Fostering Joint Parent/Child Engagement in Preschool Computational Thinking by Leveraging Digital Media, Mobile Technology, and Library Settings in Rural Communities

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Community Partners: Mississippi Public Broadcasting, Libraries Ready to Code, Association for Rural and Small Libraries, Public Library Association, WebJunction, BUILD Initiative

PI: Marisa Wolsky (GBH), marisa_wolsky@wgbh.org

Co-PIs: Jessica Andrews (GBH), Janna Kook (EDC)

https://pbskids.org/wombats

Project Description

GBH (a leading producer of educational STEM media) and EDC (experts in how technology can influence and enhance teaching and learning) are collaborating on a new project that explores how to best use the unique affordances of digital media, mobile technology, and virtual and in-person library experiences to support sustained family engagement with computational thinking across settings and over time.

The project builds on **Work It Out Wombats!,** a national PBS KIDS series that is designed to teach foundational computational thinking (CT) concepts to preschoolers.

Key Achievements

- Developed a mobile app to guide rural, low-income families through sequenced sets of animated videos and hands-on activities in order to foster joint parent/child engagement and learning around preschool CT.
- Created a new library model and training materials to support librarians in building their own CT knowledge, and in supporting rural families in using the app to explore CT.
- Developed novel CT outcome measures, including surveys for parents and library workers.
- Piloted the mobile app, library model, and CT outcome measures with 3 libraries and 15 families from rural, low-income Mississippi communities. Findings include:
  - Library staff showed greater self-efficacy in supporting CT after using the resources.
  - Parents demonstrated an increased understanding of CT and had more positive attitudes about CT after participating in the program.
  - Parents increased their use of CT engagement strategies to support their child's learning.
  - Parents ratings of their child's use of CT skills and mindsets while solving a problem increased on average from pre to post.
- We are now expanding and revising the mobile app and library model for public rollout in 2024, at which time we will launch a larger impact study using revised CT measures.

Audience & Settings

Audience: 4- to 5-year-old children, their parents and caregivers, and library professionals in rural communities

Disciplinary area: Computational thinking

Learning environment: Family homes and local libraries

Access and Inclusion

This project responds to research suggesting children from low-income families have limited access to high-quality STEM instruction. We designed our mobile app to be accessible for families with limited Internet access and low-end devices, while still delivering engaging and developmentally appropriate learning experiences for their children. Introducing well-designed, developmentally appropriate CT experiences in the early years could ultimately increase the number and diversity of children who are computationally literate and who may develop an interest in computing throughout the course of their education.

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