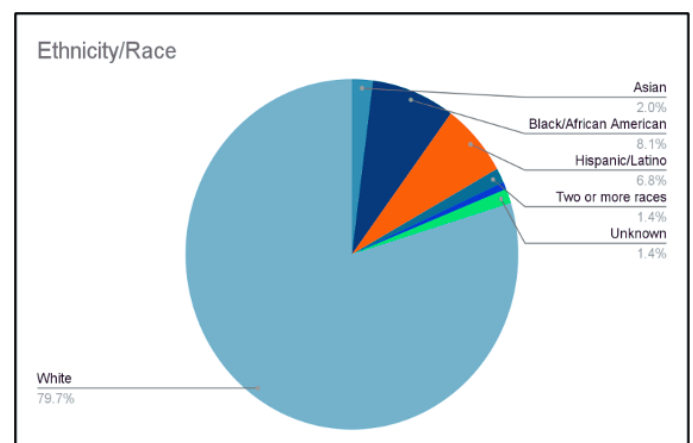


Figure 1. Racial Makeup for Undergraduate Enrollment

The fall 2022 graduate certificate program enrollment included the following:

- 146 students
- 73% who identified as women and 27% who identified as men
- 31.3% who are from underrepresented groups

Students in the undergraduate program have the option to study on the main campus or online. The graduate certificate is delivered fully online and focuses on middle and secondary teaching to lead to teacher licensure. Because CTE is currently a concentration area for students in the Middle Secondary Teaching Graduate Certificate program, data cannot be disaggregated for just CTE enrollment. **Starting in fall 2023, the CTE graduate certificate program will be separated into its own program.*

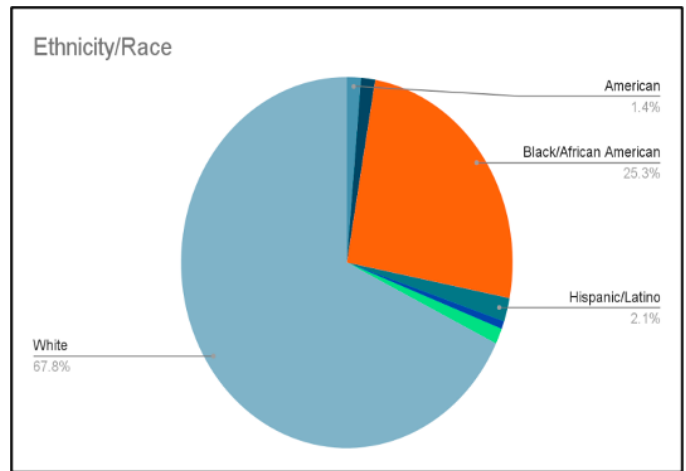


Figure 2. Racial Makeup for Graduate Enrollment

This research seeks to change belief systems and propose promising strategies to improve the CTE teacher preparation program at one institution. In this teacher preparation program, faculty largely operate in silos. This situation leaves the team engaging in single-loop learning; as individuals they may not be required to change their entire mental model but simply edit personal strategies to implement small changes. However, data from this research will require the team to build new shared mental models and engage in double-loop learning. It is assumed they will have to question their beliefs and approaches and ultimately bring to the surface (and challenge) direct and indirect impacts on students and the program. It is the hope that this research is the start of an ongoing process to entrench a new shared mental model that is in line with equity-minded change leadership.

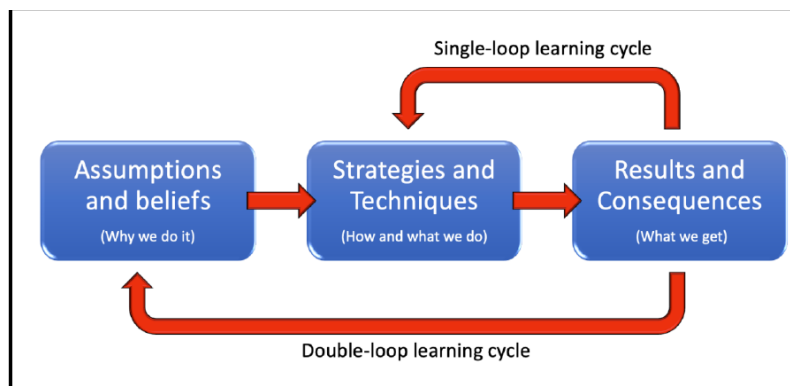


Figure 3. Learning Cycle Model. Source: Resilience-Building Leader Program (n.d.)

