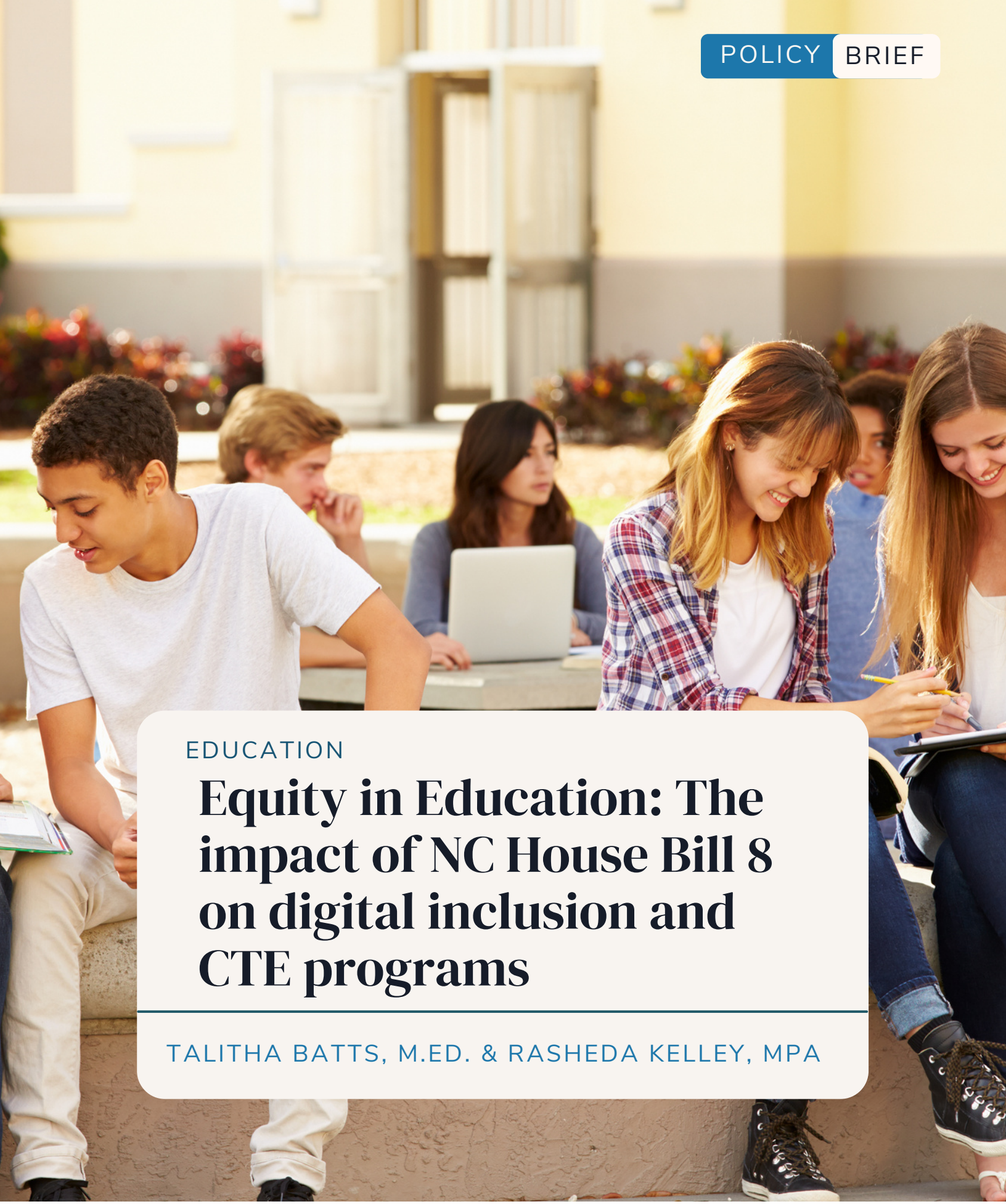
POLICY BRIEF



EDUCATION

Equity in Education: The impact of NC House Bill 8 on digital inclusion and CTE programs

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Digital equity and adequate teacher staffing are critical to equitable outcomes for all students of North Carolina

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North Carolina House Bill 8, titled "Computer Science Graduation Requirement," aims to make computer science education mandatory for high school graduation. However, this bill raises concerns about digital equity and adequate teacher staffing. The digital divide in North Carolina disproportionately affects rural, low-income, and Black and Hispanic households. During the COVID-19 pandemic, 30% of students lacked a reliable internet connection for remote learning, and 23% did not have adequate devices.

A computer science education requirement in North Carolina schools impacts the goal of ensuring all students have equitable access to education. Ensuring equitable access to digital broadband and providing sufficient teaching staff are crucial for the success of educational programs in North Carolina schools. The recent passing of NC House Bill 8 will affect schools and faculty that do not currently have access to broadband services. Students need fair access to broadband services and a sufficient supply of teachers to fulfill proposed education requirements adequately.

