



Exploring Key Predictors of STEM/ICT Career-related Outcomes Using the World Smarts STEM Challenge Model that Incorporates Global Engagement and Mentorship

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Project Overview: The World Smarts STEM Challenge is a virtual exchange that supports STEM (science, technology, engineering, and math) education in the United States and Ghana. Middle and high school students from Washington, DC, and senior secondary school students from across Ghana come together virtually to solve global issues in their communities with STEM solutions inspired by the UN Sustainable Development Goals.

A more significant increase in female students' interest in STEM and STEM self-efficacy suggest that these types of programs may be especially beneficial for girls who are historically underrepresented in many STEM fields.

Lessons Learned & Insights Gained

- 138 students completed the virtual exchange in Year 1
- 100% of students completed the challenge milestones
- 93% of students completed their post-program survey
- 51% of students identified as female
- 50% Black and 17% Latine students completed the program survey in the U.S.

Initial findings provide evidence that bi-cultural project-based learning STEM programs can increase adolescents' STEM interest and efficacy as well key global skills such as cross-cultural communication, creativity and critical thinking that may be important for the STEM workplace. Additionally, findings suggest that these types of programs may be especially beneficial for girls, who are historically underrepresented in many STEM fields and often face exclusion from STEM domains.

Equity

Innovative Technologies: Adapting Canvas and Pronto for increased accessibility and usability for teachers and students.

Curriculum: Updating World Smarts Curriculum based on curriculum review and culture audit conducted by Catalyst Consulting Group. 57% of the culture audit evaluators indicated that the pictures and graphics do “not yet” reflect the cultures and ethnic backgrounds of the participants. The updated curriculum will include more images representing youth in action and across the U.S., Ghana, and world. The curriculum will also be provided in digital and for-print versions for increased accessibility.

Outreach and Recruitment Strategies: Targeting female teachers and providing recruitment strategies for mentors to recruit an ethnically, socioeconomically, and academically diverse cohort of students; Translating promotional flyers and one-pagers for students and families

New Challenges & Next Steps

Teacher Recruitment: Recruiting 9-12 grade teachers has been challenge due to current state of education in DC and at DCPS specifically with teacher shortages, burnout, and compensation issues. As a result, the program has expanded mentor recruitment to 8-12 grade teachers, across schools in three states (DC, Maryland, and Virginia) and extended benefits and supports for participating teachers.

Research and Evaluation: Although 100% of students complete the post-test, in general, students reported the surveys were quite long. Thus, the survey administration process was redesigned to maximize post-test engagement. For Cohort 2, NC State is updating the survey to prioritize key measures with sensitivity to time constraints on teams. For teachers, Catalyst Consulting Group will also administer a post-program survey to analyze the outcomes of the program.