Effects of Biosphere 2 Summer Science Academy on Students’ Attitudes about Science

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INTRODUCTION

Biosphere 2 is an Earth systems science research facility owned by the University of Arizona.

• The mission of Biosphere 2 is to serve as a center for research, outreach, teaching and life-long learning about Earth, its living systems, and its place in the universe.
• B2 hosts approximately 100,000 visitors per year and 250,000 K-12 students.

The B2 Summer Science Academy is a week-long residential summer program for middle school and high school students focused on science research and experiential learning.

• Research was conducted by participants in each of the Biosphere 2 biomes including: tropical rainforest, ocean, mangrove wetland, coastal fog desert and savannah.
• Participants collaborated with B2 scientists and Outreach Scholars, undergraduate and graduate students from the University of Arizona.
• Research teams presented their findings at a symposium poster session.

METHODS

• A pre and post survey was used to evaluate the efficacy of the B2 Summer Science Academy.
• Survey data was coded to protect participant privacy.
• The questionnaire included demographic questions, rating questions, structured questions and open-ended questions.
• Student attitudes were self-reported through use of a Likert scale.
• Survey data was used to assess students’ attitudes toward science, leadership development and overall educational experience.

RESULTS

• A paired samples t-test was conducted to compare results from pre and post survey questionnaires following participation in the Biosphere 2 Summer Science Academy.

- There was a significant difference in pre (M=1.65, SD=0.53) and post (M=1.31, SD=0.57) scores for middle school participants’ rating of the following statement: I am a scientist. t(38)=3.76, p=0.0006.
- There was a significant difference in pre (M=1.78, SD=0.79) and post (M=1.54, SD=0.74) scores for middle school participants’ rating of the following statement: I plan to pursue science in college. t(40)= 2.36, p=0.02
- There was a significant difference in pre (M= 2.04, SD=0.72) and post (M=1.74, SD=0.64) scores for high school participants’ rating of the following statement: I am comfortable working in groups. t(41)= 2.87, p=0.0006.

DISCUSSION

• Results showed a significant difference in students’ reported attitudes toward science and leadership following participation in the Biosphere 2 Summer Science Academy.
• Further research is recommended to assess longitudinal effects of the Biosphere 2 Summer Science Academy on students’ pursuit of STEM education and careers.

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