

Project STEAM: Integrating Art with Science to Build Science Identities Among Girls

Laura Carsten Conner,¹ Carrie Tzou,² Stephen M. Pompea,³ Mareca Guthrie¹

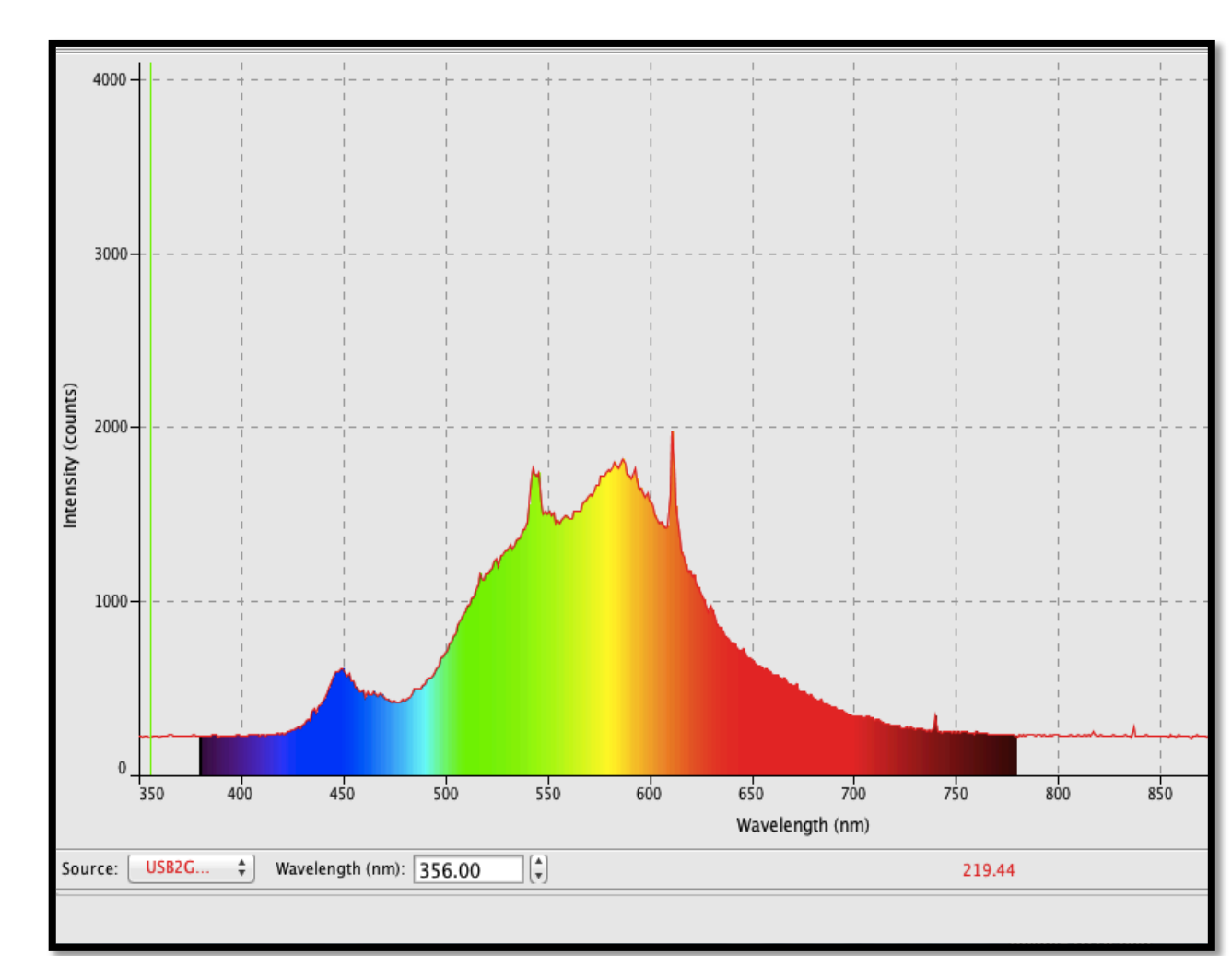
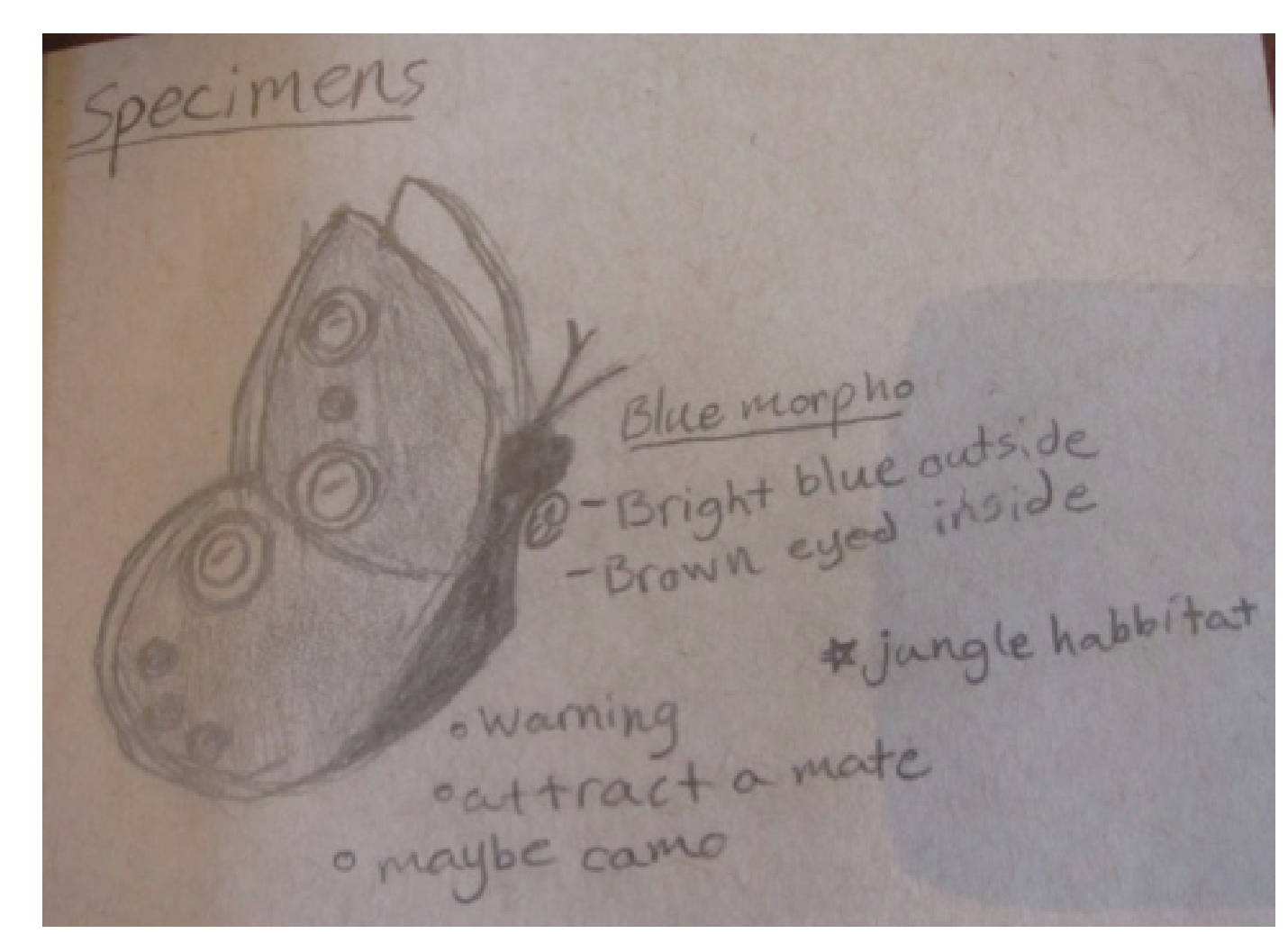
¹University of Alaska Fairbanks; ²University of Washington, Bothell; ³National Optical Astronomy Observatory

