Citizen Science in a College Microbiology Classroom

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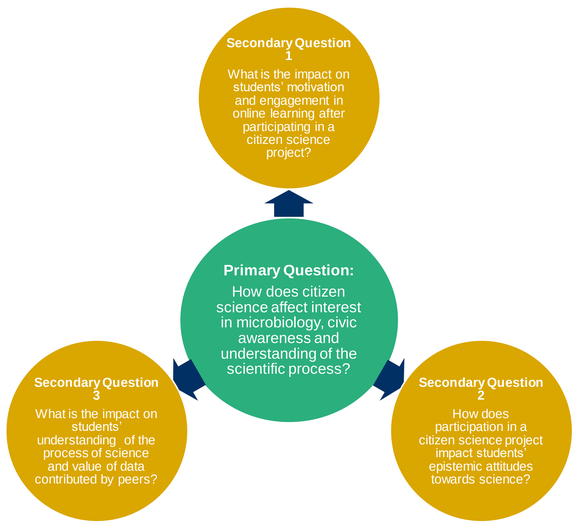
Background

The COVID-19 pandemic impacted education by removing science from physical classrooms. Adopting remote learning brought new challenges for hands-on discovery and engagement in scientific experiences for my students.

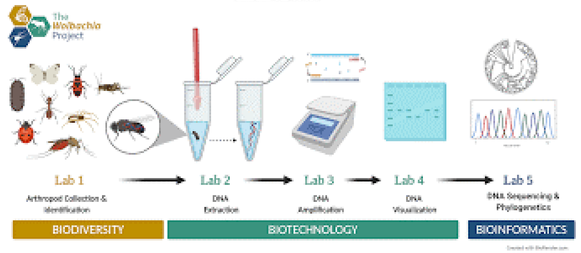
Action Research Questions



Data Collection

	Data Source 1	Data Source 2	Data Source 3
Sub Question 1	Motivation Science Questionnaire (pre and post)	Student Remote Learning Survey and Open-ended Questions	Informal Teacher Observations
Sub Question 2	Positive Attitude Toward Literacy (pre and post)	Opinion on Science and Technology (pre and post)	Discussion Board Forums and Science Identity Survey
Sub Question 3	Civic Awareness and Engagement (pre and post)	WebQuest Group Project and Discussion Board Forum	Post-treatment Student Interviews and Group Evaluation

Methodology



- ***Students completed pre-surveys and questionnaires evaluating their knowledge and attitudes towards scientists and scientific research including citizen science.***
- ***Students participated online in a group inquiry project, WebQuest: The Microbes Within, and worked collaboratively to identify a potential public health threat, propose a solution, and report a strategy based off research.***
- ***Students collected arthropod samples and performed DNA extraction, PCR, and analysis of Gels to confirm presence of Wolbachia as citizen scientists. Students completed post-surveys and exit interviews online.***

Results

Students took a more proactive role in their education, increased intrinsic motivation, self-identified as "real" scientists, and made positive growth with respect to epistemic beliefs toward science.

Figure 1

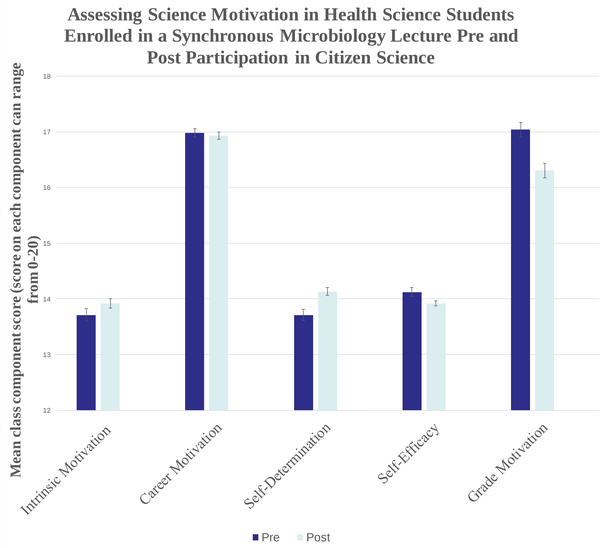
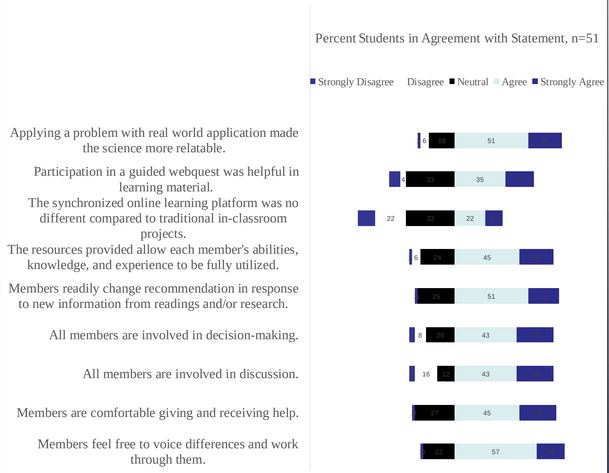


Figure 2



Student Comments: WebQuest

"The interaction with fellow classmates was a nice change of pace. Also, it allowed us to get to know some of our classmates and get involved in what we were trying to accomplish with the experiment."

"I enjoyed the group inquiry project. My partner did a great job with her research and together our ideas flowed wonderfully. We both shared opinions and even made changes when ideas came along that were better."

"I really liked having to look up real life problems. It really helped me to learn about the problem and what is/ can be done to help prevent it."

Citizen Science

"I didn't think this would be fun but I am enjoying this experience."

"I thought I got it but after actually doing it realized how much I didn't understand until now."

Value

Science for and by everyone!

Citizen science creates unique research experiences that engage students through hands-on discovery and problem-based learning to share in the whole process of scientific exploration. Projects promote students taking a proactive role in their education, increasing scientific literacy and interest in the scientific community.

Conclusions

Participation in citizen science was a positive experience for remote learners that increased their engagement, literacy, and confidence to apply scientific knowledge using real world problems.

Literature Cited

For Further Information