



NORTH CAROLINA
State Board of Education
Department of Public Instruction

Report to the North Carolina General Assembly

Impact of the Coding and Mobile App
Development Program

SL 2017-57 (SB 257)

Date Due: September 15, 2022
DPI Chronological Schedule, 2021-2022

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Legislative Requirements

[Session Law 2017-57 \(SB 257\)](#)

SECTION 7.23.(d) Reporting Requirements. – By **August 1** of each year of the Program, grant recipients shall submit a report to the **Department of Public Instruction**, beginning with an initial report by August 1, 2018, for the preceding year in which grant funds were expended that provides at least the following information on the partnership initiative:

- (1) The use of grant funds.
- (2) The number of students by grade level participating in the partnership initiative.
- (3) The number of students who subsequently participated in work-based opportunities, internships, or apprenticeship programs and a description of the types of opportunities for those students.
- (4) Student outcome data regarding job attainment and postsecondary opportunities as a result of the partnership initiative.
- (5) Any other information the Superintendent of Public Instruction deems necessary.

By **September 15** of each year of the Program, the Department shall report to the **Joint Legislative Education Oversight Committee** and the **Fiscal Research Division**, beginning with an initial report by September 15, 2018, on grant recipients and implementation of the program, including the information required to be reported to the Department pursuant to this subsection and any legislative recommendations for modifications or expansion of the Program.

Impact of the Coding and Mobile App Development Program

The grant program afforded the opportunity for more than 8,500 students and their teachers, administrators and other staff members throughout the state to experience a coding or mobile app development course as well as exposure to computer science related work in business and industry. These experiences included embedded activities, work-based learning opportunities, professional development experiences, and other options. Eleven schools or school grant recipients coordinated these experiences.

The twelve participating schools or school grant recipients added or expanded new coding related courses or supporting activities for middle or high school students. The supporting activities included instructional opportunities inside and outside participating classrooms.

Participating Public School Units

- 1) Beaufort County Schools
- 2) Burke County Schools
- 3) Cabarrus County Schools
- 4) Caldwell County Schools
- 5) Caswell County Schools
- 6) Catawba County Schools
- 7) New Hanover County Schools
- 8) McDowell County Schools
- 9) Wilson County Schools

Participating Charter Schools

- 10) Discovery Charter Schools
- 11) Northeast Academy for Aerospace & Advanced Technology
- 12) Rocky Mount Preparatory Academy

Use of Grant Funds

The grant funds were used to purchase equipment, digital materials and cover the costs associated with teacher professional development activities to build capacity in coding, computer science and mobile application development initiatives. Students across the state were exposed to various topics and concepts related to coding and computer science. This exposure expanded beyond the classroom and included interactions with business and industry members, participation in community coding activities, increased course offerings and additional skill building activities which can increase employability. The sections below provide more details on the specific use of funds among the grant recipients.

Professional Development Activities

The Professional Development activities varied in nature and content, but all with the common goal of expanding educator and administrator capacity to deliver Computer Science concepts to students within their district/school. As a result of several hours of training, learning and exposure, students at the grantee sites have the benefit of being instructed by educators who have participated in the following experiences.

| | | |
|--|--|---|
| CS Discoveries Training | NCSU & The Friday Institute CS Professional Development | Bee Bot Instructional Training |
| BirdBrain Technologies Training | CS is Fundamental with Code.org and The Friday Institute | Drone Pilot School Training |
| EiE Boston Museum of Science CS Programming Workshop | NC TIES Conference | Instructional Technology Training by Dottie Rose Foundation & STEM West |
| VR Headset Training with STEMERALD City | Sphero Virtual Training | Code Combat Training |

Equipment

Teachers and students accessed computer labs, equipment, and software as integral or enhanced components of the grant program. The following table contains a summary of the equipment and software used.

| | | | |
|--------------------------------|------------------------------|---------------------------------|------------------------|
| Chromebooks & Chromebook carts | Desktop Computers & Monitors | Apple iPads & charging stations | Spheros & Mini-Spheros |
| VR Headsets | Drones | Lenovo Thinkpads | MacBook Pros |
| Finch 2.0 Robots | Hummingbird Robots | Bee Bots | OzoBots |
| Osmo Coding | Cubetto Mats | 360 Cameras | 360 Headsets |

