



Cultivating Elementary Students' Interest in Cryptography and Cybersecurity Education and Careers

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NSF Award Number: 1849768

Dates: 2019 - 2023

Project type: ITEST Strategies

Project URL: <https://cryptocomics.org/>

Project Overview: We designed, developed and implemented an innovative, transmedia curriculum (called CryptoComics) to teach 3rd-5th grade African American females and other afterschool learners about cryptography and cybersecurity and related careers. <https://theconversation.com/comic-book-introduces-kids-to-key-concepts-and-careers-in-cybersecurity-171163>

Elementary learners are capable of and interested in learning about cryptology and cybersecurity. Afterschool educators can teach such a curriculum and engage children in cryptology problem solving.

Lessons Learned & Insights Gained

- In Year 3 of our project, 223 children (59% African American; 73% girls) from 13 afterschool programs significantly increased their knowledge of cryptology and cybersecurity and awareness of related careers after participating in the project
- Afterschool educators reported the content was accessible to and engaging for young children designing for social-cultural relevance.
- Curricular engagement was observed and measured across the transmedia components.

Equity

- Innovative technology uses and experiences* (transmedia curriculum including a digital comic book, digital games, activities and simulations and unplugged activities)
- Equity/inclusion/access* (Mainly implemented in afterschool programs enrolling African American females, over ¾ of collaborating educators are educators of color, audio supports to access the curriculum, touch-screen and web-based versions available, curriculum and training freely available)
- Culturally responsive methods* (near-peer comic book characters represent different races, collaboration with educators of color to design the curriculum, multiple cultures across multiple points in history represented in the comic book, women & girls exhibit skills and dispositions important in STEM careers throughout the comic book)

New Challenges & Next Steps

- Working with the different pandemic practices in afterschool programs (curricular options & scheduling flexibility)
- Afterschool educators unable to travel for curriculum orientation (developed online synchronous and then online asynchronous professional learning platforms)
- Continue to support curricular implementation
- Apply our transmedia model to other STEM content and different contexts
- <https://stemforall2021.videohall.com/presentations/1925>