This policy brief examines the challenges of NC House Bill 8, digital equity, and inadequate technology education instructor staffing in North Carolina high schools.

We evaluate data from the North Carolina Office of Information Technology and Department of Public Instruction to address two research questions:

A.How does the critical need for broadband access in rural areas and underserved communities of North Carolina compare from the COVID-19 pandemic to previous years?

B.What is the career and technology educator recruitment and attrition across North Carolina High School Districts?

To address these challenges, policy recommendations include creating a school district initiative in collaboration with Broadband, Equity, Access, Deployment (BEAD) to ensure all students have home internet access, partnering with HBCUs and Minority Serving higher education institutions to create pathways to teaching positions, and revising the current policy SCOS-012 to add computer science to Career Technical Education instead of a stand-alone course.

The digital divide has been a significant issue across the United States, affecting many low-income families and rural areas. The COVID-19 pandemic has highlighted the digital divide and its impact on education, as remote learning became necessary for many schools. In North Carolina, this divide has disproportionately affected rural, low-income, and Black and Hispanic households. Remote learning became crucial for NC students during the pandemic, with an estimated 1.1 million K-12 students engaging in fully remote or blended learning. However, 30% of students in the state didn't have a reliable internet connection for remote learning, and 23% didn't have adequate devices. A recent report demonstrates that North Carolina has 1.1 million households that lack access to high-speed internet (The Digital Divide | ncbroadband.gov, 2022). Various initiatives had been implemented to address the issue, such as purchasing computers with federal funds, equipping school buses with Wi-Fi, offering free internet, and awarding grants to expand high-speed internet in rural counties.

North Carolina House Bill 8, titled "Computer Science Graduation Requirement," aims to require instruction in computer science and the completion of a computer science course for graduation from high school. The bill mandates the inclusion of computer science in the standard course of study for middle and high school students and requires public school units to offer elective introductory computer science courses to middle school students and computer science courses for high school students. A passing grade in the computer science course will fulfill one credit that is not an English, mathematics, science, or social studies credit. The bill does not increase the current number of required credits but instead decreases the number of elective credits by one. The requirements apply to students entering the ninth grade in the 2024-2025 school year. Public school units must provide computer science instruction, and the State Board of Education is required to adopt and post a list of approved computer science courses on the Department of Public Instruction's website by specific deadlines.

Likewise, North Carolina has been experiencing a teacher shortage for some time now. A 2023 North Carolina Department of Public Instruction report reveals that North Carolina's public school systems have experienced a 58.4% increase in vacant teaching positions during the 2022-2023 school year, with vacancies exceeding 5,000 teachers. This amounts to over 5% of all teachers. The report highlights the challenges of fully staffing schools and providing adequate education with stretched resources. The state has also seen a decline in the number of students enrolled in its 15 public colleges of education. With fewer teachers coming out of state colleges, the report warns schools to prepare for another drop in teacher numbers.

The increase in vacancies is attributed to higher workloads, a demand for better pay, and challenges related to the COVID-19 pandemic. According to the NC Department of Public Instruction, schools experienced around 8% teaching staff loss during the 2021 - 2022 school year (NC Teacher Workforce Remained Largely Stable Through 2020-21, 2022). Students in all school districts deserve to have adequate instructors to support their educational needs. NC House Bill 8 will further impact teacher staffing by diverting resources to hiring Computer Science teachers in a market that already has too few teachers.

Nonetheless, Computer Scienceis an important field for solving problems in information systems, as it involves studying various processes and interactions from different data sources. The knowledge gained from studying Computer Science can be applied to a person's daily life. However, to effectively learn and progress in this field, students require broadband access for web-based software applications. In research from Quaintance (2022), the significance of digital equity is clear and concise.

Moving forward in a technological society, students must have fair access to broadband internet to succeed in educational courses such as Computer Science. Implementing House Bill 8 without changing the broadband access landscape may further exacerbate the digital divide and present a challenge for digital equity.

How does the critical need for broadband access in rural areas and underserved communities of North Carolina compare from the COVID-19 pandemic to previous years?

Understanding how technology and digital access influence the equitable outcome of student education is vital. Digital equity concerns have only increased since the COVID-19 pandemic. In research from Cheah et al. (2023), digital access disparities in educational systems have generated growing barriers to the learning of minority students. Statewide, 11.9% of all households have no internet access (Data & Reports | ncbroadband.gov, 2022). All students must have digital access to succeed in school. Digital inequity impacts all students' in completing a computer science graduation requirement.

Additionally, teachers have expressed challenges to inadequate instructional technology, such as school internet access. The Teacher Working Conditions Survey of North Carolina provides insight into teachers' issues directly related to the COVID-19 pandemic (Teachers Signal Desire to Be Heard With Record Response to Statewide Job Survey, 2022).

Research using the Teacher Working Conditions survey from five school districts in demonstrates gaps in digital equity inclusion pre- and during- the COVID-19 pandemic. Some schools have seen a decline in internet access as a source of instructional technology.