NECESSITY OF THE RESEARCH

North Carolina has seven CTE concentration areas for teacher licensure. The North Carolina Department of Public Instruction identifies 56 approved educator preparation programs for the state, but according to the state database, Appalachian is the only institution that serves each concentration at some level (bachelor's and/or residency). Other programs have only one level or the other, do not address all seven areas, or do not service CTE at all.

Additionally, North Carolina sits in the top five states in the nation with the highest employment of CTE educators at both the secondary level and postsecondary levels (U.S. Bureau of Labor Statistics, 2022). Though the data are not disaggregated by CTE teacher and student enrollment, at the secondary level, North Carolina had 51.7% students of color compared to 23.0% teachers of color in 2017–18 (The Education Trust, 2022). For that same year, men made up approximately 25% of the public school teachers in North Carolina (National Center for Education Statistics, 2018). Appalachian’s unique positioning as both an online and a comprehensive CTE teacher preparation program could be further strengthened with intentional equity-based efforts.

Given the project’s need to be directly connected to postsecondary CTE, it is important to highlight that though the teacher preparation aspect tends to focus on the students on the receiving end (students in Grades 6–12), Appalachian is a postsecondary degree-granting institution; the emphasis in this project is on the undergraduate and graduate CTE students preparing to become teachers. This project seeks to lead to equity-based student recruitment, retention, and support to enhance the outcomes for Appalachian’s CTE programs and students.

BACKGROUND: HISTORICAL ANALYSIS

<p>Impact of <i>Brown v. Board of Education of Topeka</i></p>	<p>Though this brief focuses on underrepresented groups of teachers collectively, the United States has a unique history as it relates to the decline of Black teachers in particular: the aftermath of <i>Brown v. Board of Education of Topeka</i>. Will (2022) highlights that the Black educator totals in segregated schools ranged between 35% and 50% but now “no state has anywhere close to those percentages, and nationally, just 7% of teachers, and about 11% of principals, are Black.”</p>
<p>The Great Debate</p>	<p>Booker T. Washington and W. E. B. DuBois are discussed in CTE spaces considering their differing views on the role of vocational education. Though the goal was seemingly the same for both scholars, Washington believed vocational education could lead to economic mobility while DuBois felt it could be limiting and further racial class disparity. This debate is largely cited as influential to the lingering racial disparities in many areas of CTE (Kalamazoo Regional Educational Service Center, n.d.).</p>
<p>Importance of Perkins and Compliance</p>	<p>One element of the Carl D. Perkins Career and Technical Education Act is civil rights compliance. Through the Methods of Administration program, the Office of Civil Rights and the Office of Career, Technical, and Adult Education oversee the civil rights compliance programs that administer CTE to ensure that regardless of identity markers such as race, sex, national origin, or disability, learners have equal access to high-quality CTE programs (U.S. Department of Education, n.d.).</p>

Collectively, representation matters for students in CTE. Students being able to see people who look like them lead in their CTE classrooms and in their desired professions can go a long way toward influencing their decision to enter those fields as learners and, perhaps, eventually teachers.

METHOD AND FINDINGS

This research brief utilized a compilation of existing data. In the first section, enrollment data are presented to showcase the demographic backgrounds of North Carolina CTE students. After that, common themes highlighted in existing literature are noted to contextualize common barriers that impede the diversification of the CTE teacher pool.

Data Dive: Pools of Students to Recruit

With the goal of combatting the underrepresentation of teachers of color and male teachers, it is important to explore potential pools of students for recruitment into the CTE teacher preparation program. Enrollment data from the North Carolina State Profile from the Perkins Collaborative Research Network showcases potential pools of students as a starting place for CTE teacher preparation program recruitment. During the 2020–21 academic year, 54,075 secondary students and 62,641 postsecondary students were CTE concentrators. The following Career Clusters® are the most popular among CTE concentrators in North Carolina:

- at the secondary level: 18.5 % Health Science*; 16.8% Human Services; 11.8% Agriculture, Food & Natural Resources; and 9.6% Architecture & Construction
- at the postsecondary level: 23.1% Health Science, 16.8% Business Management & Administration; 10.3% Information Technology; and 8% Law, Public Safety, Corrections & Security

The racial makeup of **secondary students** in these Career Clusters can be seen below.



Figure 4. Racial makeup of secondary students in the most popular Career Clusters® among CTE concentrators in North Carolina

The racial makeup of **postsecondary students** in these Career Clusters can be seen below.



