

# **A Different Lens** How Integrating Art into the Curriculum Affects Upper-Level Microbiology Students

#### **Background and Question**

Benefits to transdisciplinary education: Prepares students for continuing education and jobs in industry Increases student enjoyment and engagement Increases student learning Helps retain underrepresented groups in STEM

Setting Collaboration between Metabolic Studios **Optics** Division The Owens Dry Lakebed is used by the Optics Divison to fix photographs Silver in the photo paper is fixed by the thiosulfates in the lakebed mud and water

Question

How does explicit transdisciplinary integration of art into a science classroom affect student learning and engagement?

I don't know if I would say that it affected my learning. I would say that it changed how I learned in that sense.

## Methods

Validity

No tested instrument exists Expert reviews of methods and survey questions and structure Integration Partnered with the Microbiology Capstone Class Visits and special lectures from Tristan Duke, our main collaborator at Metabolic Studios **Optics** Division Film discussion of China Town Integrating art into their hypotheses Assessment Likert sureveys pre and post semester

Post semester interviews for qualitative coding

Survey

Next Steps Qualitatively code student interviews Identify themes based around transdisciplinary integration



### Results

Student Hypotheses

Students formed several hypotheses around the phenomena of the Owens Dry Lakebed

Three of these five hypotheses showed transdisciplinary approaches, methods, and thinking, focused on SciArt Approches These hypotheses emphasized how the film and film making process were influenced by chemcial reactions, microbial communities, and how art can ask and answer scientific questions

Students took a pre and post Likert survey

These questions focused on perceptions of transdisciplinary research, perceptions on whether integrating art and science is

an effective learning strategy, etc.

All students that took the post survey had consolidation towards the extremes

IRB approval was obtained for this study, IRB# 20220922EB03393

#### **Pre and Post Likert Survey Results**

The y-axis shows a value between 1 and 5, representing a scale from Strongly Disagree (1) to Strongly Agree (5). Each question is represented by the associated color, grouped by student. The results from the Pre Survey are on the left, with the results of the Post Survey on the right.





It really pushed me to just like think differently, and think outside of the box and think about what was actually going on.

#### Appreciation

The University of Wyoming Art Museum Metabolic Studios Tristan Duke, Lauren Bon, Rich Nielson **EPSCoR** UWYO Soil Microbial Ecology Lab UW Dept. of Geology and Geophysics UW Top-Tier Science Initiative UW College of Agriculture and Natural Resources UW Ellbogen Center for Teaching and Learning

It's really hard to understand what transdisciplinary work would look like, but as the semester went on, you kind of see more of how it just really takes everything and combines it into like a kind of like a super power of learning.