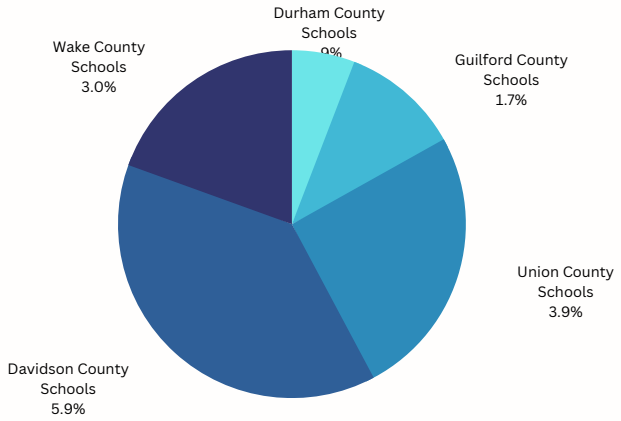
This finding highlightsthe critical need to close the gap between digital equity and inclusion.

Figure 1.1 Differences in teacher working conditions of having adequate resources such as internet access

What is the career and technology educator recruitment and attrition across North Carolina High School Districts?

While computer education initiatives have been implemented to ensure North Carolina students can compete in a technologically advanced workforce upon graduation, there is still a critical need for more technology education instructors. Certified Career and Technology Education instructors are crucial to computer science course instruction. According to the NC Department of Instruction (2022), there are 230 Career and Technology Education vacancies for school instruction. Moreover, the statewide attrition rate of teachers in general and the lower numbers enrolling in teacher training programs demonstrates the need to accelerate funding to training and recruitment programs. Without more instructors certified in Computer Sciences, school districts will not be able to fulfill the requirement of House Bill 8 and some students may not graduate on time.

Figure X CTE Vacancies 2021 - 2022



*Info based on total of 230.5 CTE Vacancies for 2021-2022

Policy Recommendations

North Carolina House Bill 8 aims to make computer science education mandatory for high school graduation. However, as we have shown, concerns arise about digital equity and teacher staffing. The digital divide in North Carolina affects rural, low-income, and Black and Hispanic households disproportionately. The bill's passing will impact schools and faculty without broadband access, making digital equity and adequate teaching staff crucial for educational success.

The following policy recommendations are directed toward the North Carolina Department of Public Instruction, local school districts, and state legislators to address the challenges of digital equity and promising career and technology education staffing.

1. **Develop a comprehensive broadband expansion plan in coordination with schools**: State legislators and the North Carolina Department of Public Instruction should collaborate to create a plan that expands broadband access to underserved communities, particularly in rural, low-income, and Black and Hispanic households. This plan may involve public-private partnerships, infrastructure investments, and targeted funding to ensure equitable access to high-speed internet for all students. As part of the plan, school districts should engage with the Broadband, Equity, Access, Deployment (BEAD) Program (BEAD and Digital Equity Planning | ncbroadband.gov, n.d.) to ensure all students receive home internet access. This program provides $42.45 billion to expand high-speed internet access by funding planning, infrastructure deployment and adoption programs in all 50 states

2. **Increase funding for technology resources and devices:** Allocate additional funding to provide adequate devices and technology resources to all students, particularly those in low-income households. This may involve subsidies or grants for schools to purchase computers, tablets, and other necessary devices for computer science education.

3. **Create teacher recruitment and retention programs in CTE and Computer Science:** Partner with Historically Black Colleges and Universities (HBCUs) and Minority Serving Institutions to develop pathways to teaching positions in computer science and other technology-related fields. Offer incentives, such as loan forgiveness, scholarships, or higher starting salaries, to attract and retain qualified educators, particularly in underserved areas.

4. **Revise curriculum and course requirements:** Integrate computer science education into existing Career Technical Education (CTE) programs. This would be accomplished by updating North Carolina Standard Course of Study (NCSCOS), SCOS-012, to add computer science to Career Technical Education instead of a stand-alone Standard Course of Study.This approach may help mitigate teacher shortages and reduce the burden on schools to find additional qualified instructors while still providing students with essential computer science skills.

5. **Implement digital equity training and support**: Develop professional development programs for educators to help them better understand and address digital equity issues. Provide ongoing training and support to ensure teachers can effectively use technology in their classrooms, identify and address barriers to digital access, and develop strategies to promote digital inclusion for all students.

The implementation of North Carolina House Bill 8 presents both opportunities and challenges for the state's education system. While computer science education is crucial for preparing students for a technology-driven future, it is vital to address the digital divide and teacher shortages. By pursuing policy recommendations that focus on expanding broadband access, increasing funding for technology resources, creating teacher recruitment and retention programs, integrating computer science into CTE programs, and providing digital equity training for educators, state legislators and the North Carolina Department of Public Instruction can work together to ensure that all students have an equal opportunity to succeed. In doing so, they can help create a more inclusive, equitable, and technologically advanced society that empowers the next generation to thrive in the 21st century.

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