Figure 5. Racial makeup of postsecondary students in the most popular Career Clusters® among CTE concentrators in North Carolina

The gender makeup of North Carolina CTE participation can be seen in Figures 6 and 7.

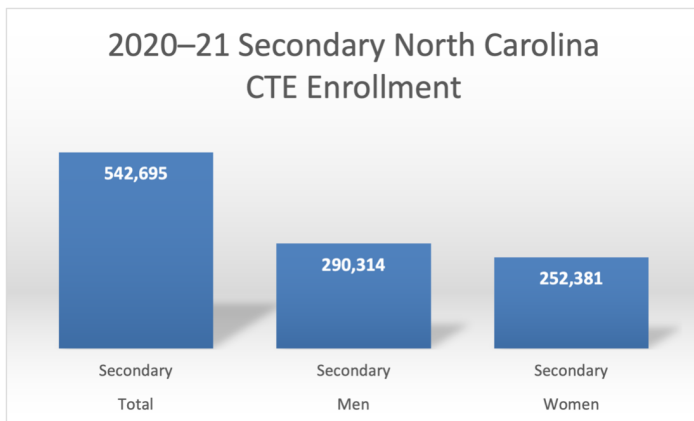


Figure 6. Secondary CTE Enrollment by Gender for the 2020-2021 Academic Year

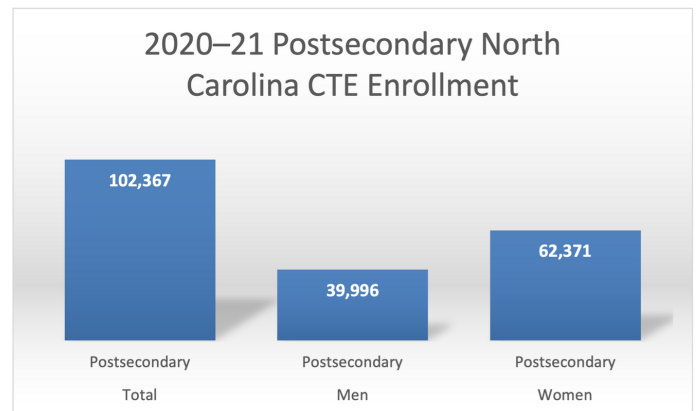


Figure 7. Postsecondary CTE Enrollment by Gender for the 2020-2021 Academic Year

Because the undergraduate CTE teacher preparation program licenses teachers in Agriculture Education; Business, Finance, and Information Technology Education; Business and Marketing Entrepreneurship Education; Family and Consumer Sciences Education; Technology, Engineering, and Design Education; and Trade and Industrial Education, these concentrators could be a major source of recruitment into the program. The program could try to target traditional secondary students and funnel them into the undergraduate program, and those students in community college postsecondary programs could be targeted as a part of the transfer program options. **Note: Licensure for CTE Health Sciences Education at Appalachian State is only applicable to the graduate certificate program so this pool of students would not be an immediate source of recruitment for that degree level.*

Common Barriers to Diversifying the CTE Teacher Pool

For decades, the field of teaching has been majority White and female. Yet, research has identified specific benefits for students when they have teachers of color and male teachers. Those benefits can include a sense of belonging and connectedness and increased use of culturally responsive teaching methods (Blazar, 2021). Taken together, research shows a positive impact on social-emotional and behavioral outcomes for all students (Blazar, 2021).

In a research report completed by Steiner et al. (2022) designed to highlight strategies to increase racial diversification of all teachers, the authors highlighted the following as systemic barriers to becoming (and remaining) a teacher:

- People of color incur higher rates of educational debt (in comparison to their White peers).
- Higher debt places a burden on teachers because of lower salaries.
- Candidates are more likely to encounter screening or interview practices that are biased.
- School leadership, or principals, are less likely to be racially and ethnically diverse.

RECOMMENDATIONS

Considering all of the information presented thus far, the initial question remains: How can Appalachian's program move toward more diverse recruitment and retention? Based on promising practices from research and data, a total of four recommendations have been provided for North Carolina university decision makers and stakeholders.

