Investing in the Next Generation
Student Outreach Across North Carolina

Initiated: 2022
Completed: 2024

Contact: James Weaver
North Carolina State Chief Information Officer
Secretary, N.C. Department of Information Technology
919-809-3845
james.weaver@nc.gov

NCDIT | NORTH CAROLINA
DEPARTMENT OF
INFORMATION
TECHNOLOGY

Executive Summary

One of the N.C. Department of Information Technology's most important strategic goals in both its strategic plan and North Carolina's Statewide IT Strategic Plan is to promote an inclusive and innovative workforce, including an emphasis on attracting, developing and retaining a skilled and diverse workforce. This goal is of particular significance because human capital is essential to carrying out the department's vision, mission and goals, and ensuring North Carolina's continued success in a rapidly evolving technological landscape. The department must continue to have a highly trained, highly skilled talent pipeline it can rely on to meet the state's needs both now and into the future.

To address this, NCDIT Secretary and State Chief Information Officer Jim Weaver has prioritized reaching out to students as young as middle school to help build awareness of the information technology field and introduce career opportunities. This strategy has involved partnering with the department's human resources division and others throughout the agency to introduce new internship and apprenticeship opportunities that provide real-world work experience and experiential learning opportunities. In addition, the department collaborates with both public- and private-sector partners on visits, initiatives and events aimed at giving students from across North Carolina exposure to various aspects of information technology.

These efforts also seek to increase the diversity of workers entering IT professions and intentionally include a wide range of individuals in the IT talent pipeline. In addition, they tie into Governor Roy Cooper's declaration of 2024 as the "Year of Public Schools," highlighting North Carolina's strong public schools to show the positive impacts of a well-funded education system on the state's economy and communities.

Idea

In the field of cybersecurity alone, there are approximately 18,000 vacant cyber-related positions in North Carolina across all employment sectors. Nationally, that number tops more than 570,000. And needs in this area continue to grow as cyberattacks become increasingly prevalent and sophisticated. Introducing students to cybersecurity careers from an early age helps create educational pathways and opportunities to build a diverse pool of cyber talent with the skills and experience needed to help address future threats and challenges. The same is also true in other areas of IT.

NCDIT has recognized that some students are now beginning to make career decisions as early as middle school, making it critical that they are aware of and exposed to opportunities within the IT field from a young age. In addition, more students are choosing not to pursue a traditional four-year degree; therefore, the department has focused on providing experience and support to individuals pursuing a wide variety of educational and career paths.

Secretary Weaver has encouraged NCDIT team members to envision and implement ways they can reach out to students and help build a highly trained, highly skilled talent pipeline for both the department and the state's IT workforce. This outreach developed by the department includes visiting schools to meet with students, hosting them at NCDIT facilities, providing internship and apprenticeship opportunities specifically designed to reach certain student populations and partnering with outside groups to sponsor unique educational events. The department aims to reach the next generation of the IT workforce, ensure that they have the education, training and skills to be successful and keep pace with North Carolina's evolving technological demands.

Implementation

To achieve the strategic goal in both NCDIT's strategic plan and North Carolina's Statewide IT Strategic Plan to promote an inclusive and innovative workforce, Secretary Weaver partnered with human resources and other agency teams to develop a variety of ways to introduce students to the IT field.

School Visits

Secretary Weaver and his team have continued to prioritize visits to schools throughout North Carolina to meet with students and talk with them about the information technology field and career opportunities.

These visits have included meeting with student tech teams established by schools in partnership with the North Carolina Business Committee for Education, a business-led, education non-profit 501(c)(3) that operates out of the Office of the Governor. These student-run technology desks repair devices and provide technical support to their school districts. Students receive course credit or paid work-based learning and are able to gain skills and attain relevant credentials, such as HP and Dell certifications.

Secretary Weaver and staff members have visited tech teams across North Carolina, including in Columbus, Durham, Granville, Scotland and Wayne counties, as well as Kannapolis City Schools, located on the Cabarrus/Rowan county line. During their time at each school, the group has observed the teams in action and discussed career and internship opportunities with students.

The department's school-based outreach has also included leveraging a school supply delivery to Richmond County early in the 2023-24 school year as an opportunity to tour Richmond Senior High School's Career and Technical Education programs and talk with students about IT careers and future digital opportunities and risks.

In February 2024, NCDIT staff visited Millbrook High School in Raleigh to present to students on technology careers, provide an overview of data center operations and lead a hands-on cabling exercise. Additionally, in spring 2024 Secretary Weaver and others from the department attended a 3D Showcase displaying and presenting 3D computer hardware models created by junior and senior high school students at the North Wake College and Careers Academy in Wake County. State Chief Risk Officer Torry Crass and NCDIT intern Christian Wilson also visited students learning in the SparkNC lab at Asheboro High School and led a cybersecurity activity.

Student Tours at NCDIT

NCDIT also hosts visits for high school students at its facilities as part of the department's efforts to develop a skilled workforce in North Carolina.

During these tours, NCDIT team members talk with the students about how data centers work, and students participate in a hands-on exercise to assemble the network cables that connect data centers. Incident Management Center staff also show students how they monitor and address any issues on the state networks and systems. Students have also had the opportunity to meet with staff from the N.C. 911 Board and learn about the various career pathways available through 911 public safety answering points.

As part of these visits, Secretary Weaver and other leaders talk with students about the IT field, career opportunities and internships available at NCDIT. These visits also help the department build ongoing relationships with schools and provide insight into how the agency can support students.

