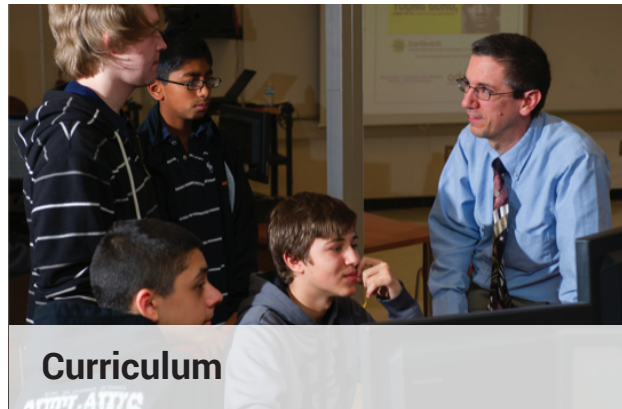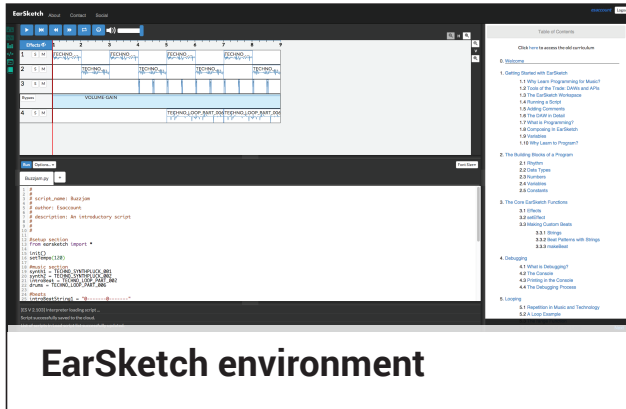# EarSketch

a STEAM approach to broadening participation in Computer Science Principles
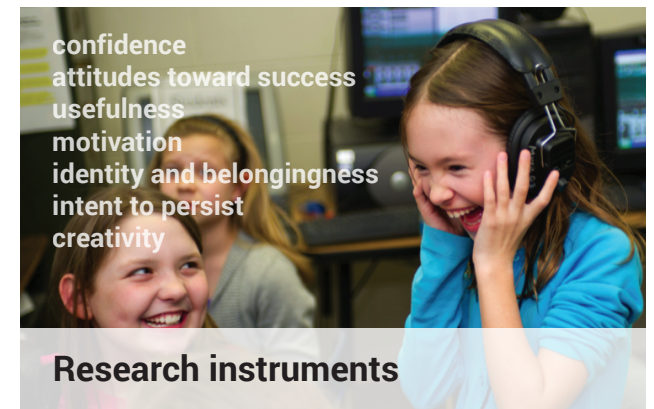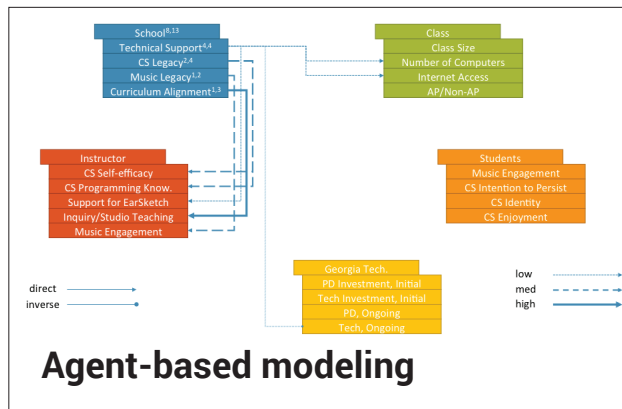
Jason Freeman[1], Brian Magerko[1], Doug Edwards[1], Roxanne Moore[1], Tom McKlin[2], Anna Xambó[1]

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earsketch.gatech.edu

EarSketch environment

Curriculum

Deployment & professional learning

EarSketch is a computer science learning environment and curriculum that seeks to increase and broaden participation in computing using a **STEAM (STEM + Arts)** approach. EarSketch creates an authentic learning environment in that it is both personally meaningful and industry relevant in terms of its STEM component (computing) and its artistic domain (music remixing). Students learn to code in **JavaScript or Python**, tackling learning objectives in the **Computer Science Principles** curricular framework as they simultaneously learn core concepts in music technology. They create **music through code** by uploading their own audio content or remixing loops in popular genres created by music industry veterans. No prior experience in music or computer science is required. EarSketch is entirely **browser-based and free**. It has successfully been employed in afterschool programs, high school and college CS courses, summer workshops, and a massive open online course (MOOC).

Agent-based modeling

confidence
attitudes toward success
usefulness
motivation
identity and belongingness
intent to persist
creativity

Research instruments