Recruitment Recommendation One: Lower Cost of Attendance and/or Incentivize Program Completion

Re-energizing an interest in teaching will be pivotal. Programs such as Teach Arkansas have created pipelines for teaching across all levels and are promoting becoming a teacher with a debt-free education. North Carolina has already implemented programs that help boost student enrollment and lower the cost of completion such as North Carolina Teaching Fellows and NC Promise. The North Carolina Teaching Fellows program was a long-standing program that supported teacher education majors across the state's institutions. The program largely contributed to students' tuition costs in the form of forgivable loans, and as long as students taught for four years in the state, they were not required to repay funds received. It was reestablished in 2017 at eight select educator preparation programs. It now focuses on the state's areas of need (elementary education, special education, science, technology, engineering or math) and provides tuition assistance of up to \$10,000 per year for students committed to teaching. The NC Promise program has four partner institutions in the state where the cost of tuition is a flat rate of \$500 per semester for in-state students. College completion is critical to economic mobility for the state's citizenry.

These programs are proof that institutions, with legislative backing, can lower the cost of enrollment and/or incentivize program completion. While North Carolina ranks 46th on the national scale for teacher pay, until we can combat this external barrier legislatively, examining immediate barriers, such as the cost of attendance, should be a priority.

According to the Department of Public Instruction, a first-year teacher with a bachelor’s degree in North Carolina will have an annual salary of \$37,000. Estimated costs from Appalachian’s Office of Financial Aid (2023) show tuition and fees for the 2023–24 school year for the three groups of students the program serve are the following:

Table 1
Cost of Attendance

Undergraduate-Main Campus	App Online	Graduate Certificate
\$8,152 per year	\$5,416 per year	\$3,963 per year
\$32,608 for four years*	\$10,832 for two years**	\$7,926 for two years***

These totals exclude “general cost of attendance” such as food, housing, and transportation as well as out-of-state costs and summer school.

** This number assumes that the undergraduate main campus student is not a transfer student and studies with the university and completes the degree in 4 years.*

*** This number assumes that the undergraduate online student is a transfer student with an associate degree and studies with the university for 2 years to earn a bachelor’s degree.*

**** This number assumes that the graduate certificate student takes 2 years to complete the program.*

Recruitment Recommendation Two: Target Affinity Groups Through Grants

Across the nation we see models such as the Black Educators Initiative in Nashville, TN, and Call Me Mister—two programs backed by grant funding to intentionally target particular demographics. With existing program models in place, teacher preparation programs are encouraged to study models for replication where possible. As referenced earlier in the data dive, there are initial pools of students the university could tap into as it works to increase enrollment. One potential barrier with this recommendation is the ongoing pushback on diversity and equity initiatives. Though this is not happening as much in North Carolina, it could be a future barrier and could affect other states hoping to replicate similar programming.

Successful recruitment efforts have to be supported by specific retention efforts. Recommendations for retention follow.

Retention Recommendation One: Create Continuing Education via Microcredentialing Opportunities

Because teacher training programs and requirements vary from institution to institution, investing in a credentialing structure could enhance CTE students’ classroom experiences. The microcredential approach could go a long way in helping CTE educators enhance their instructional skills. Considering the brevity of Appalachian’s graduate certificate program in particular, it is recommended that the program (and institution) continue to find ways to align instructors’ subject-matter expertise with tools to strengthen instructor pedagogical knowledge.

By considering partnerships with organizations such as Advance CTE and campus instructional designers, the program could build a curriculum and create a series of certifications for CTE instructors that provides access to the professional development support they need. While there may be private firms or other credentialing bodies delivering content, the program must question cost, accessibility, and overall knowledge of CTE. By developing a “bank” of skills and topics for CTE educators by CTE educators, the institution could make professional development more flexible and personalized, allowing participants to complete courses related to their specific needs and interests. Because all educators are required to obtain continuing education units (CEUs) to maintain their licenses, these microcredentialing opportunities could be a great way to continue supporting North Carolina CTE teachers while also recouping some costs associated with programming that initially lowered the cost of attendance.

This recommendation particularly addresses two potential barriers. First, at the national level each state has its own requirements and expectations for CTE teacher preparation. While North Carolina has traditional undergraduate programming alongside alternative certification routes, other states work only with industry experts for CTE teaching. Some states are seeing educator preparation programs be dissolved. Having microcredentialing options can help level the playing field. Secondly, though this program can reach further and wider because of the online option, the institution can only license for North Carolina so some limitations are in place for out-of-state students. Microcredentialing is not limited in these same ways.