Software

Software chosen as integral or enhanced components allowed educators to fluently work with equipment that supported each program. The following table contains a summary of the software used.

| | | | |
|------------------------|---------------|----------------------|---------------|
| BirdBrain Technologies | Google Slides | Loom | iMovie |
| STEM Careers | Scratch | Scratch JR. | Storm Spotter |
| Weather IQ | Code.org | Code Combat Software | OzoBots |

Student Demographics

Student participants at the various grantee sites were exposed to Coding and Computer Science concepts in a variety of ways. Representation this year comprised of a diversity of backgrounds and capabilities; adding to the affluence of program experience and impact throughout the state of North Carolina. The tables below include demographics specifically related to sex, ethnicity, and grade for participating students. The following information is self-reported by grantees. Please note, the tables are not correlated.

*Due to reporting conflicts and leadership transitions, participants' numbers from New Hanover County Schools, Cabarrus County Schools, and Rocky Mount Prep were not included.

| Total Participants | Males | Females | Sex Not Available |
|--------------------|-------|---------|-------------------|
| 8653 | 4039 | 2774 | 1840 |

| Caucasian | African American | Hispanic/Latino | Native American | Asian | Other | Ethnicity Not Available |
|-----------|------------------|-----------------|-----------------|-------|-------|-------------------------|
| 5641 | 1550 | 928 | 9 | 216 | 168 | 138 |

| 6th Grade | 7th Grade | 8th Grade | 9th Grade | 10th Grade | 11th Grade | 12th Grade |
|-----------|-----------|-----------|-----------|------------|------------|------------|
| 2050 | 2317 | 1803 | 736 | 785 | 708 | 254 |

Work-based opportunities, internships, or apprenticeship programs

Due to continued navigation during the COVID-19 related pandemic students were not yet able to follow up with or complete work-based opportunities, internships, or apprenticeship programs.

Lessons Learned and Sustainability

Fiscal year 2021-22 presented the opportunity for grantees to regain momentum with after almost three (3) years navigating a global pandemic. Individual supports and responses that were enacted allowed districts and schools to remain successful when facing the unexpected. As North Carolina's students returned to in-person learning in many areas, they were able to participate in activities that were entirely hands on in most districts. Because of the global health crisis impacts of COVID-19, many grant recipients faced delays pertaining to receiving materials required to execute their plans. However, they remained consistent with the program as outlined in grant applications.

As in previous years, there were several lessons learned among the grantees. The following lists successes & sustainability notes from the grant administrators or teachers. The responses vary, providing great insight for program planning, implementation, and maintenance:

Lessons Learned

- With the adoption of K-12 Computer Science Standards, the Coding and Mobile App Development Grant should be offered districts/schools that support K-5 grade bands.
- Implement models of shared decision making for feedback and input from stakeholders at every level in planning events.
- Coding and computer science should be offered at all levels of K-12 to support robust programming and experiences through a student's educational career.
- Equity and access remain a concern for our classrooms in rural areas.
- Technology should be kept current to continue to pique student interest and simulate higher education and industry environments.
- Cultivating relationships with experts in the various avenues of computer science assists with increasing knowledge of respective subject matter content.
- It is important to adjust and adapt strategies to further engage students and to incorporate ever-evolving components which will increase the rigor of the current curriculum.

The Coding and Mobile App Development Grant Program finished its fifth year of engaging and impactful programs for North Carolina scholars. It is important to note the expansion of Coding and Computer Science curriculum continues to grow significantly as there are areas of consistently nascent pieces. Students from a miscellany of demographics readily exposed to the curriculum as an increasing number of teachers and administrators are receiving professional development and training to help expand course offerings. This expansion of curriculum and technology with the younger generations

has the potential to positively impact the economy in the state of North Carolina as more students are being exposed to and developing the skills necessary to meet workforce demands. Grantees have overwhelmingly expressed their desire to continue along this path of computer science expansion and exposure as we move into the future.