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Project Overview

Project STEAM aims to inspire art-interested girls to enter STEM careers through a series of activities, including summer academies that explore the biology and physics of color, science café-style presentations that feature the overlap between art and science, and the development of “kits” that can be used in informal and formal venues (Girl Scouts, science centers, and K-12 classrooms). Project research explores the following questions:

- (1) How does an art-focused approach (STEAM) to teaching science support engagement in scientific practices such as experimentation, observation, and communication of scientific information?
- (2) How does a STEAM approach support STEM-related identity shifts in young girls?

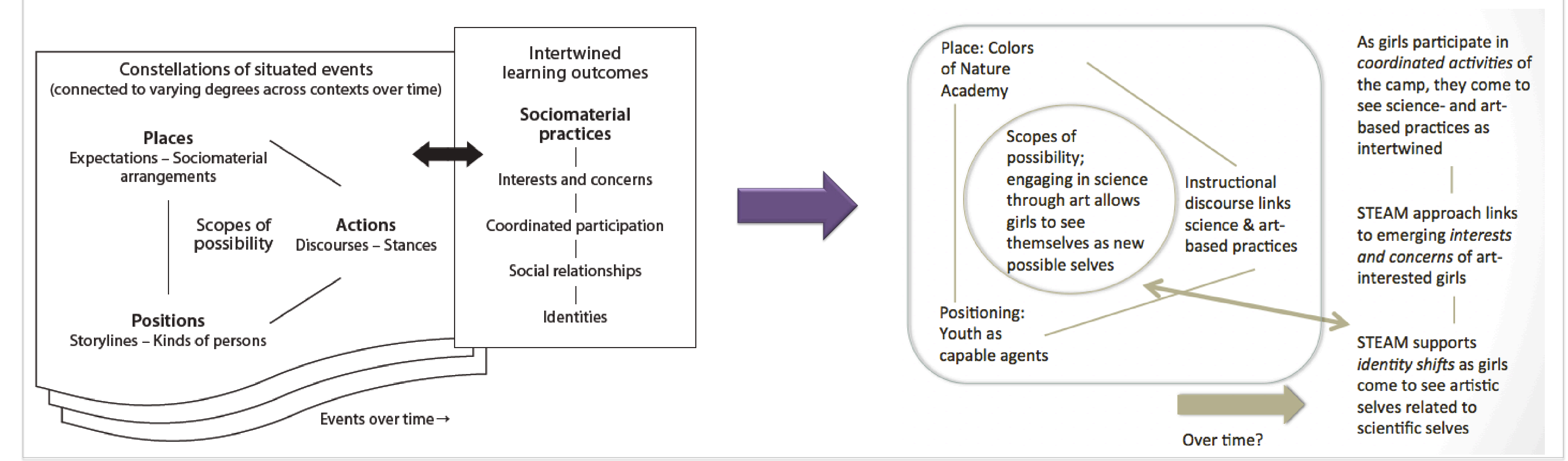


Theoretical Framing

Identity shifts & identity work (Holland, et al., 2008, Calabrese Barton, et al., 2013):

- Identities shift as participation in & positioning around the valued practices & norms of a community change & deepen
- Identity shifts may be part of a longitudinal pathway marked with deeper engagement with practices of community (Bell, et al., 2013) that may lead to more robust identity changes as participation deepens

Analytical framework: Cultural learning pathways model (Bell, et al., 2012)



Methods and Indicators

Researchers used a participant-observer approach to study the outcomes of the summer academies. We enroll ~30 girls per year (rising 5th -7th graders) at each of two sites (a small far Northwestern city and a large Southwestern city). Data sources include daily, videotaped observations, pre/post interviews and surveys, and science/art notebooks.

Analytical focus: Pre/post interviews coded for indicators of identity with science, art, & science/art overlap; field notes & video analyzed for science/art practices overlap, positionality of youth during STEAM instruction.



Findings and Implications

- (1) Girls see more specific ways in which art and science disciplinary practices overlap
- (2) Instructional approach creates a sense of agency for learners
- (3) Scientific knowledge and interest in science careers increases
- (4) Great potential for art as a way to support identity shifts in learning science and engage learners in NGSS-related practices

Challenges and Solutions

Interdisciplinary project planning and implementation takes more time, as participants come to the table with different perspectives, background, and training. Solution: increase estimated time for task completion by about 1/3. Engage in frequent, planned meetings, including in-person meetings.