Retention Recommendation Two: Build/Leverage Social Networking Opportunities

Creating and sustaining a sense of belonging in teacher preparation programs will be critical for retaining future teachers of color and male teachers. Through the creation of new social networks and the leveraging of existing ones, students in the CTE teacher preparation program will be able to connect with other teachers across the state (and perhaps the nation) and share information and ideas. Supporting affinity groups for students gives them safe spaces to support one another. Two notable entities that could serve as a resource and/or a model are Profound Gentlemen and Profound Ladies. Profound Gentlemen hosts professional development sessions and provides male educators of color with coaching opportunities. Similarly, Profound Ladies supports women of color educators through training, development, and mentorship.

CONCLUSION

Framework Revisited and Expanded

As previously stated, this work uses the double-loop learning framework as an underpinning. The information presented in this brief will likely require the Appalachian CTE teacher preparation program to build new shared mental models. The recommendations presented here are audacious, so belief systems will be challenged. Luckily, equity-minded change leadership requires leaders to address inequities in student outcomes and acknowledge how organizations could be perpetuating them (Bragg & McCambly, 2018).

In addition to the loop learning framework, CTE programs taking heed to these recommendations should also consider the benefits of implementing the six aspects of the talent management lifecycle: recruiting and attracting talent, hiring and onboarding, performance management, employee development, employee retention, and succession planning (Rogers, 2023).

Finding ways to assist the state's districts with those tasks could strengthen district partnerships, bring in financial support via professional development and grant dollars, and be a major source of ongoing program (and university) advertising.

CTE Without Limits Alignment

This work aligns across all five principles outlined by Advance CTE. Using the data gathered in this report as well as the recommendations provided, Appalachian and other CTE teacher preparation programs have the opportunity to create learning ecosystems that are rooted in equity, responsive, welcoming, supportive, and expansive.

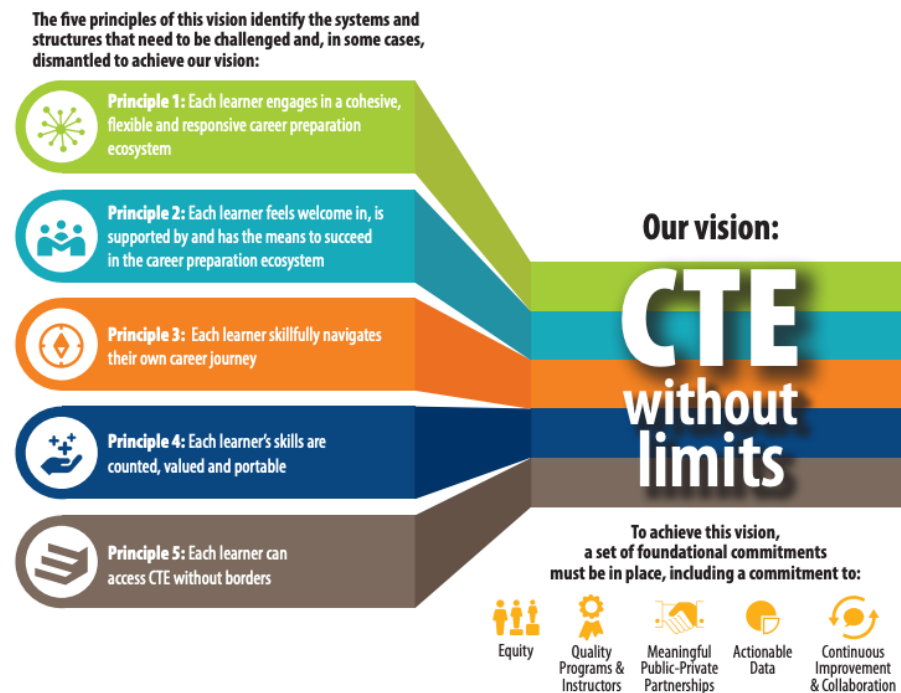


Figure 8. CTE Without Limits: A Shared Vision for the Future of Career Technical Education Source: Advance CTE (2021)

Recommendations for Future Research

While this report considered only existing data, it is imperative that Appalachian (and other CTE teacher preparation programs) harness the power of primary research. It is important to

- explore the experiences of current and past students,
- conduct research with faculty and staff to explore their perspectives on equity barriers,
- implement data management tools/systems to visualize trends in enrollment and program completion, and
- track outcomes of newly implemented systems and strategies.

The final recommendation is for Appalachian, and other CTE teacher preparation programs, to respond to the call to action charged by Advance CTE (2021): "Our systems and leaders must come together to push beyond the status quo and take collective, collaborative and bold action" (p.14).

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