Internships

At the beginning of 2023, NCDIT created four new paid internship programs aimed at reaching key demographics, including individuals who want to enter the IT field but do not intend to pursue a college degree, students at Historically Black Colleges and Universities (HBCUs), members of the neurodiverse community and individuals who are pursuing tech-related college education or experience. Interns gain real-world work experience across work divisions, contribute to day-to-day operations and connect with diverse people and communities.

Currently, internship opportunities are allocated across 16 temporary positions. Interns are paid $20 per hour, and most positions are eligible for remote work. Internships are available in the summer and throughout the year. Preference is given to candidates who reside in North Carolina.

Employees throughout NCDIT play a critical role in the success of the internship programs as they are responsible for designing opportunities that provide interns with meaningful work experience in their team's area of expertise. Team members also interview, hire and supervise the interns, and are responsible for developing their daily work assignments and providing mentorship and guidance.

Apprenticeships

NCDIT recently established an apprenticeship program through ApprenticeshipNC, which is part of North Carolina's community college system. This apprenticeship program will recruit from community colleges and hire students into permanent full-time roles in cybersecurity, networking and user support. Cybersecurity apprenticeships are also offered to veterans and their spouses through a separate cyber veteran apprenticeship program managed by our agency's Enterprise Security and Risk Management Office.

Hour of Code

In 2023, more than 25 volunteers from NCDIT, including Secretary Weaver, joined forces with corporate partner Accenture and nine other state entities to teach an Hour of Code to 8,000 middle school students in 40 schools in Columbus, Durham, Mecklenburg and Wake counties Dec. 4-8, in conjunction with Computer Science Education Week.

In addition to hosting in-person sessions at 14 middle schools in Durham and Wake counties, NCDIT also piloted a virtual Hour of Code with students in Columbus County schools. A smaller version of the event held in 2022 reached 725 students at three Wake County elementary and middle schools.

Organized by code.org, Hour of Code is a worldwide effort to celebrate computer science, demystify "code" and broaden participation in the field by showing that everyone can learn the basics. The 2023 lesson introduced machine learning and artificial intelligence to increase student awareness of these technologies and help inspire them to consider a future career in the computer science field.

N.C. Education Datathon

In February 2024, more than 20 volunteers from NCDIT, other government entities and the private sector provided guidance to teams of North Carolina high school and college students at the third annual N.C. Education Datathon in Raleigh.

NCDIT's Government Data Analytics Center partnered with The Hunt Institute and the Office of Governor Roy Cooper to sponsor the N.C. Datathon. The 19 student teams analyzed publicly available datasets to address social and economic problems under this year's theme of Connecting Career and Technical Education (CTE) and North Carolina Workforce Needs. The students created data visualization reports revealing key findings regarding how high school graduates are prepared to enter today's workforce, and they offered solutions for schools to improve CTE courses to match the workforce needs of the state.

The second Datathon held in 2023 included nine student teams and 14 NCDIT mentor volunteers, and the inaugural Datathon in 2022 included 13 teams of students and 14 NCDIT mentor volunteers.

Impact

Through these efforts, NCDIT has played a role in reaching thousands of students across the state from K-12 up through the graduate school level. Encouraging encounters with IT professionals in state government can give students insights into career paths in the industry and in public service that they might not otherwise have considered or been aware of before.

NCDIT received 552 applications for the internships it offered in 2023, and more than 1,000 applications for the positions it has offered in 2024 to date. The department has hosted a total of 33 interns, two of which have been hired into permanent positions. An additional 11 interns will be joining NCDIT this summer. In March 2024, NCDIT hired its first apprentice into a cybersecurity role. A second apprentice hired into a networking position began later in the spring.

NCDIT's internships are also helping diversify the talent pipeline entering the IT field. Close to half of the department's interns have been Black/African American. Females have also accounted for almost half of the intern population.

Interns have indicated that their internships have provided valuable training and experience:

"This was the perfect opportunity because I wanted to work in my home state and see the ways that NCDIT helps people in different parts of North Carolina. I have learned a lot about what database administrators do on a day-to-day basis. The outcome I am hoping for my NCDIT internship is a lot of real-word experience. The classroom gives you good foundational knowledge, but there is still a lot to learn about how to apply that knowledge to the real world."

"While my journey began with a focus on privacy awareness and IT, this internship has ignited a deep interest in cybersecurity. I'm eager to leverage the practical insights gained here and apply them to a new trajectory. This transition not only aligns with my career goals but also underscores my commitment to embracing opportunities within the public sector."

Students have also provided positive feedback on the tours offered by NCDIT and the exposure it has provided them to the IT field:

"I loved the tour. It was informative, fun and a great look into the IT world," one student wrote in a feedback survey.

"Going to the 911 center and learning just about the job allowed me to think about another profession or part-time job I want to participate in," wrote another.

Next Steps

NCDIT plans to continue building on its current efforts to reach even more students, with additional school visits and student tours planned for the remainder of the year.

In addition to the internship and apprenticeship programs already in place, NCDIT is developing concepts for pre-apprenticeships. A pre-apprenticeship would provide paid micro-learning opportunities for youth between the ages of 16 and 20. The pre-apprentice would work 120 hours with NCDIT. In addition to gaining technology-related work experience, a registered pre-apprentice would be eligible for high school course credit and tuition waivers through North Carolina's community college system.

Based on the success of the virtual Hour of Code sessions NCDIT and Accenture offered to middle school students in Columbus County in 2023, NCDIT plans to expand virtual Hour of Code opportunities across the state in partnership with Accenture this year to reach middle school students in all 100 North Carolina counties.

These efforts will continue and expand Secretary Weaver's strategic vision to engage students early in their education to help build an IT career pipeline that will provide the highly skilled and inclusive workforce that North Carolina and its state government need to meet the ever-evolving future.